



NEXCOM International Co., Ltd.

Intelligent Platform & Services Business Unit
Slim Touchscreen Computer
SPPC 16-10N150 Series
User Manual

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PREFACE

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Disclaimer

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Acknowledgements

SPPC 16-10N150 series is a trademark of NEXCOM International Co., Ltd. All other product names mentioned herein are registered trademarks of their respective owners.

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

Declaration of Conformity

FCC

This equipment has been tested and verified 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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

RoHS Compliance



NEXCOM RoHS Environmental Policy and Status Update

NEXCOM is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force to implement the introduction of green products. The task force will ensure that we follow the standard NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

How to recognize NEXCOM RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2013 will be RoHS compliant. They will use the usual NEXCOM naming convention.

Warranty and RMA

NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM.

NEXCOM Return Merchandise Authorization (RMA)

- Customers shall enclose the “NEXCOM RMA Service Form” with the returned packages.
- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the “NEXCOM RMA Service Form” for the RMA number apply process.
- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.
- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as “Out of Warranty.”
- Any products returned by NEXCOM to other locations besides the customers’ site will bear an extra charge and will be billed to the customer.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

System Level

- Component fee: NEXCOM will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.
- Items will be replaced with NEXCOM products if the original one cannot be repaired. Ex: motherboard, power supply, etc.
- Replace with 3rd party products if needed.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Board Level

- Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Warnings

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

Cautions

Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Safety Precautions

1. Read these safety instructions carefully.
 2. Keep this User Manual for later reference.
 3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
 4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
 5. Keep this equipment away from humidity.
 6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.
 7. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.
 8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
 9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.
 10. All cautions and warnings on the equipment should be noted.
 11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
 12. Never pour any liquid into an opening. This may cause fire or electrical shock.
 13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
 14. If one of the following situations arises, get the equipment checked by service personnel:
 - a. The power cord or plug is damaged.
 - b. Liquid has penetrated into the equipment.
 - c. The equipment has been exposed to moisture.
 - d. The equipment does not work well, or you cannot get it to work according to the user's manual.
 - e. The equipment has been dropped and damaged.
 - f. The equipment has obvious signs of breakage.
 15. Do not place heavy objects on the equipment.
 16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
 17. **ATTENTION:** Risque d'explosion si la batterie est remplacée par un type incorrect. Mettre au rebus les batteries usagées selon les instructions.
- CAUTION:** Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at www.nexcom.com.
2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
 - Product name and serial number
 - Detailed information of the peripheral devices
 - Detailed information of the installed software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wordings of the error messages

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.
2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

Conventions Used in this Manual



Warning:

Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.



Caution:

Information to avoid damaging components or losing data.



Note:

Provides additional information to complete a task easily.

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Package Contents

Before continuing, please verify the contents of the product package. The items included are listed in the table below.

SPPC16-10N150-PD

Item	Part Number	Name	Qty
1	10W70SPPC01X0	SPPC16-10N150-PD	1
2	7400140002X00	140W Type-C Power Adapter	1
3	603COM0183X00	COM PORT CABLE RJ45 8P8C TO DB9	2

SPPC16-10N150

Item	Part Number	Name	Qty
1	10W70SPPC00X0	SPPC16-10N150	1
2	7400065042X00	65W Type-C Power Adapter	1
3	603COM0183X00	COM PORT CABLE RJ45 8P8C TO DB9	2

Ordering Information

The following provides ordering information.

SPPC16-10N150-PD (P/N: 10W70SPPC01X0)

15.6" TFT Panel PC, PCAP, Optical Bonding, Intel® Processor N150, 2 x USB 3.2 Type-C with DP, PD 3.0, DC 28V power input

M.2 EXTEND BRACKET for M.2 key B 3042/2242 (P/N: 5061712285X00), optional

SPPC 16-10N150 (P/N: 10W70SPPC00X0)

15.6" TFT Panel PC, PCAP, Optical Bonding, Intel® Processor N150, 2 x USB 2.0 Type-C, DC 20V power input

M.2 EXTEND BRACKET for M.2 key B 3042/2242 (P/N: 5061712285X00), optional

CHAPTER 1: PRODUCT INTRODUCTION



Key Features

- 15.6" 16:9 FHD 450nits LCD panel
- 10-point PCAP multi-touch with AF film
- Slim compact chassis and fanless design
- Thickness only 20mm
- Support VESA mounting
- Support landscape/portrait mode
- Intel® Processor N150
- 1 x DDR5 SO-DIMM, up to 16GB
- 1 x M.2 Key M 2280 for storage
- USB Type-C supports optional Power Delivery 3.0
- TPM 2.0 design for security

Hardware Specifications

Processor

- Intel® Processor N150, PBP 6W

Integrated Graphics

- Intel® UHD graphics

Panel

- LCD size: 15.6", 16:9
- Resolution: Full HD 1920x1080
- Luminance
 - LCD panel: industrial grade 450cd/m2
 - PCAP touch: 90% of panel's luminance after optical bonding
- Contrast ratio: 1000
- LCD color: 16.7M
- Viewing angle: 89 (U), 89 (D), 89 (L), 89 (R)
- Touchscreen
 - 10-point PCAP (Projected Capacitive Touch)
 - Optical bonding
 - Glass surface treatment: AF (Anti-fingerprint) film

Memory

1 x DDR5 SO-DIMM, up to 16GB

Storage Device

- 1 x M.2 Key M 2280 SSD, supports SATA & PCIe signal

Expansion Slot

- 1 x M.2 Key B 2242/3042/3052
 - Support an SSD, 4G/LTE, or 5G module
- 1 x M.2 key E 2230
 - Support a Wi-Fi/BT module

I/O Interface Front

- 1 x Illuminance sensor
- 1 x Camera (optional)
- 2 x 2W speaker
- 1 x Microphone
- 1 x LED indicator

I/O Interface Rear

- 1 x USB, Type-C
 - DC 20V (default), 28V (optional PD 3.1 support) power input
- 2 x 2.5GbE RJ45 port, Intel® I226-V
- 2 x USB, Type-C
 - Default: USB 2.0
 - Optional: USB 3.2 Gen 1x1, supports DP Alt Mode and PD 3.0
- 1 x USB 3.2 Gen 1x1, Type-A
- 2 x COM port (RJ45)
 - COM1 supports RS-232/422/485
 - COM2 supports RS-232
- 1 x Line out
- 1 x SIM card slot
- 2 x SMA antenna

I/O Interface Internal

- 1 x USB 2.0, Type-A for an optional BT dongle

Power Supply

- Standard: 1 x 65W power adapter, DC 20V input via USB Type-C (PD 3.0)
 - Optional: DC 28V input via USB Type-C (PD 3.1)

Mechanical

- Aluminum and metal chassis with fanless design
- Color/Materia: black/white metal case
- Dimensions: 384.9mm (W) x 234.2mm (D) x 20mm (H)
- Net Weight: 2.3kg

Package Information

- Dimensions: 476mm (W) x 355mm (D) x 206mm (H)
- Gross Weight: 4.5kg

Environment

- Temperature:
 - Ambient with 0.35 m/s air flow: 0°C~50°C
 - Storage temperature: -20°C~60°C
- Humidity: 90% (non condensing)
- Shock protection: 20G peak acceleration, 11 ms according to IEC 60068-2-27
- Vibration protection:
 - Random: 2Grms@5Hz~500Hz, IEC 60068-2-64
 - Sinusoidal: 2G@5Hz~500Hz, IEC 60068-2-6

Certification

- CE (EN 55035 + EN 55032)
- FCC Class A (EMI part 15B)
- LVD (EN 62368-1)

