



VIKING-9XXB Series

12.1"/19"/24" Intel 8th Core i3/i5 Marine Panel PC

User Manual

Release Date	Revision
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Revision History

Reversion	Date	Description
1.0	2024/01/05	Official Version

Warning!

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

Caution

Risk of explosion if the battery is replaced with an incorrect type. Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.

Packing List

Accessories (as ticked) included in this package are:		
Adaptor		
Driver & manual CD disc		
Other	_(please specify)	

Safety Precautions

Follow the messages below to prevent your systems from damage:

• Avoid your system from static electricity on all occasions.



- Prevent electric shock. Don't touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.
- Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

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Chapter 1

1.1 Features

- Intel[®] Core 8th Gen i3/i5 Processor
- 12.1"/19"/24" TFT LCD
- Aluminum Enclosure (with Anti-Corrosion Coating)
- True Flat Bezel Design
- IP66 Front Panel
- 1 x 260pin SO-DIMM, up to 32GB DDR4 2400MHz
- 24V DC Power Input, isolated
- Meet CE/FCC/ IEC 60945

1.2 Specifications

	VIKING-912BP/R(H)	VIKINGTAM-919BP/R(H)	VIKING-924BP(H)		
System	System				
CPU	Intel 8 th Gen. Core i5-8365UE Processor(4C/8T, up to 1.60 GHz, 15W TDP)				
	Intel 8 th Gen. Core i3-	8145UE Processor(2C/4T, up to	2.20 GHz, 15W TDP)		
Chipset		SoC			
Memory	1 x 260-pi	n SO-DIMM up to 32GB DDR4 2	2400MHz		
LVDS		18bit/24bit LVDS support			
Outside IO Port – From	nt I/O				
LED	1 x Power	System LED (with Power Buttor	n ON/OFF)		
Buzzer		1			
Dimming Control	0.1%~100%				
OSD Keypad	5-Keys OSD Capacitive Touch at front				
Outside IO Port—Rea	r I/O				
USB	4 x USB3.0 type A				
Serial/Parallel	1 x RS-232 (COM1, 5 pin terminal block)				
	1 x RS-232/422/485 selectable (default RS-485) (COM2, 5pin terminal block, mode select				
		by BIOS setup.)			
Display Port	1 x DP				
Audio	1 x Line-out, phone jack				
LAN	2 x GbE RJ-45				
Power	1 x 2Pin terminal block connector (for remote power switch)				
	1 x 3pin terminal block connector				

ESD	1 x ESD Ground			
Storage Space				
Storage	Default 1 x M.2 M-Key support 2242 SSD (2280 for option, can't use TB-528 at the same			
		time)		
		1 x 2.5" HDD space (Option)		
Expansion				
Expansion Slot	1	x Full-size mPCle slot onboard	1	
	1 x TB-528	expansion connector (CN3, fo	r 19"/24")	
	(option 1	B-528C2I for 2 x RS-422/485 is	solation)	
Display – Standard LC	D			
Display Type	12.1" TFT LCD	19" TFT LCD	24" TFT LCD	
Max. Resolution	1024 x 768	1280 x 1024	1920 x 1080	
Max. Color	16.7M	16.7M	16.7M	
Luminance (cd/m ²)	500	350	300	
Contrast Ratio	1000:1	1000:1	3000:1	
Viewing Angle(H/V)	178/178	170/160	178/178	
Backlight Lifetime	30,000hrs	50,000hrs	50,000hrs	
Option	Optical bonding			
Display – High Brightr	ness LCD (option)			
Display Type	12.1" TFT LCD	19" TFT LCD	24" TFT LCD	
Max. Resolution	1024 x 768	1280 x 1024	1920 x 1080	
Max. Color	16.7M	16.7M	16.7M	
Luminance (cd/m ²)	1000	1000	1000	
Contrast Ratio	3000:1	1000:1	5000:1	
Viewing Angle(H/V)	176/176	170/160	178/178	
Backlight Lifetime	70,000hrs	50,000hrs	50,000hrs	
Option		Optical bonding		
Touch Screen				
Туре	Projected capacitive touch screen			
Interface	USB			
Light Transmission	Projected capacitive touch screen: over 90%			
Power				
Power Input	DC 24V/ 1 x 3pin termir	al block connector by TB-323	(option AC 90~264V in)	
Power Consumption	MAX: 50.88W-912BH	MAX: 52.85W-919BH	MAX: 69.94W-924BH	
Mechanical				

			1	
Construction	Black/Aluminum bezel and Aluminum housing (Anti-corrosion coating)			
Mounting	Panel Mount/VESA mount			
IP Rating		IP66/IP69K		
Dimension (mm)	307 x 246 x 73.5	439 x 396 x 76.3	609 x 400 x 76.3	
Net Weight	4.07 Kg	7.15 Kg	8.88 Kg	
Environmental				
Operating	0~50°C (-20~60°C for option)			
temperature				
Storage temperature	-30~70°C			
Storage humidity	10 to 90% @ 40°C, non- condensing			
Certification	Meet CE / FCC Class B / IEC 60945			
IP Rating	Front Panel IP66 Design for Panel Mount			
Operating System	Windows 10 IoT ENT LTSC, Windows 11/Ubuntu 20.04			
Support				

1.3 Dimensions



Figure 1.1: Dimensions of VIKING-912BP(H)



Figure 1.2: Dimensions of VIKING-919BP(H)



Figure 1.3: Dimensions of VIKING-924BP(H)

1.4 Brief Description of VIKING-9XXB Series

There are 12.1", 19" and 24" new generation adopt Black/Aluminum bezel and Aluminum housing panel PC in VIKING-9XXB series, which comes with 100% dust and waterproof guarantee, and the all-in-one fanless design. It is powered by 8th Gen. Intel Core i3-8145UE/i5-8365UE processor, 1 x 260-pin SO-DIMM up to 32GB DDR4 2400MHz memory, 1 x 2.5" HDD space and 1 x M.2 M-Key 2242 space for storage. VIKING-9XXB series is DC24V power input and IP66/IP69K rated with M12 connectors. Furthermore, the models support resistive touch and projected capacitive touch for option, and can be high brightness LCD and optical bonding designed for option. It supports touch on/off button on the side edge for hygienic cleaning and ergonomic versatile mounting: Yoke mounting and space-saving VESA mounting.



Figure 1.5: Rear View of VIKING-912B







Figure 1.8: Front View VIKING-924B



Figure 1.9: Rear View of VIKING-924B

1.5 Panel Mount and VESA Mount

The VIKING-9XXB Series model can be Panel mounted and VESA mounted as shown in Picture below.



Figure 1.9: Panel mount of VIKING-9XXB Series



Figure 1.10: VESA mount of VIKING-9XXB Series

2.1 Motherboard Introduction

SBC-7124 is a 4" industrial motherboard developed on the basis of Intel Whiskey Lake-U Processor, which provides abundant peripheral interfaces to meet the needs of different customers. Also, it features dual GbE ports, 6xCOM ports and one M.2 M-Key configuration, one DP Port and one LVDS interface. To satisfy the special needs of high-end customers, CN1 and CN2 and CN3 richer extension functions, the product is widely used in various sectors of industrial control.

Specifications	
Board Size	170mm x 113mm
CPU Support	Intel® Core™ i3-8145UE (2.20GHz, up to 3.90GHz) Intel® Core™ i5-8365UE (1.60GHz, up to 4.10GHz) (option)
Chipset	SOC
Memory Support	1 x SO-DIMM (260 pins), up to 32GB DDR4 2400MHz FSB (i3-8145UE/i5-8365UE)
Graphics	Intel [®] UHD Graphics 620 (i3-8145UE/i5-8365UE)
Display Mode	1 x LVDS (18/24-bit dual LVDS) 1 x DP Port
Support	Up to 4096 x 2304 for DP1
Resolution	Up to 1920 x 1200 for LVDS (PS8625)
Dual Display	LVDS + DP1
Super I/O	Nuvoton NCT6106D
BIOS	AMI/UEFI
Storage	1 x SATAIII Connector (7Pin) 1 x M.2 M-Key (PCIex4/SATAIII Auto Detect), Support 2242 NVME SSD
USB	4 x USB 3.2 Gen1 (Type A) Stack Ports (USB3_1/USB3_2) (USB3.2:USB3-1/USB3-2/USB3_3/USB3_4, USB2.0:USB1/2/3/4) 2 x USB 2.0 Pin header for CN3 (USB5/USB6)

2.2 Specifications & Dimensions

	1 x USB 2.0 Pin header for CN1 (USB7) 1 x USB 2.0 Pin header for CN2 (USB8) 1 x USB 2.0 for M-PCIE1 (USB9) 1 x USB 2.0 for PM6000 (USB10)
Serial	1 x PH3y.50mm, 2*5Pin Connectors for external (COM1_1) 1 x RS232 port, Pin1 w/5V/12~14VRTS select (COM1_1-1) 1 x RS232/RS422/RS485 port (COM1_1-2) 2 x UART for CN3 (COM3, COM4) 2 x RS422/485 header for CN2 (COM5/COM6)
Digital I/O	8-bit digital I/O (CN2) 4-bit digital Input 4-bit digital Output 4-bit digital I/O (CN3) 2-bit digital Input 2-bit digital Output
Battery	Support CR2477 Li Battery by 2-pin header
Smart Battery	1 x Smart Battery Support 3 Serial Li battery by 10-pin header (BAT2)
Audio	Support Audio via Realtek ALC888S-VD2 audio codec Support Line-out by JACK (LINE_OUT1) Support Line-in, Line-out, MIC by 2x6-pin header (F_AUDIO1)
Expansion Bus	1 x mini-PCI-express slot for M-PCIE1 1 x PCI-express for CN3
Touch Ctrl	1 x Touch ctrl header for TCH1 (USB10)
Power Management	Wide Range DC+9V~36V 1 x 3-pin power input connector
Switches and LED Indicators	1 x Power on/off switch (BT1/CN2/CN3) 1 x Reset (CN2) 1 x HDD LED status (CN2) 1 x Power LED status (CN1) 1 x Buzzer
External I/O port	1 x COM Ports (COM1_1-1/COM1_1-2) 4 x USB 3.2 Gen 1 Ports (stack) 2 x RJ45 GbE LAN Ports

	1 x DP Port 1 x Audio Jack (Line out)
трм	Infineon's Trusted Platform Module (TPM 2.0) *Note: Only support Windows 10 IOT*
Temperature	Operating: -20°C to 70°C Storage: -40°C to 85°C
Humidity	10% - 90% relatively, non-condensing, operating
Power Consumption	24V/1.6A (Intel i3-8145UE Processor with 16GB DDR4/HDD) 24V/2.0A (Intel i5-8365UE Processor with 16GB DDR4/HDD)
EMI/EMS	Meet CE/FCC class A



(Unit: mm)

Figure 2.1: Motherboard Dimensions



2.3 Jumpers and Connectors Location

Figure 2.2: Jumpers and Connectors Location- Board Top



Figure 2.3: Jumpers and Connectors Location- Board Bottom

2.4 Jumpers Setting and Connectors

1. CPU1:

(FCBGA1528), onboard Intel Whiskey Lake-UE Processors.