Operating System Support

- Windows 11
- Windows 10, 64-bit
- Linux

Product Overview

Front



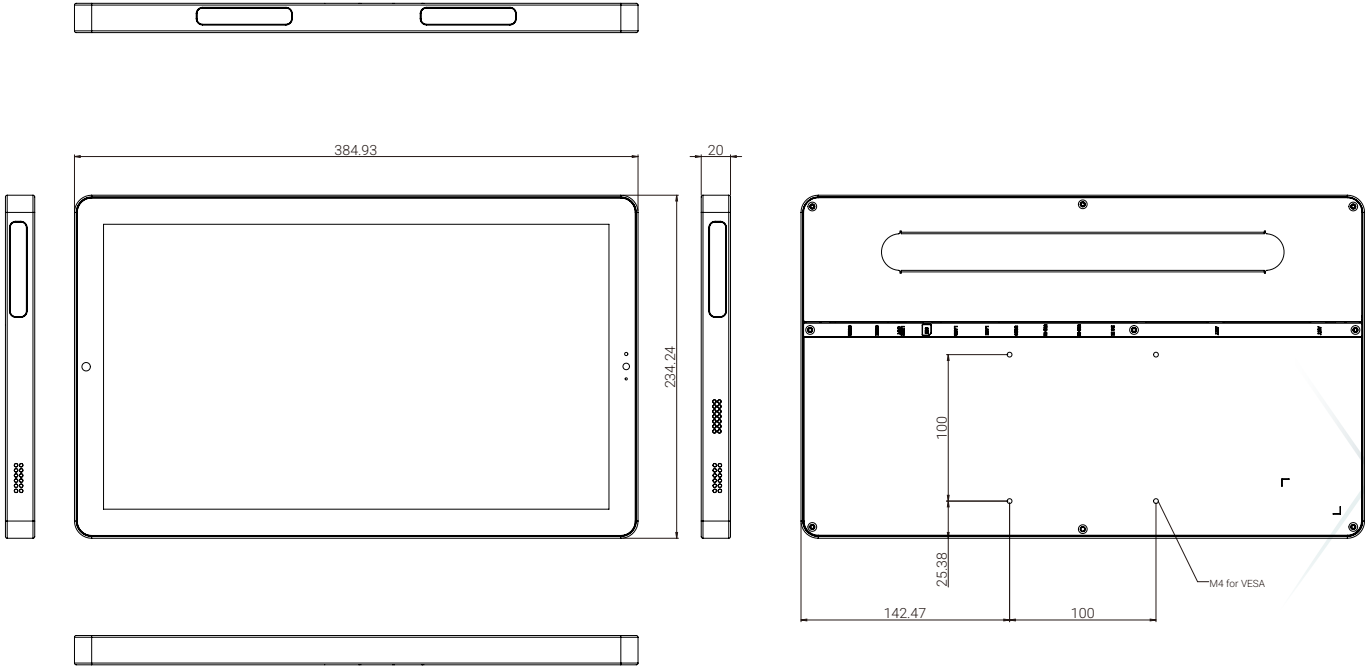
1. Camera (optional)
2. LED indicator
3. Light sensor
4. Microphone
5. Speakers
6. Reset button (located inside the hole)

Rear Bottom



- 7. Antenne connector holes
- 8. USB Type-C DC input
- 9. USB 2.0 Type-C connectors (optional USB 3.2 Gen 1x1 with DP Alt Mode and PD support)
- 10. USB 3.2 Gen 1x1, Type-A
- 11. 2.5GbE RJ45 LAN ports
- 12. SIM card slot
- 13. Line out jack
- 14. RJ45 COM ports (RS-232/422/485)

Mechanical Dimensions



CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the SPPC 16-10N150 series motherboard.

Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
 - A Philips screwdriver
 - A flat-tipped screwdriver
 - A set of jewelers screwdrivers
 - A grounding strap
 - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity

than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

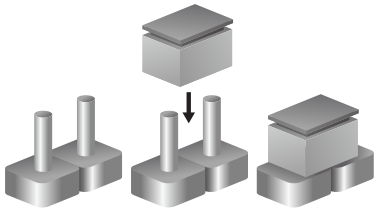
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

Jumper Settings

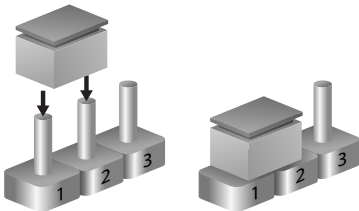
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)



Three-Pin Jumpers: Pins 1 and 2 are Short

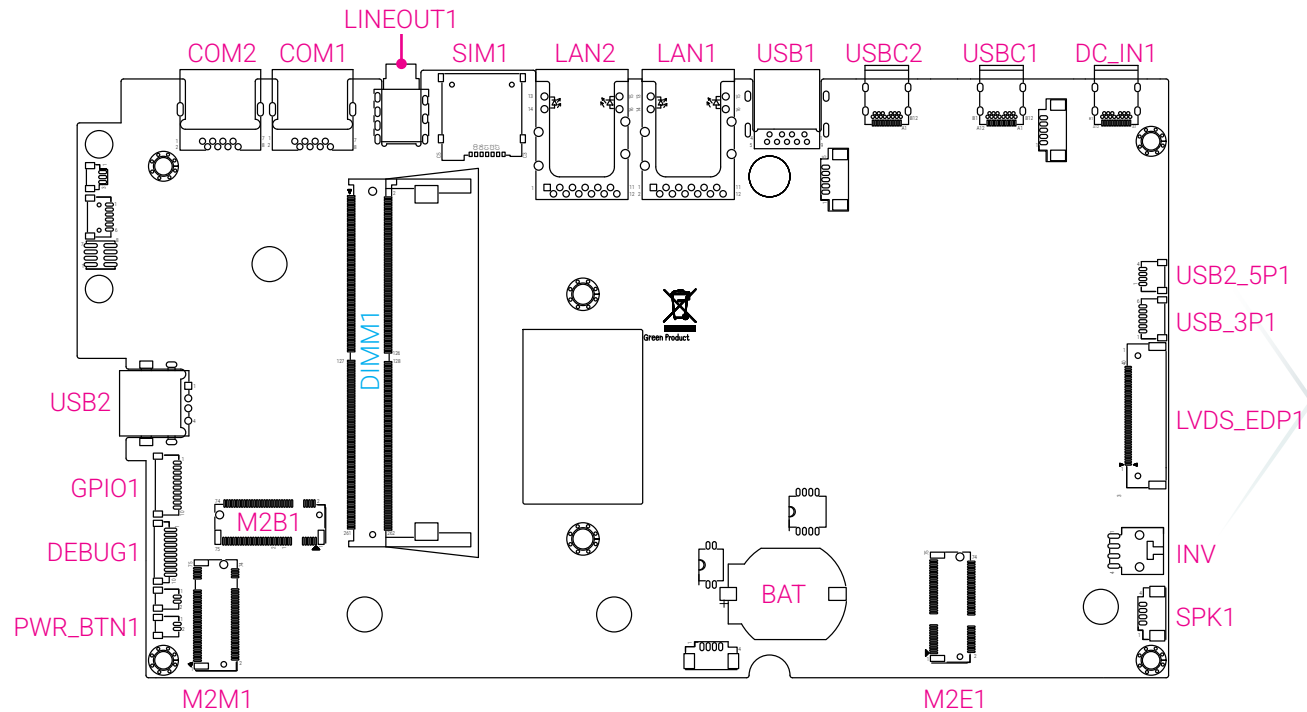


System Main Motherboard Overview

This section outlines the location and pin assignments of jumpers and connectors, with reference illustrations (not to scale) and pink-marked pin definitions to aid understanding.

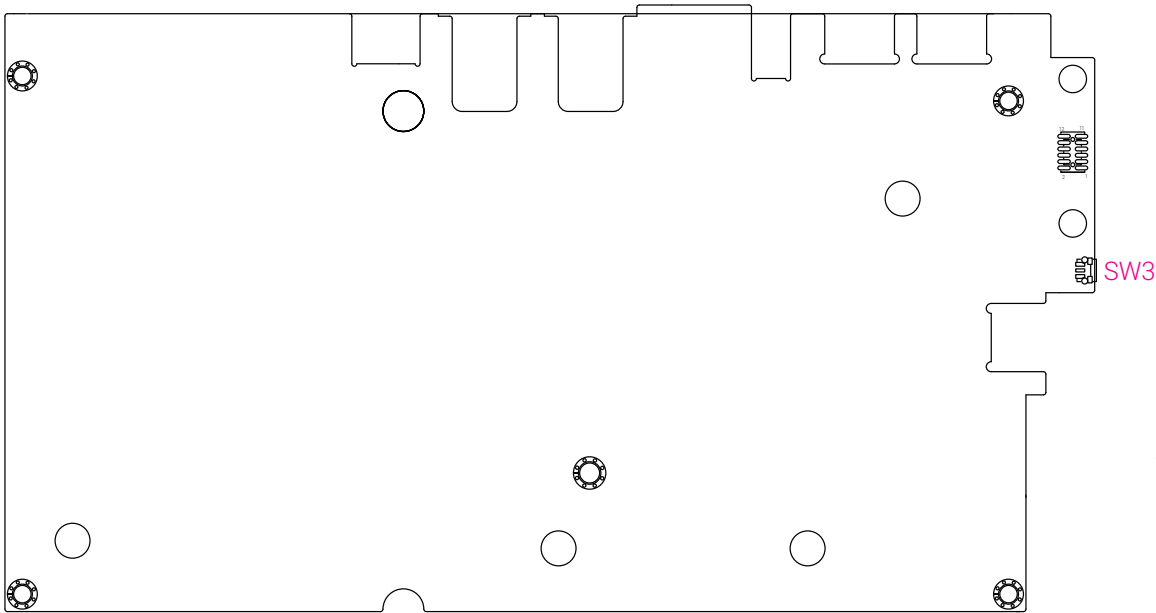
Location of Jumpers and Connectors on the Main Motherboard