	Processor						
Model	Number	PBF	Cores/	TDP	Embedded	Intel VPro	Remarks
			Threads				
SBC-7124-I3-8145UE	13-8145UE	2.20 up to	2/4	12.5W	•	-	
		3.90GHz		25W			
SBC-7124-I5-8365UE	15-8365UE	1.60 up to	4/8	12.5W	•	•	option
		4.10GHz		25W			
SBC-7124-I7-8665UE	17-8665UE	1.70 up to	4/8	12.5W	•	•	option
		4.40GHz		25W			

2. H1/H2/H3/H4 (option):

CPU1 Heat Sink Screw holes, four screw holes for Intel Whiskey Lake-UE

Processors.

Heat Sink assembles.

3. FAN1:

(2.54mm Pitch 1x4 Pin Header), FAN connector, cooling fans can be connected directly for use. You may set the rotation condition of cooling fan in menu of BIOS CMOS Setup.



Pin#	Signal Name
1	Ground
2	VCC
3	SYS_FANTACH
4	SYS_FANPWM

Note:

Output power of cooling fan must be limited under 5W.

4. DDR4_1:

(SO-DIMM 260Pin slot), DDR4 memory socket, the slot is located at the socket of the board and supports 260Pin 1.2V DDR4 2400MHz FSB SO-DIMM memory module up to 32GB.

Model	DDR4 Memory Types (FSB)
SBC-7124-I3-8145UE	2400MHz
SBC-7124-I5-8365UE	2400MHz

5. BAT1:

(1.25mm Pitch 1x2 Wafer Pin Header, SMD) 3.0V Li battery is embedded to provide power for CMOS. CMOS clear operation will permanently reset old BIOS settings to factory defults.

Pin#	Signal Name
Pin1	Ground
Pin2	VBAT

6. SW1 (PIN1, PIN2, PIN3, PIN6):

SW1-6(Switch), ATX Power and Auto Power on jumper setting.

SW1 (Switch)	Mode	
Pin6 (Off)	ATX Power	
Pin6 (On)	Auto Power on (Default)	

SW1-1(Switch), POE or DCIN input setting.

SW1 (Switch)	DC_IN1	BAT2 (PoE)
Pin1 (Off, Default)		-
Pin1 (On)	-	

SW1-2, SW1-3 (Switch), CMOS clear switch, CMOS clear operation will permanently reset old BIOS setting to factory defaults.

SW1	CMOS
Pin2 (Off)	NORMAL (Default)
Pin2 (On)	Clear CMOS
Pin3 (Off)	NORMAL (Default)
Pin3 (On)	Clear CMOS

Procedures of CMOS clear:

- a) Turn off the system and unplug the power cord from the power outlet.
- b) To clear the CMOS settings, use the switch to Pin2 on for about 3 seconds then move the switch Pin2 and Pin3 off.

- c) Power on the system again.
- d) When entering the POST screen, press the key to enter CMOS Setup Utility to load optimal defaults.
- e) After the above operations, save changes and exit BIOS Setup.
- 7. BAT2:

(2.0mm Pitch 1x10 Wafer Pin Header), Smart battery Interface

Pin#	Signal Name	
Pin1	VCC_BAT1	
Pin2	VCC_BAT1	
Pin3	VCC_BAT1	
Pin4	SMB_DAT_SW	
Pin5	SMB_CLK_SW	
Pin6	BAT1_TEMP	
Pin7	Ground	
Pin8	Ground	
Pin9	Ground	
Pin10	NC	

Function	Specifications
Nominal voltage (3S1P)	11.1~12.6V
Charge voltage	12.6V
Charge current	0.5C

8. DC_IN1:

(5.08mm Pitch 1x3 Pin Connector), DC9V~36V Sustem power input connector.

Pin#	Power Input
Pin1	DC_IN+ (DC+9V~36V)
Pin2	DC_IN- (Ground)
Pin3	FG

Model	DC_IN1
SBC-7124-I3-8145UE	180° Connector
SBC-7124-I5-8365UE	180º Connector
SBC-7124-I7-8665UE	180° Connector

Connector	Power input
DC_IN1 (Default)	DC_IN1

BAT2 (option)	BAT2
DC_IN1 + BAT2 (option)	DC_IN1

9. BT1:

Power on/off button, it is used to connect power switch button. The two pins are disconnected uncer normal condition. You may short them temporarily to realize system startup & shutdown or awaken the system from sleep state.