Top View





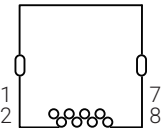
Bottom View



External I/O

COM Ports

Connector type: RJ45
Connector interface: RS-232/422/485
Connector location: COM1, COM2



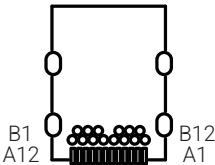
Pin	RS-232	Pin	RS-422	Pin	RS-485
1	DCD#	1	TX- (B)	1	D- (B)
2	RXD	2	TX+ (A)	2	D+ (A)
3	TXD	3	RX+ (A)	3	
4	DTR#	4	RX- (B)	4	
5	GND	5		5	
6	DSR#	6		6	
7	RTS#	7		7	
8	CTS#	8		8	



Refer to the [BIOS chapter](#) for instructions on configuring the serial port mode.

DC Input

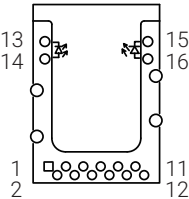
Connector type: USB Type-C
Connector location: DC_IN



Pin	Definition	Pin	Definition
A1	GND	B1	GND
A2	NC	B2	NC
A3	NC	B3	NC
A4	VBUS (5V, 9V, 15V, 20V, 28V)	B4	VBUS (5V, 9V, 15V, 20V, 28V)
A5	CC1	B5	CC2
A6	NC	B6	NC
A7	NC	B7	NC
A8	NC	B8	NC
A9	VBUS (5V, 9V, 15V, 20V, 28V)	B9	VBUS (5V, 9V, 15V, 20V, 28V)
A10	NC	B10	NC
A11	NC	B11	NC
A12	GND	B12	GND

LAN Ports

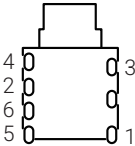
Connector type: RJ45
Connector location: LAN1, LAN2



Pin	Definition
1	MDI0P
2	MDI0N
3	TCT1
4	MDI1P
5	MDI1N
6	TCT2
7	MDI2P
8	MDI2N
9	TCT3
10	MDI3P
11	MDI3N
12	TCT4
13	LED_100#
14	LED_2500#
15	LED_ACT#
16	LED_ACT_P

Line Out

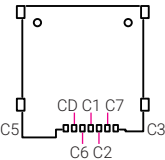
Connector type: Phone jack
Connector location: Lineout1



Pin	Definition
1	LINEOUT-L
2	LINEOUT-R
3	GND
4	GND
5	LINEOUT_JD
6	GND

SIM Card Slot

Connector location: SIM1

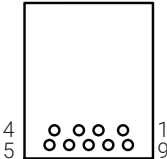


Pin	Definition
1	SIM_PWR
2	SIM_RST
3	SIM_CLK
4 (CD)	SIM_DET
5	GND
6	NC
7	SIM_DATA

USB 3.2

Connector type: USB Type-A

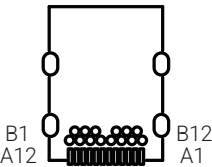
Connector location: USB1



Pin	Definition
1	+5V
2	USB2_1N
3	USB2_1P
4	GND
5	USB3_RX1N
6	USB3_RX1P
7	GND
8	USB3_TX1N
9	USB3_TX1P

USB 2.0

Connector type: USB Type-C
Connector location: USBC1, USBC2

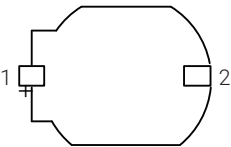


Pin	Definition	Pin	Definition
A1	GND	B1	GND
A2	TX1P	B2	TX2P
A3	TX1N	B3	TX2N
A4	VBUS (5V, 9V, 15V, 20V)	B4	VBUS (5V, 9V, 15V, 20V)
A5	CC1	B5	CC2
A6	USB2_P	B6	USB2_P
A7	USB2_N	B7	USB2_N
A8	SBU1	B8	SBU2
A9	VBUS (5V, 9V, 15V, 20V)	B9	VBUS (5V, 9V, 15V, 20V)
A10	RX2N	B10	RX1N
A11	RX2P	B11	RX1P
A12	GND	B12	GND

Internal I/O

Battery Connector

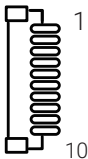
Connector location: BAT1



Pin	Definition
1	BAT
2	GND

Debug Port

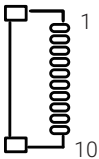
Connector location: DEBUG1



Pin	Definition
1	GND
2	PLTRST#
3	ESPI_CLK
4	ESPI_CS#
5	ESPI_IO3
6	ESPI_IO2
7	ESPI_IO1
8	ESPI_IO0
9	ESPI_RST#
10	3.3V

GPIO

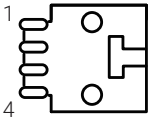
Connector location: GPIO1



Pin	Definition
1	+5V
2	GND
3	GPO0
4	GPO1
5	GPO2
6	GPO3
7	GPIO
8	GPI1
9	GPI2
10	GPI3

Backlight 12V

Connector location: INV



Pin	Definition
1	12V
2	12V
3	GND
4	GND

LVDS/eDP

Connector location: LVDS_EDP1



LVDS

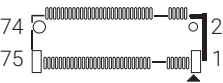
Pin	Definition	Pin	Definition
1	LVDS_DAT3P	21	GND
2	LVDS_DAT3N	22	+V_PANEL
3	LVDS_DAT2P	23	GND
4	LVDS_DAT2N	24	GND
5	LVDS_DAT1P	25	GND
6	LVDS_DAT1N	26	LVDS_CLK1P
7	LVDS_DAT0P	27	LVDS_CLK1N
8	LVDS_DAT0N	28	GND
9	LVDS_DAT7P	29	GND
10	LVDS_DAT7N	30	GND
11	LVDS_DAT6P	31	Hot-Plug Detect
12	LVDS_DAT6N	32	INV_BKLTEN
13	LVDS_DAT5P	33	INV_BKLTCTRL
14	LVDS_DAT5N	34	LVDS_CLK2P
15	LVDS_DAT4P	35	LVDS_CLK2N
16	LVDS_DAT4N	36	+V_INV
17	GND	37	+V_INV
18	+V_PANEL	38	+V_INV
19	+V_PANEL	39	+V_INV
20	+V_PANEL	40	N.C.

eDP

Pin	Definition	Pin	Definition
1	N.C.	21	GND
2	N.C.	22	+V_PANEL
3	EDP_TX0P	23	GND
4	EDP_TX0N	24	GND
5	EDP_TX1P	25	GND
6	EDP_TX1N	26	EDP_AUXP
7	EDP_HPD	27	EDP_AUXN
8	N.C.	28	GND
9	N.C.	29	GND
10	N.C.	30	GND
11	N.C.	31	Hot-Plug Detect
12	N.C.	32	INV_BKLTEN
13	N.C.	33	INV_BKLTCTRL
14	N.C.	34	N.C.
15	N.C.	35	N.C.
16	N.C.	36	+V_INV
17	GND	37	+V_INV
18	+V_PANEL	38	+V_INV
19	+V_PANEL	39	+V_INV
20	+V_PANEL	40	GND

M.2 Key B

Connector form factor: 3042/2242/3052
Connector location: M2B1

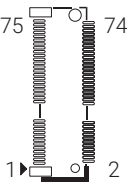


Pin	Definition	Pin	Definition
1	CONFIG3	2	3.3V
3	GND	4	3.3V
5	GND	6	POWER_OFF#
7	USB2_5P	8	WIFI_DIS#
9	USB2_5N	10	LED#
11	NC		
Key			
		20	Telit FN980 PCIe/USB Select Pin
21	CONFIG0	22	NC
23	NC	24	NC
25	NC	26	WWAN_GPS_ON
27	GND	28	NC
29	USB3_RXN	30	UIM_RESET
31	USB3_RXP	32	UIM_CLK
33	GND	34	UIM_DATA
35	USB3_TXN	36	UIM_PWR
37	USB3_TXP	38	NC
39	GND	40	NC