10. LED1/LED2/LED3/LED4/LED5/LED6/LED7/LED8/LED9:

LED1: LED STATUS. Green LED for M2_M1 Power status. LED2: LED STATUS. Green LED for PM6000 Power status. LED3: LED STATUS. Green LED for 3P3V_ALLS_EC Power status. LED4: LED STATUS. Green LED for PM_S5_OK status. LED5: LED STATUS. Green LED for PM_PCH_PWROK status. LED6: LED STATUS. Green LED for H_CATERR status. LED7: LED STATUS. Green LED for charge Power Good status. LED8: LED STATUS. Green LED for charge Power Good status. LED8: LED STATUS. Green LED for charge Power Good status. LED9: LED STATUS. Green LED for charge Complete status.

11. S_LVDS:

(Switch), LVDS jumper setting.

(0		
S_LVDS (Switch)	Function (DN1)	
Pin1 (ON)	3.3V Level	
Pin1 (OFF)	5V Level	
Pin2 (ON)	Single channel LVDS	
Pin2 (OFF)	Dual channel LVDS	
Pin3 (ON)	8/24 bit	
Pin3 (OFF)	6/18 bit	
Pin4 (ON)	DC Mode	
Pin4 (OFF)	PWM Mode	
Pin5 (ON)	Enable PS8625	
Pin5 (OFF)	Disable PS8625	

12. U11:

AT24C02-DIP8, The EEPROM IC(U11) is the set of LVDS resolution. If you need other resolution settings, please upgrade U11 data.

Model	LVDS resolution	
SBC-7124-I3-8145UE	1280*1024 (Default)	

SBC-7124-I5-8365UE	800*480 (option)
SBC-7124-I7-8665UE	800*600 (option)
	1024*768 (option)
	1920*1080 (option)

13. INVT1:

(2.0mm Pitch 1x6 wafer Pin Header), Backlight control connector for LVDS.

	_	
1	•	
2	•	
3	•	
4	•	
5	•	
6	•	
_	_	

Pin#	Signal Name
1	+DC12V_LVDS
2	+DC12V_LVDS
3	Ground
4	Ground
5	BKLT_EN_OUT
6	BKLT_PWM_OUT

14. CN1:

(1.25mm Pitch 2x20 Connectorm DF13-40P), for 18/24-bit LVDS output connector, fully supported by Parad PS8625 (DP to LVDS), the interface features dual channel 24-bit output. Low Voltage Differential Signalling, a high speed, low power data transmission standard used for display connections to LCD panels.

Function	Signal Name	Pin#		Signal	Function
				Name	
LVDS Signal	12V_LVDS	2	1	12V_LVDS	LVDS Signal
	BKLT_EN_OUT	4	3	BKLT_CTRL	
	Ground	6	5	Ground	
	LVDS_VDD5	8	7	LVDS_VDD5	
	LVDS_VDD3	10	9	LVDS_VDD3	
	Ground	12	11	Ground	
	LA_D0_P	14	13	LA_D0_N	
	LA_D1_P	16	15	LA_D1_N	

	LA_D2_P	18	17	LA_D2_N	
	LA_D3_P	20	19	LA_D3_N	
	LA_CLKP	22	21	LA_CLKN	
	LB_D0_P	24	23	LB_D0_N	
	LB_D1_P	26	25	LB_D1_N	
	LB_D2_P	28	27	LB_D2_N	
	LB_D3_P	30	29	LB_D3_N	
	LB_CLKP	32	31	LB_CLKN	
USB7	Ground	34	33	Ground	
(option)	USB7_P	36	35	USB7_N	
	5V_S5_USB	38	37	5V_S5	
Power LED	PWR_LED+	40	39	Ground	

15. DP1:

(DP Connector), Display Port Interface connector.



16. SW1 (Pin5):

SW1-5 (Switch), Touch jumper setting.

SW1(Switch)	Touch (TCH1)
SW1-5 OFF (Default)	Enable
SW1-5 ON (option)	Disable

17. TCH1:

(2.0mm Pitch 2x3 Pin Header), COM1 jumper setting, pin1~6 is used to select signal out of pin 1 of COM1 port.

Pin#	Signal Name
1	SENSE
2	X+
3	Х-
4	Y+
5	Y-
6	GND_EARCH

18. JP2:

(2.0mm Pitch 2x3 Pin Header), COM1 jumper setting, pin1~6 is used to select signal out of pin 1 of COM1 port.

JP1 Pin#	Function
Close 1-2	COM1 Pin1 RTS (Default)
Close 3-4	COM1 Pin1: DC+5V (option)
Close 5-6	COM1 Pin1: DC+12V~14V (option)

19. COM1:

(3.50mm, 2x5pin connector), Rear serial port, Phoenix connector serial port is provided to make a direct connection to serial devices. COM1 port is controlled by pins No.1~6 of JP2, select output Signal RTS or 5V or 12V~14V, for details, please refer to description of JP2 setting.



Pin#	COM1(RS232)	COM2(RS232)	COM2(RS422)	COM2(RS485)		
1	-	-	-	-		
2	Ground	Ground	Ground	Ground		
3	-	RXD2	422_TX-	485+		
4	CTS1-	-	-	-		
5	-	DCD2-	422_TX+	485-		
6	TXD1	-	-	-		
7	-	422_RX-				
8	RXD1	-	-	-		
9	-	RXD2	422_TX+	-		
10	10 RTS-/5V/(12~14V) 5V/(12~14V) 5V/(12~14V) 5V/(12~14V)					
COM1 BIOS	Setup:					
Advanced/NCT6106D Super IO Configuration/Serial Port 1 Configuration: [RS-232]						
COM2 BIOS Setup:						
Advanced/NCT6106D Super IO Configuration/Serial Port 2 Configuration: [RS-232]						
Advanced/NCT6106D Super IO Configuration/Serial Port 2 Configuration: [RS-422]						
Advanced/NCT6106D Super IO Configuration/Serial Port 2 Configuration: [RS-485]						



Caution:

Please Pay attention to pin1 pin definition. The power output might damage your device if is connected to the RTS port.

20. SATA_P1:

(2.5mm Pitch 1x2 box Pin Header), one onboard 5V output connector is reserved to provide power for SATA devices.

Pin#	Signal Name	
1	5V_S0 (+DC5V output)	
2	Ground	



Output current of the connector must not be above 1A.

21. SATA1:

(SATA 7Pin), SATA Connectors, one SATA connector is proveded, with transfer speed up to 6.0Gb/s.

22. M2_M1:

(NGFF M.2 Socket), NGFF(M.2) M-Key, is located at the top, it supports M.2 M-Key devices with four PCIe or SATA signal, support 2242 size card.

23. H5:

M2_M1 SCREW HOLES, H5 for M2_M1 card assemble.

24. M-PCIE1:

(Socket 52Pin), mini PCIe socket, is located at the top, it supports mini PCIe devices with USB2.0 and SIM and SMBUS signal. MPCIe card size is 30x50.95mm.

Function	Support	Remarks
Mini PCIe (PCIe 13)	•	
SMbus	•	
SIM	•	
USB2.0 (USB9)	•	

25. H7:

M-PCIE1 SCREW HOLES, H7 for mini PCIE card (30mmx50.95mm) assemble.

26. SIM1:

(NANO-SIM Socket), Support nano SIM Card devices.

4		8
3	<u> </u>	7
2		6
1		5

27. F_AUDIO1:

(2.0mm Pitch 2x6 Pin Header), front audio, an onboard Realtek ALC888C-VD2 codec is used to provide high-quality audio I/O ports. Line Out can be connected to a headphone or amplifier. Line in is used for the connection of external audio source via a Line in cable. MIC is the port for microphone input audio.

Signal Name	Pin#	Pin#	Signal Name
+5V_F_AUDIO	1	2	GND_AUD
LINE-OUT-L	3	4	LINE-OUT-R
FRONT_JD	5	6	LINE_IN_JD
LINE-IN-L	7	8	LINE-IN-R
MIC-IN-L	9	10	MIC-IN-R
GND_AUD	11	12	MIC1_JD

28. LINE_OUT1:

(Diameter 3.5mm Jack), HD Audio Port, an onboard Realtek ALC888S-VD2 codec is used to provide high quality audio I/O ports. Line out can be connected to a headphone or amplifier.



29. USB3_1:

USB3-1/USB3-2: (Double stack USB type A), rear USB connector, provodes up to two USB3.2 Gen1 ports, High-speed USB2.0 allows data transfer up to 480 Mb/s, USB3.2 Gen1 allows data transfer up to 5.0Gb/s, support USB full-speed and low-speed signaling.



Each USB Type A Receptacle (2 Ports) Current limited value is 2.0A.

If the external USB device current exceeds 1.5A, please separate connectors into different Receptacle.

30. USB3_2:

USB3-3/USB3-4: (Double stack USB type A), rear USB connector, provides up to two USB3.2 Gen1 ports, High-speed USB 2.0 allows data transfer up to 480 Mb/s, USB 3.2 Gen1 allows data transfer up to 5.0Gb/s, support USB full-speed and low-speed signaling.



Each USB Type A Receptacle (2 Ports) Current limited value is 2.0A.

If the external USB device current exceeds 1.5A, please separate connectors into different Receptacle.

31. LAN1:

(RJ45 Connector), Rear LAN port, two standard 10/100/1000M RJ-45 Ethernet ports are provided. Intel I219-LM chipset is used, LINK LED (green) and ACTIVE LED (green or orange) respectively located at the left-hand and right-hand side of the Ethernet port indicate the activity and transmission state iof LAN.

Corporate LAN product with support for Intel[®] AMT2 technology.

Model	Intel [®] AMT2 technology
SBC-7124-I3-8145UE	-
SBC-7124-I5-8365UE	•
SBC-7124-I7-8665UE	•

32. LAN2:

(RJ45 Connector), Rear LAN port, two standard 10/100/1000M RJ-45 Ethernet ports are provided. Intel I210AT chipset is used, LINK LED (green) and ACTIVE LED (green or orange) respectively located at the left-hand and right-hand side of the Ethernet port indicate the activity and transmission state iof LAN.