Pin	Definition	Pin	Definition
41	PCIE_RXN	42	NC
43	PCIE_RXP	44	NC
45	GND	46	NC
47	PCIE_TXN	48	NC
49	PCIE_TXP	50	RESET(3.3V)
51	GND	52	CLKREQ#
53	CLK_DN	54	WAKE#
55	CLK_DP	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	RESET(1.8V)	68	SUS_CLK
69	CONFIG1	70	3.3V
71	GND	72	3.3V
73	GND	74	3.3V
75	CONFIG2		

M.2 Key E

Connector form factor: 2230
Connector location: M2E1

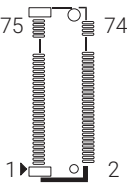


Pin	Definition	Pin	Definition
1	GND	2	3VSB
3	USBP	4	3VSB
5	USBN	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	NC
19	NC	20	NC
21	NC	22	NC
23	NC		
		32	NC
33	GND	34	NC
35	PCIE_TXP	36	NC
37	PCIE_TXN	38	NC
39	GND	40	NC

Pin	Definition	Pin	Definition
41	PCIE_RXP	42	NC
43	PCIE_RXN	44	NC
45	GND	46	NC
47	CLK_PCIEP	48	NC
49	CLK_PCIEN	50	SUSCLK
51	GND	52	PLTRST#
53	CLKREQ#	54	BT_DISABLE#
55	WAKE#	56	WIFI_DISABLE#
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	GND	64	NC
65	NC	66	NC
67	NC	68	NC
69	GND	70	NC
71	NC	72	3VSB
73	NC	74	3VSB
75	GND	76	

M.2 Key M

Connector form factor: 2280
Connector location: M2M1



Pin	Definition	Pin	Definition
1	GND	2	VCC3
3	GND	4	VCC3
5	PCIE3_RXN	6	NC
7	PCIE3_RXP	8	NC
9	GND	10	M2M_LED#
11	PCIE3_TXN	12	VCC3
13	PCIE3_TXP	14	VCC3
15	GND	16	VCC3
17	PCIE2_RXN	18	VCC3
19	PCIE2_RXP	20	NC
21	GND	22	NC
23	PCIE2_TXN	24	NC
25	PCIE2_TXP	26	NC
27	GND	28	NC
29	PCIE1_RXN	30	NC
31	PCIE1_RXP	32	NC
33	GND	34	NC
35	PCIE1_TXN	36	NC

Pin	Definition	Pin	Definition
37	PCIE1_TXP	38	DEVSLP
39	GND	40	NC
41	SATA_RXP(PCIE0_RXP)	42	NC
43	SATA_RXN(PCIE0_RXN)	44	NC
45	GND	46	NC
47	SATA_TXN(PCIE0_TXN)	48	NC
49	SATA_TXP(PCIE0_TXP)	50	RESET#
51	GND	52	CLKREQ#
53	CLK_PCIEN	54	WAKE#
55	CLK_PCIEP	56	NC
57	GND	58	NC
Key			
67	NC	68	NC
69	M2M_PEDET	70	VCC3
71	GND	72	VCC3
73	GND	74	VCC3
75	GND		

System Power Button

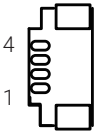
Connector location: PWR_BTN1



Pin	Definition
1	GND
2	PWRBTN#

Speaker Connector

Connector location: SPK



Pin	Definition
1	R_OUT-
2	R_OUT+
3	L_OUT-
4	L_OUT+

System Reset Button

Connector location: SW3

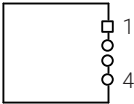


Pin	Definition
1	GND
2	RESET#
3	GND

USB 2.0

Connector type: USB Type-A

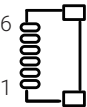
Connector location: USB2



Pin	Definition
1	+5V
2	USB2_1N
3	USB2_1P
4	GND

USB 2.0 Header

Connector location: USB2_3P1



Pin	Definition
1	GND
2	USB_N
3	USB_P
4	NC
5	NC
6	5VSB

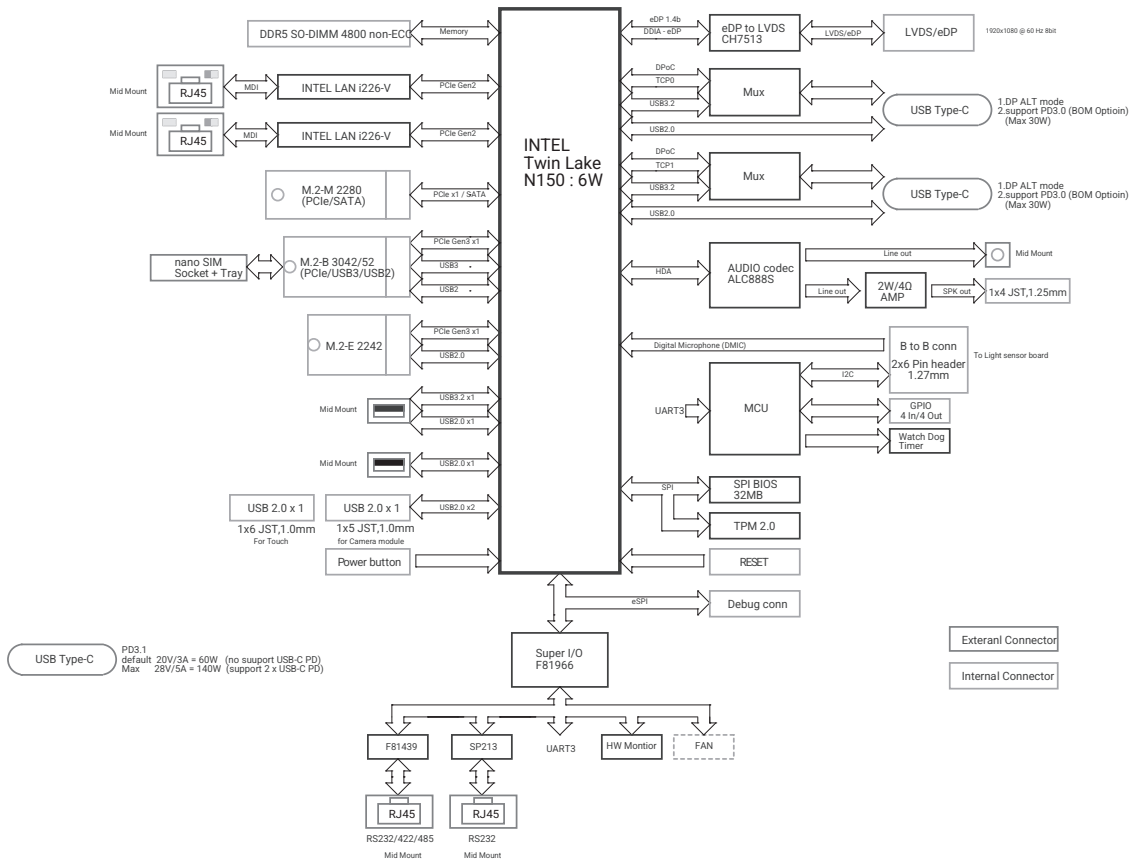
USB 2.0 Header

Connector location: USB2_5P1



Pin	Definition
1	GND
2	USB_N
3	USB_P
4	5VSB

Block Diagram



CHAPTER 3: SYSTEM SETUP



Prior to removing the top cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

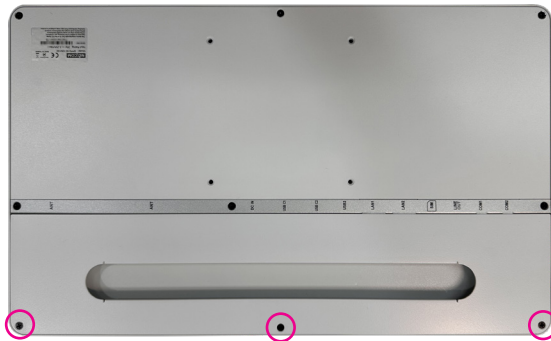


The product shown here is for installation reference only. The actual product color may vary depending on the shipment.

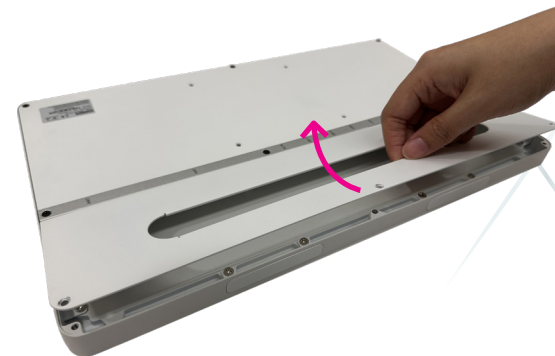
Accessing the Chassis

Removing the Rear Cover

1. The rear cover consists of the top and lower cover plates. To remove the lower cover (cable cover), loosen the screws indicated in the image below.



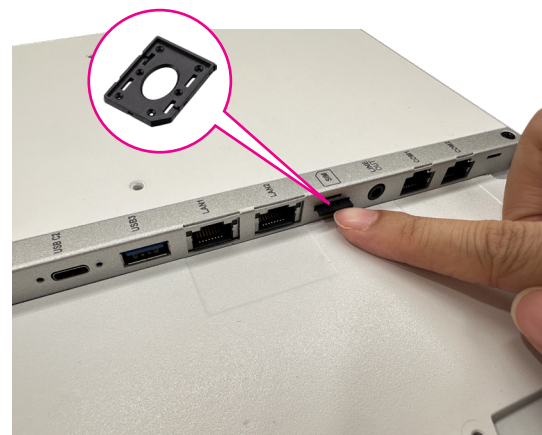
2. Slightly lift the cable cover.



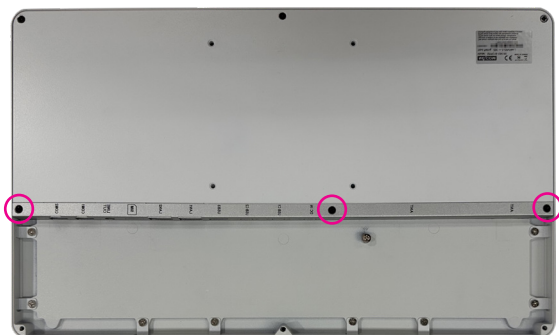
3. Once the lower cover (cable cover) has been removed, set the lower cover and screws aside for later use.



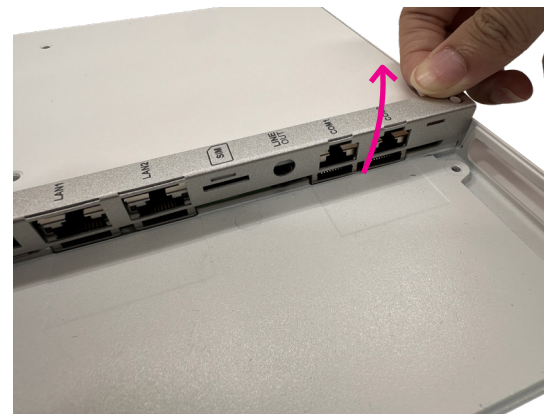
4. Push the SIM card tray to eject it. Make sure this step is completed before proceeding to the next step.



5. Loosen the screws shown in the image below to release the I/O bracket.



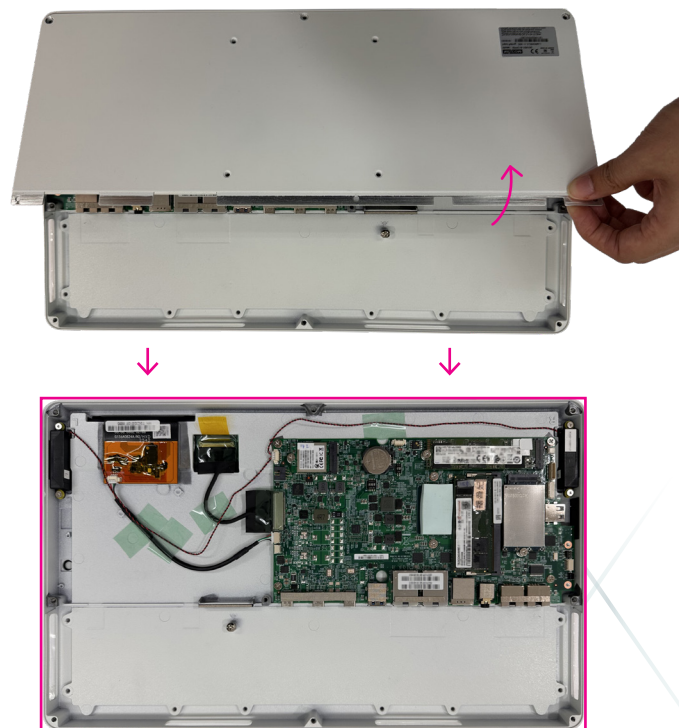
6. Slightly lift the I/O bracket.



7. Loosen the screws shown in the image below to release the upper cover.



8. Slightly lift the upper cover to access the motherboard.



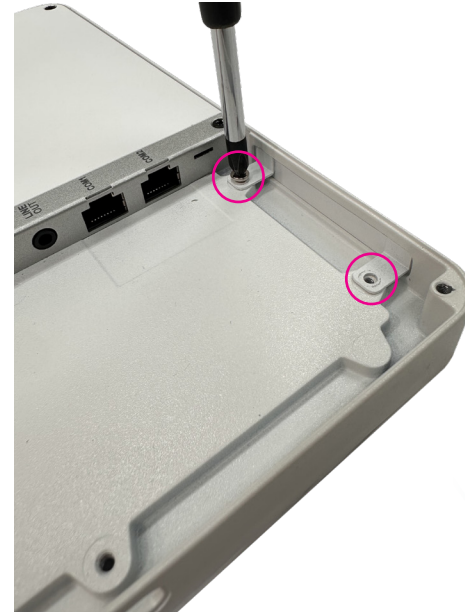
Removing the Cable Entry Covers

This system provides four additional openings for routing cables based on the user's requirements. Follow the steps below for installation.

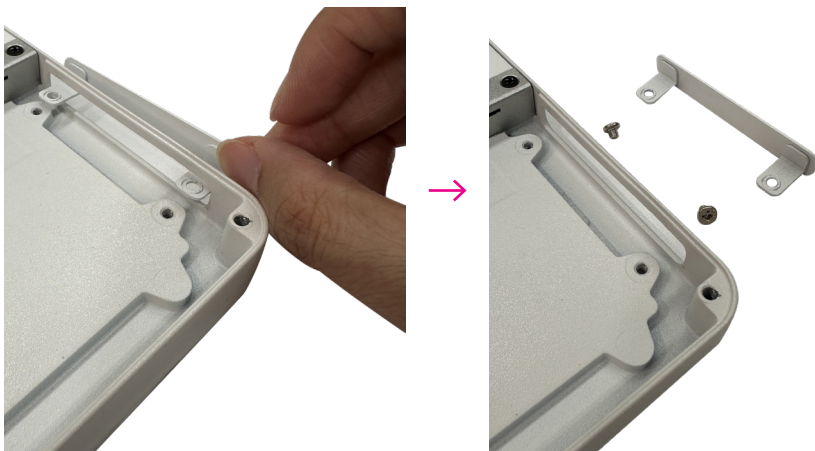
1. Follow [Step 3](#) of the previous procedure to continue the installation process. Locate the cable entry covers shown in the image below.



2. Loosen the screws indicated below.



3. Carefully remove the cable entry cover.

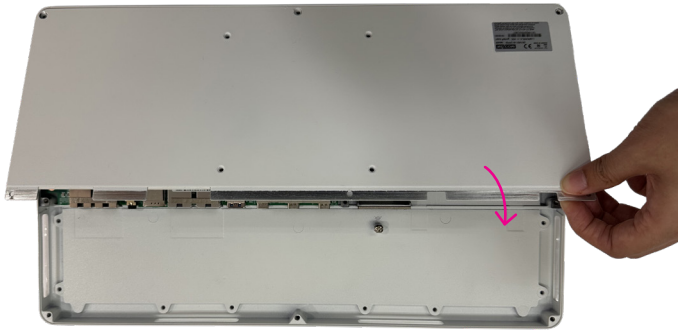


4. Repeat the steps above to remove the other cable entry covers as required.

Reinstalling the Rear Cover

After installing the memory module(s), refer to the steps below to reinstall the rear cover.

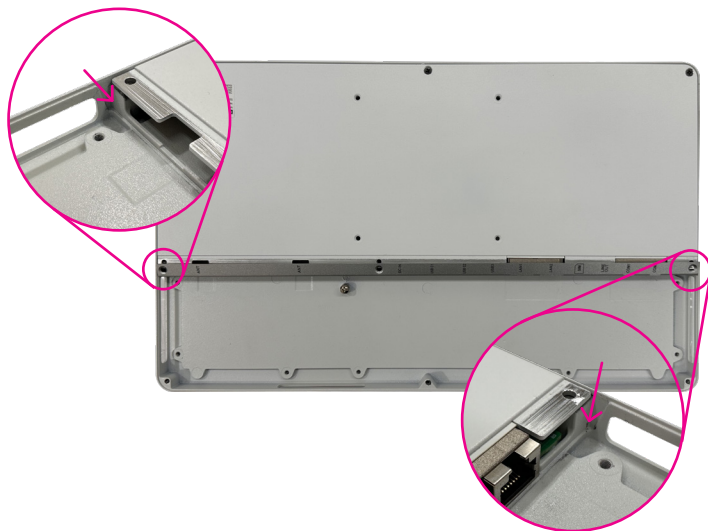
1. Align the upper cover with the chassis.