33. BUZ1:

Onboard buzzer

34. CN2:

(DF 13-30P Connector), for expand output connector, it provides eight GPIO, two RS-422 or RS-485, one USB2.0, one Power on/off, one Reset.

		r			
Function	Signal Name	Pi	n#	Signal Name	Function
5V	5V_S5	2	1	5V_S5	5V
SIO_GP31	GPIO_IN2	4	3	GPIO_IN1	SIO_GP30
SIO_GP33	GPIO_IN4	6	5	GPIO_IN3	SIO_GP32
SIO_GP35	GPIO_OUT2	8	7	GPIO_OUT1	SIO_CP34
SIO_CP27	GPIO_OUT4	10	9	GPIO_OUT3	SIO_GP36
	Ground	12	11	Ground	
485 or 422	485+_422TX5+	14	13	485422TX5-	485 or 422
(COM5)	422_RX5+	16	15	422_RX5-	(COM5)
485 or 422	485+_422TX6+	18	17	485422TX6-	485 or 422
(COM6)	422_RX6+	20	19	422_RX6-	(COM6)
5V	5V_S0	22	21	HDD_LED+	HDD LED
USB2.0	5V_S5	24	23	5V_S5	USB2.0
	USB8_P	26	25	USB8_N	
Power auto on	Ground	28	27	FP_RST-	RESET
	PWRBTN_ON	30	29	Ground	
COM5 BIOS Setup:					
Advanced (NCTC10CD Super 10 Configuration (Covid Dart 5 Configuration) [DS 422]					

Advanced/NCT6106D Super IO Configuration/Serial Port 5 Configuration: [RS-422] Advanced/NCT6106D Super IO Configuration/Serial Port 5 Configuration: [RS-485] COM6 BIOS Setup:

Advanced/NCT6106D Super IO Configuration/Serial Port 6 Configuration: [RS-422] Advanced/NCT6106D Super IO Configuration/Serial Port 6 Configuration: [RS-485]

35. DEBUG1 (option):

Pin#	Signal Name		
Pin1	3P3V_S0		
Pin2	CLK_24M_SIO		
Pin3	PLT_RST_BUF1-		
Pin4	Ground		
Pin5	LPC_AD0		
Pin6	LPC_AD1		
Pin7	APC_AD2		
Pin8	APC_AD3		
Pin9	LPC_FRAME-		

(1.25mm Pitch 1x9 Wafer Pin Header, SMD), Debug Port

36. U1(option):

Infineon's Trusted Platform Module (TPM2.0) SLM9670AQ is a fully standard compliant TPM based on the latest Trusted Computing Group (TCG) specification 2.0.

Note: only support Windows 10 IOT.

Model	U1 (TPM2.0)
SBC-7124-I3-8145UE	•
SBC-7124-I5-8365UE	•
SBC-7124-I7-8665UE	•

37. CN3:

(1.27mm Pitch 2x30 Female Header), for expand output connector, it provides four GPIO, two USB2.0, oneSPI, two UART, one PCIex1, one SMbus, connexts to the TB-528 card series.

Function	Signal Name	Pin#		Signal Name	Function
	5V_S5_USB	1	2	5V_S5_USB	
	5V_S5_USB	3	4	5V_S5_USB	
	USB0506_OC	5	6	PS_ON_ALL-	
USB5	USB5_N	7	8	USB5_P	USB5
USB6	USB6_N	9	10	USB6_P	USB6
	Ground	11	12	Ground	
SPI	PCH_SPI1_CLK	13	14	SPI1_MISO_PCH	SPI
	PCH_SPI1_CS0-	15	16	PCH_SPI1_MOSI	
COM4	COM4_RI	17	18	COM4_DCD-	COM4 (UART)
(UART)	COM4_TXD	19	20	COM4_RXD	

	COM4_DTR	21	22	COM4_RTS-	
	COM4_DSR	23	24	COM4_CTS-	
	Ground	25	26	Ground	
COM3	COM3_RI	27	28	COM3_DCD-	COM3 (UART)
(UART)	COM3_TXD	29	30	COM3_RXD	
	COM3_DTR	31	32	COM3_RTS-	
	COM3_DSR	33	34	COM3_CTS-	
	SIO_GP45	35	36	SIO_GP44	
	SIO_GP47	37	38	SIO_GP46	
	Ground	39	40	Ground	
PCIE14	PCIE14_TX_N0	41	42	PCIE14_TX_P0	PCIE14
	PCIE14_RX_N0	43	44	PCIE14_RX_P0	
	Ground	45	46	Ground	
	CLK_100M_PE4_N	47	48	CLK_100M_PE4_P	
	PCIE_WAKE_N	49	50	PLT_RST_BUF2-	
SMBUS	SMB_CLK_S0	51	52	SMB_DATA_S0	SMBUS
PCIE	CLKREQ_PE4	53	54	Ground	
	3P3V_S5	55	56	PWRBTN_ON-	Power Auto on
	3P3V_S5	57	58	3P3V_S5	
12V	12V_S0	59	60	12V_S0	12V

3.1 Keypad Control

ltem	Description
	Press to turn on the power the system. Press 2 seconds to turn off the power the system. • Green : working state
(+)	Increase LCD brightness • Green is always on
Θ	Decrease LCD brightnessGreen is always on
9	Programmable (No function, Reserve) LED is always off
	Swap Brightness mode (Day / Dust / Night mode) • Green is always on



ltem	Description	
ţ.	Lights up when brightness adjusted to Day mode (70% Brightness)	
-Q-	Lights up when brightness adjusted to Dust mode (50% Brightness)	
(Lights up when brightness adjusted to Night mode (30% Brightness)	
Chapter 4 Installation of Drivers

4.1 Intel[®] 8th Generation Core Chipset

To install the Intel[®] 8th Generation Core Chipset, please follow the steps below. **Step 1.** Here is welcome page. Please make sure you save and exit all programs before install. Click **Next**.