2. Secure the upper cover with screws.



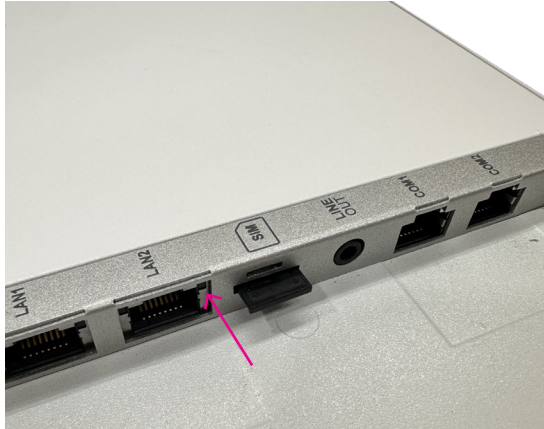
3. Align the I/O bracket with the chassis grooves and reinstall.



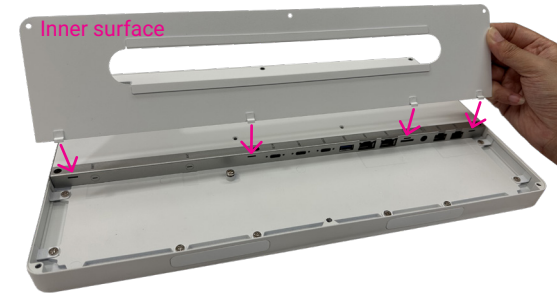
4. Secure the I/O bracket with screws.



5. Insert the SIM card tray back into the system slot.

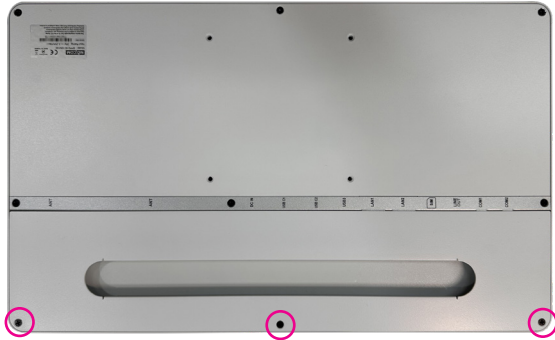


6. Reinstall the lower cover (cable cover) back onto the chassis by aligning the reference holes on the I/O bracket (marked below), and then seat it into place.



The side featuring the tabs represents the inner surface.

7. Secure the lower cover (cable cover) with the screws.



Installing DDR Memory or M.2 Module(s)

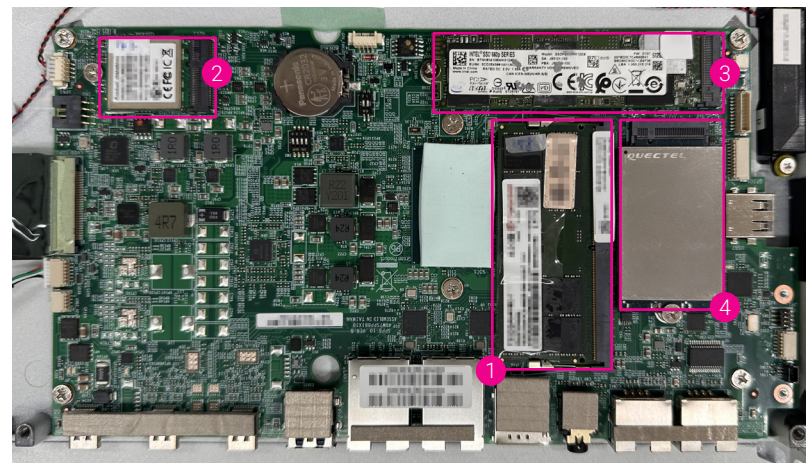
Once you have opened the chassis, as described in the [previous section](#), the internal motherboard will be visible. Refer to the image on the right for the locations of DDR memory and M.2 modules.

- **To Insert the DDR Memory ①**

Insert the DDR module into the socket at an approximately 30-degree angle. Push the module down until the clips on both sides of the socket lock into position. The gold-plated connector on the edge of the module will almost completely disappear inside the socket. The supported memory in this slot is up to 16 GB.

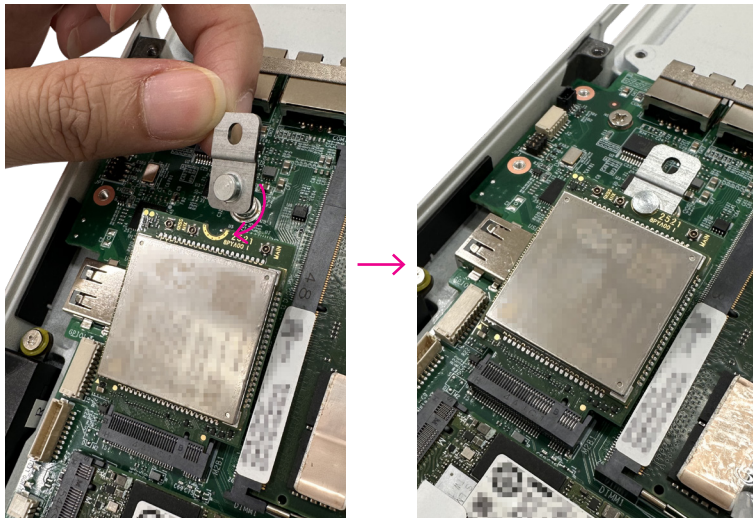
- **To Insert the M.2 Module(s) ②/③/④**

Insert the module into the corresponding slot at a 45-degree angle until the gold-plated connector on the edge of the module completely disappears. With the module fully inserted, tighten the screw in the mounting hole to secure it.

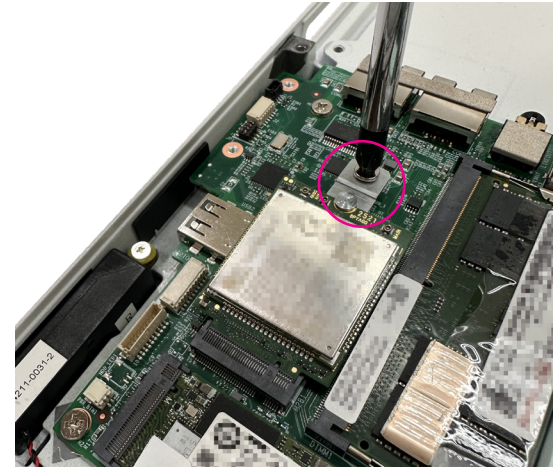


Installing M.2 Key B Module

- The system's M.2 Key B slot supports 2242, 3042, and 3052 form factors. An M.2 Key B bracket is required when installing a 2242 or 3042 module. The bracket is optional and available for purchase. Refer to the [Ordering Information](#) for details.
 - The procedure below uses the M.2 bracket for a 2242/3042 module as an example. If you are installing a 3052 module, secure the M.2 module directly to the mounting hole on the motherboard.
1. Slide the M.2 Key B bracket into the M.2 semi-circular notch, then press it down to align it with the mounting hole on the motherboard.



2. Secure the M.2 module and bracket with the screw.



CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for SPPC 16-10N150 series. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NEXCOM website at www.nexcom.com.tw.

About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use

- Power management features

The settings made in the setup program affect how the computer performs. It is important, therefore, first to try to understand all the setup options, and second, to make settings appropriate for the way you use the computer.

When to Configure the BIOS

- This program should be executed under the following conditions:
- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the setup program
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing  allows you to enter Setup.

Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

When “►” appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press .

Legends

Key	Function
 	Moves the highlight left or right to select a menu.
 	Moves the highlight up or down between sub-menus or fields.
	Exits the BIOS Setup Utility.
	Scrolls forward through the values or options of the highlighted field.
	Scrolls backward through the values or options of the highlighted field.
	Selects a field.
	Displays General Help.
	Load previous values.
	Load optimized default values.
	Saves and exits the Setup program.
	Press <Enter> to enter the highlighted sub-menu

BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press  to accept or enter the submenu.

Main

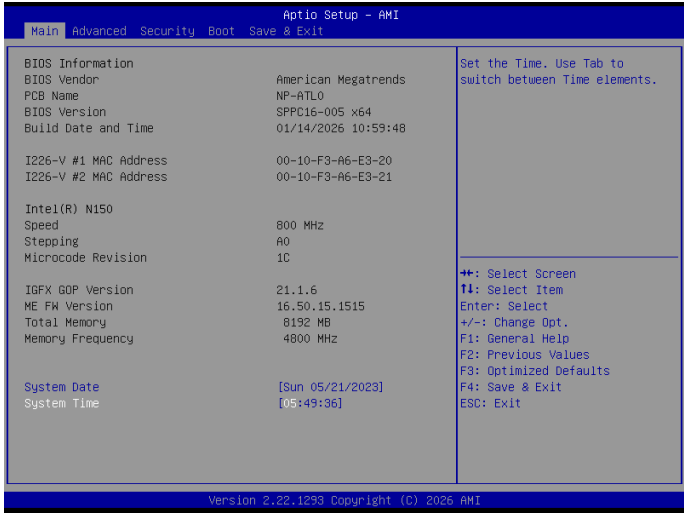
The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 2005 to 2099.

System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

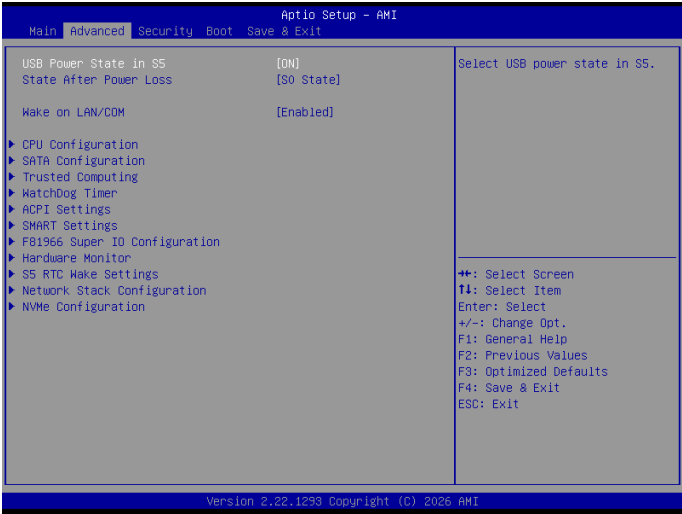


Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.



Setting incorrect field values may cause the system to malfunction.



USB Power State in S5

Select USB power state in S5.

State After Power Loss

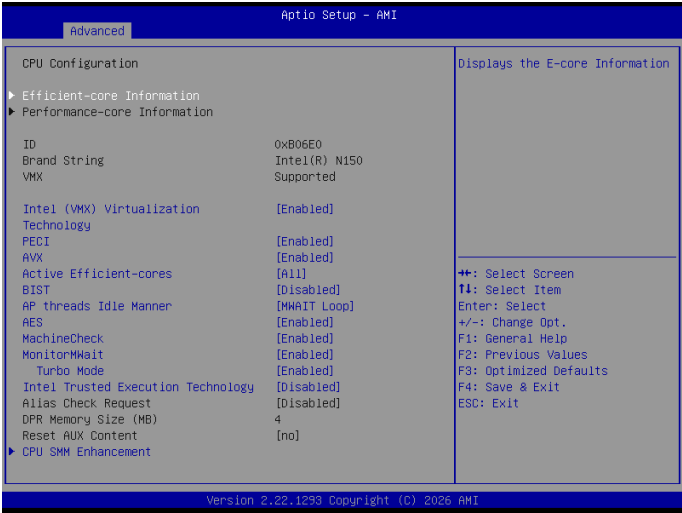
Specify what state to go to when power is re-applied after a power failure (G3 State).

Wake on LAN/COM

Enable or disable integrated LAN/COM port RI to wake the system.



CPU Configuration



Efficient-core Information

Press <Enter> to display the E-core information.

Intel (VMX) Virtualization Technology

Enable or disable Intel Virtualization technology. When enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

PECI

Enable or disable the PECI feature.

AVX

Enable or disable the AVX feature.

Active Efficient-cores

This allows you to select the number of E-cores to enable in each processor package.

BIST

Enable or disable BIST (Built-in Self Test) on reset.

AP Threads Idle Manner

AP Threads Idle Manner for waiting signal to run.

AES

Enable or Disable AES (Advanced Encryption Standard).

MachineCheck

Enable or disable Machine Check.

MonitorMwait

Enable or disable MonitorMwait; If disable MonitorMwait, the AP threads Idle Manner should not set in MWait Loop.

Turbo Mode

Enable or disable turbo mode.

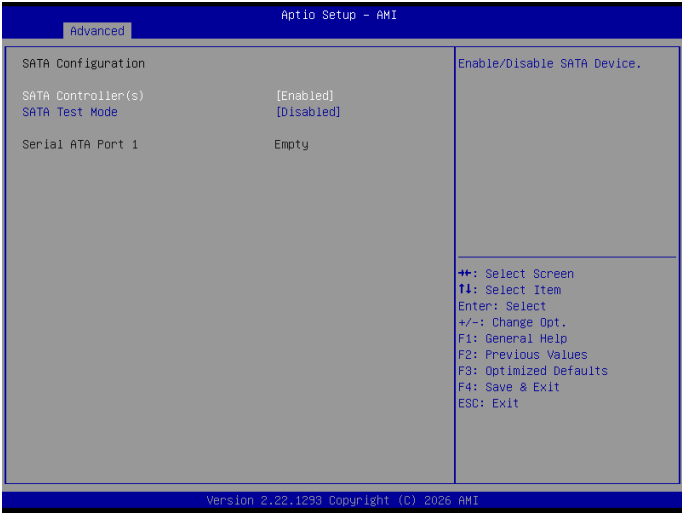
Intel Trusted Execution Technology

Enable or disable Intel Trusted Execution Technology.

CPU SMM Enhancement

Enter the CPU SMM Enhancement submenu

SATA Configuration



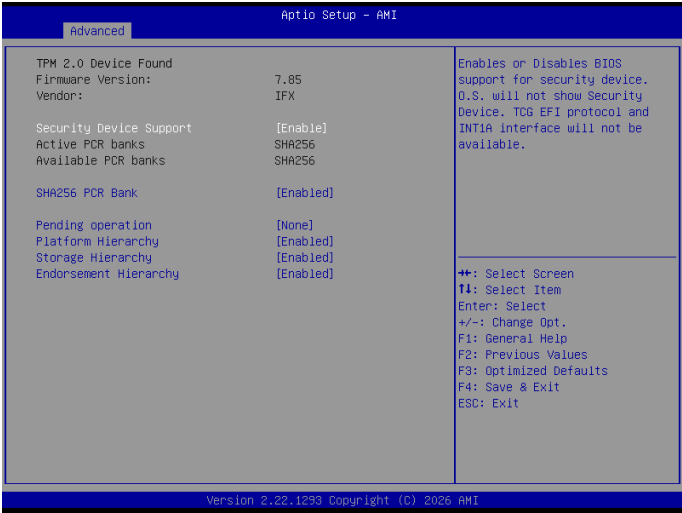
SATA Controller(s)

Enable or disable SATA device.

SATA Test Mode

Enable or disable test mode (loop back).

Trusted Computing



Security Device Support

Enable or disable BIOS support for security device. O.S will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

SHA256 PCR Bank

Enable or disable SHA256 PCR Bank

Pending operation

Schedule an operation for the security device. Note: your computer will reboot during restart in order to change state of security device.

Platform Hierarchy

Enable or disable Platform Hierarchy.

Storage Hierarchy

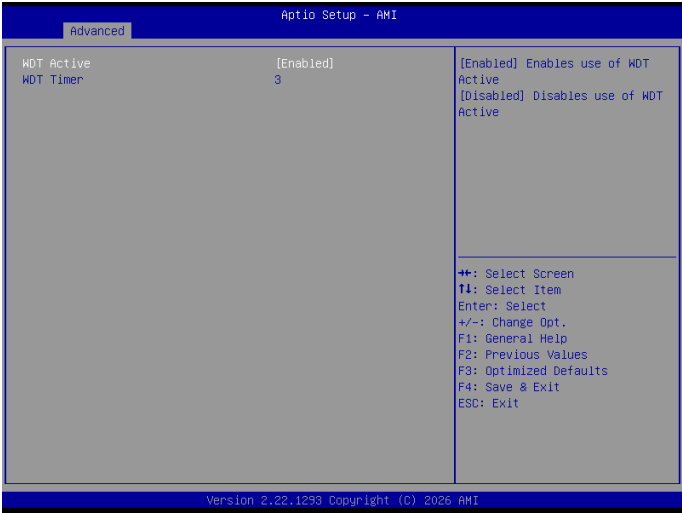
Enable or disable Storage Hierarchy.