Step2. Read the license agreement. Click **Accept** to accept all of the terms of the license agreement.

Intel(R) Chipset Device Software	
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)	^
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING. Do not use or load software (including drivers) from this site or any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement, which Intel may modify from time to time following reasonable notice to You. If you do not wish to so agree, do not install or use the Software. Please Also Note:	
If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV) or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;	
If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT, applies.	~
Back Accept Cancel	

Step3. Click Install to begin the installation.

	R) Chipset Devi ne File Information		Inter
*****	********	******	*****
* Pro	oduct: Intel(R) (Chipset Device Softwar	e l
* Ta	rget PCH/Chipset		
*	10.1.19.1:	Intel(R) Atom(TM) Pr	cocessor C3000 produc
*	10.1.17.1:	Intel(R) Atom(TM)/Ce	eleron(R)/Pentium(R)
*	10.1.16.6:	Intel(R) 300 Series	Chipset Family
*		Intel(R) C240 Series	Chipset Family
*	10.1.15.5:	mobile 8th Gen Intel	(R) Core(TM) process
*	10.1.14.7:	8th Gen Intel(R) Cor	re (TM)
*	10.1.13.3:	Intel(R) Celeron(R)/	Pentium(R) Processor
*	10.1.11.4:	Intel(R) 200 series	chipset family
*		Intel(R) 300 series	chipset family
*	10.1.10.4:	Intel(R) Xeon(R) pro	cessor E3-1200 v6 pr
*		7th Generation Intel	(R) Core(TM) process
*	10.1.9.2:	Intel(R) C620 series	chipset
*	10.1.8.5:	Intel(R) Xeon(R) pro	-
*	10.1.7.3:	Intel(R) Xeon(R) pro	cessor E3-1500 v5 pr
*		Intel(R) Xeon(R) pro	cessor E3-1200 v5 pr
<			>
		Back	Install Cancel

Step4. Select **Restart Now** to reboot your computer for the changes to take effect.

Intel(R) Chipset Device Softw Completion	are	(intel)
You have successfully installed the following	g product:	
Intel(R) Chipset Device Software You must restart this computer for the char	nges to take effect.	
View Log Files		
	Restart Now	Restart Later

4.2 Intel[®] VGA Chipset

To install the Intel[®] VGA Chipset, please follow the steps below.

Step1. Click Next.



Step2. Read the license agreement. Click **Yes** to accept all of the terms of the license agreement.



Step3. Click Next to continue.

Intel® Installation Framework		_		×
Intel® Graphics Driver				
Readme File Information			(int	el
Refer to the Readme file below to view the system r	equirements ar	nd installation ir	nformation.	
Release Version: Production Version				^
Driver Version: 25.20.100.6577				
Release Date: February 12, 2019				
Operating System(s): Microsoft Windows* 10-64 (RS3) Microsoft Windows* 10-64 (RS4) Microsoft Windows* 10-64 (RS5)				
Platforms:				~
	< Back	Next >	Cance	
		— Intel® Insta	allation Fra	mework

Step4. Click Next to continue the program.

Intel® Installation Framework	r
Setup Progress	(intel)
Please wait while the following setup operations an Deleting File: C:\ProgramData\Microsoft\Windows Deleting File: C:\ProgramData\Microsoft\Windows Deleting File: C:\Users\Public\Desktop\Intel(R) HD Deleting File: C:\Users\Public\Desktop\Intel(R) Gr Deleting File: C:\ProgramData\Microsoft\Windows Deleting File: C:\ProgramData\Microsoft\Windows Deleting File: C:\Users\Public\Desktop\Intel(R) Iris Deleting File: C:\Users\Public\Desktop\Intel(R) Iris Deleting File: C:\Users\Public\Desktop\Intel\Intel(R) Iris Deleting File: C:\Users\Public\Desktop\Intel\Intel(R) Iris	Start Menu \Programs \Intel(R) Graphics and Start Menu \Programs \Intel \Intel(R) Graphic Graphics Control Panel.Ink aphics and Media Control Panel.Ink Start Menu \Programs \Intel \Intel(R) Iris(R) (Start Menu \Programs \Intel (R) Iris(R) Graph s(R) Graphics Control Panel.Ink R) Iris(R) Graphics Control Panel.Ink
Deleting Registry Key: HKLM\SOFTWARE\Intel\GF Deleting Registry Key: HKLM\SOFTWARE\Intel\GF Click Next to continue.	
<	>
	Next >

Step5. Select **Yes, I want to restart this computer now**. Click **Finish** to complete installation.



4.3 Intel[®] LAN Driver

To install the Intel[®] LAN Driver, please follow the steps below.

Step1. Click Next to continue.

🕼 Intel(R) Network Connections Install Wizard	×
Welcome to the install wizard for Intel(R) Network Connections	(intel)
Installs drivers, Intel(R) Network Connections, and Advanced Networking Services.	
WARNING: This program is protected by copyright law and international treaties.	
< Back Next >	Cancel

Step2. Read the license agreement. Click **Yes** to accept all the terms of the license agreement.

🕼 Intel(R) Network Connections Install Wizard	×
License Agreement Please read the following license agreement carefully.	D
SOFTWARE LICENSE AGREEMENT	^
DO NOT DOWNLOAD, INSTALL, ACCESS, COPY, OR USE ANY PORTION OF THE SOFTWARE UNTIL YOU HAVE READ AND ACCEPTED THE TERMS AND CONDITIONS OF THIS AGREEMENT. BY INSTALLING, COPYING, ACCESSING, OR USING THE SOFTWARE, YOU AGREE TO BE LEGALLY BOUND BY THE TERMS AND CONDITIONS OF THIS AGREEMENT. If You do not agree to be bound by, or the entity for whose benefit You act has not authorized You to accept, these terms and conditions, do not install, access, copy, or use the Software and destroy all copies of the Software in Your possession.	:
This SOFTWARE LICENSE AGREEMENT (this "Agreement") is entered into between Intel Corporation, a Delaware corporation ("Intel") and You. "You" refers to you or your employer or other entity for whose benefit you act, as applicable. If you are agreeing to the terms and conditions of this Agreement on behalf of a company or other legal entity, you represent and	*
I accept the terms in the license agreement Print	
$\bigcirc I$ do not accept the terms in the license agreement	
< Back Next > Cancel	

Step3. Click Next to continue.

Setup Options Select the program features you want installed. Install: Device drivers Intel® PROSet Intel® Advanced Network Services	Intel(R) Network Connections Install Wiz	ard	×
Device drivers 		installed.	(intel)
Intel® PROSet	Install:		
Feature Description	Intel® PROSet	vices	
< Back Next > Cancel	Feature Description		

Step4. Click **Finish** to complete the installation.

🕼 Intel(R) Network Connections Install Wizard	×
Install wizard Completed	ntel)
A shortcut has been created in the Start Menu. You can also create one on the desktop, if desired. To access new features, launch the Intel(R) PROSet Adapter Configuration Utility from the Start Menu.	
Additional Options: Create Desktop Shortcut Launch Intel(R) PROSet Adapter Configuration Utility	
< Back Finish Ca	ancel

4.4 Realtek Audio Driver

To install the Realtek Audio Driver, please follow the steps below.

Step1. Select setup language you need. Click Next to continue.

Realtek High Definition Audio	Driver Setup (4.27) R2.79	×
Realtek High Definition Audio I	Driver Setup (4.27) R2.79 Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer. To continue, dick Next.	×
I nsta II Shield	< Back Next > Cancel	
Installoneid	< Back Next > Cancel	

Step3. Click **Finish** to complete the installation.

Realtek High Definition Audio Driv	ver Setup (4.27) R2.79
	InstallShield Wizard Complete
	The InstallShield Wizard has successfully installed Realtek High Definition Audio Driver. Before you can use the program, you must restart your computer.
	 Yes, I want to restart my computer now. No, I will restart my computer later.
	Remove any disks from their drives, and then dick Finish to complete setup.
InstallShield	< Back Finish Cancel

4.5 Intel Serial IO Driver

To install the Intel Serial IO Driver, please follow the steps below.

Step1. Select Intel Serial IO Driver from the list



Step2. Click Next to continue.

Setup	×
Intel® Serial IO Welcome	(intel)
You are about to install the following product:	
Intel® Serial IO 30.100.1841.2	
It is strongly recommended that you exit all programs before con Click Next to continue, or click Cancel to exit the setup program.	
Intel Corporation	< Back Next > Cancel

Step3. Read the license agreement. Choose **Accept** and click **Next** to accept all of the terms of the license agreement.



Step4. Click Next to continue.

Setup	×
Intel® Serial IO Readme File Information	(intel)
*******	<u>^</u>
* Production Version Release *	
* Microsoft Windows* 10 64 bit *	
* Intel(R) Serial IO Driver *	
 NOTE: This document refers to systems containing the following Intel processors/chipsets: 	
 * Intel(R) 300 Series Chipset Family On-Package Pla * Hub (PCH) 	tform Controller
 Intel(R) 300 Series and Intel(R) C240 Series Chipse Controller Hub 	et Family Platform
* Installation Information	~
Intel Corporation	< Back Next > Cancel

Step5. Click Install to continue the installing.



Step6. Click Finish to complete the installation and restart computer immediately.



4.6 Resistive Touch Driver

To install the **Resistive Touch Driver**, please follow the steps below.

Step1. Select Resistive Touch Driver from the list



Step2. Read the license agreement. Choose **Accept** and click **Next** to accept all of the terms of the license agreement.



Step3. Click Next to continue.

Setup	×	
Intel® Serial IO Readme File Information	intel	
***************************************	·	
* Production Version Release		
* Microsoft Windows* 10 64 bit		
* Intel(R) Serial IO Driver *		
 NOTE: This document refers to systems containing the following Intel processors/chipsets: 		
 * Intel(R) 300 Series Chipset Family On- Package Platform Controller * Hub (PCH) 		
 Intel(R) 300 Series and Intel(R) C240 Series Chipse Controller Hub 	et Family Platform	
* Installation Information	*	
Intel Corporation	< Back Next > Cancel	

Step4. Click Next to continue.

Setup	×
Intel® Serial IO Confirmation	(intel)
You are about to install the following components: - Intel® Serial IO GPIO Driver - Intel® Serial IO I2C Driver	
Intel Corporation	< Back Next > Cancel

Step5. Click Finish to complete the installation and restart computer immediately.