Endorsement Hierarchy

Enable or disable Endorsement Hierarchy.



WatchDog Timer



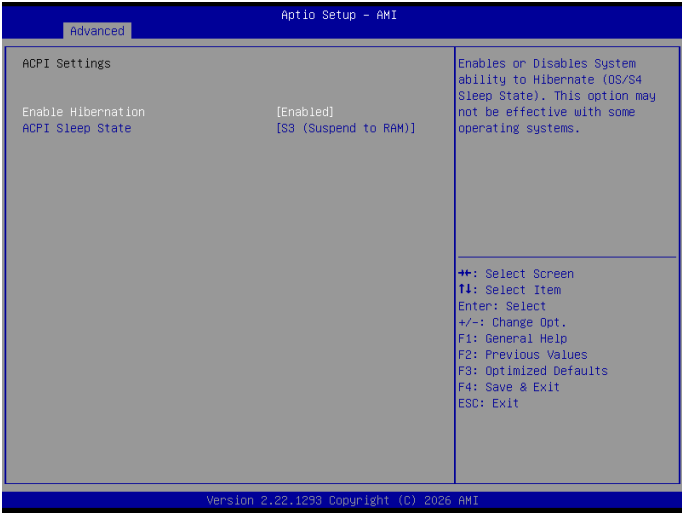
WDT Active

Enable or disable the WDT (Watchdog Timer) active state.

WDT Timer

Select a value for the Watchdog Timer.

ACPI Settings



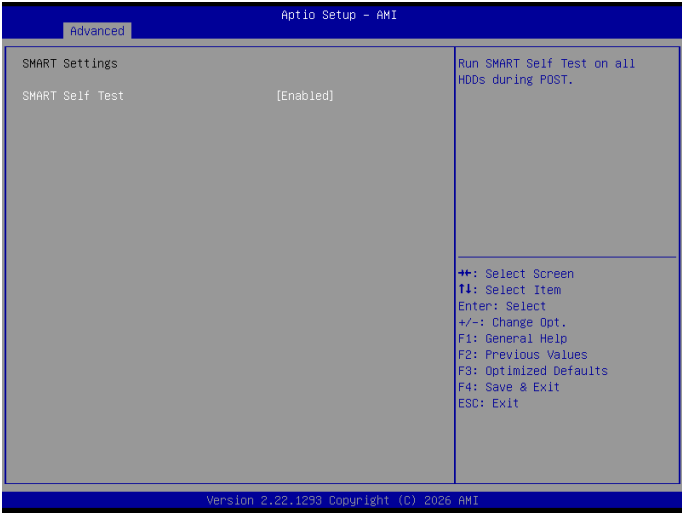
Enable Hibernation

Enable or disable system ability to hibernate (OS/S4 Sleep State). This option may not be effective with some OSs.

ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the suspend button is pressed.

SMART Settings



Smart Self Test

Run smart self test on all HDDs during POST.

F81966 Super IO Configuration



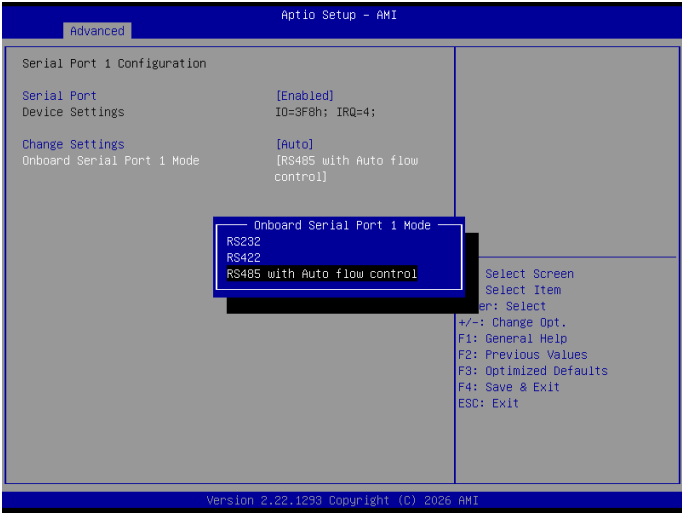
Serial Port 1/2 Configuration

Press <Enter> to access the submenu.

MCU COM Configuration

Press <Enter> to access the submenu.

F81966 Super IO Configuration > Serial Port 1(2/MCU) Configuration



Serial Port (Serial Port 1/2/MCU)

Enable or disable serial port (COM).

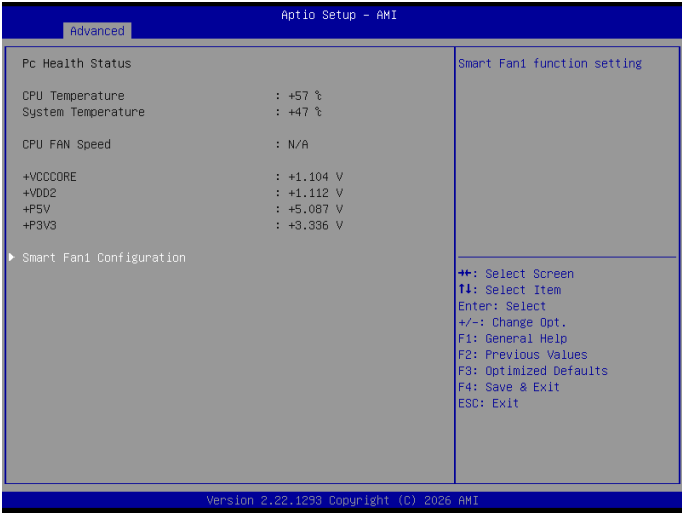
Change Settings (Serial Port 1/2/MCU)

Select an optimal setting for the Super IO device.

Onboard Serial Port 1 Mode

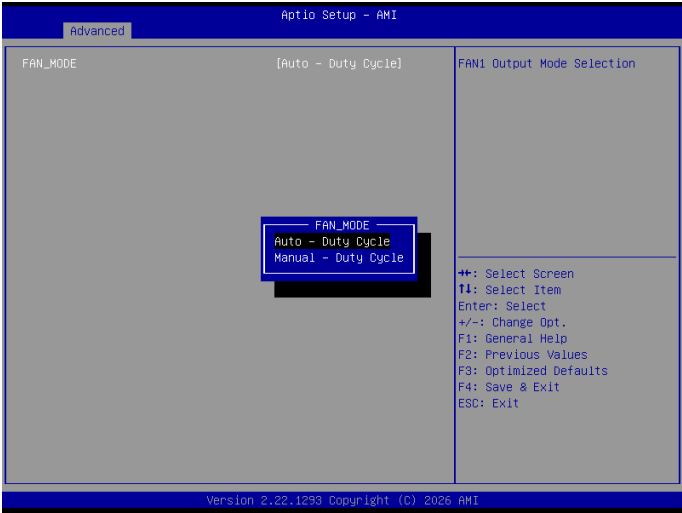
Selects this to change the serial port mode to RS-232, RS-422, or RS-485

Hardware Monitor



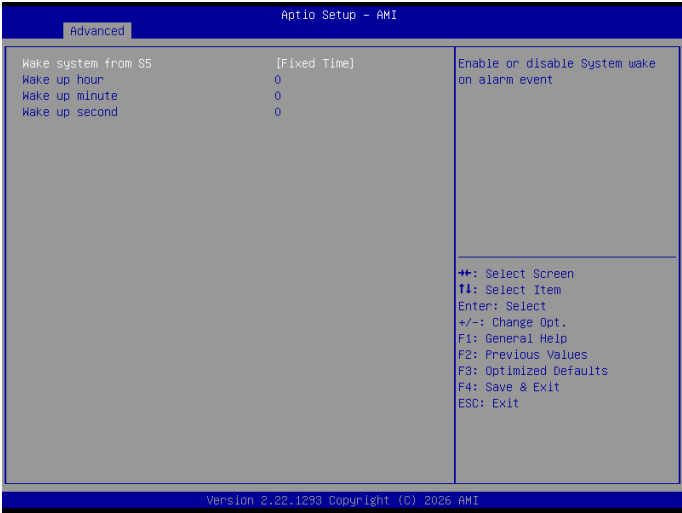
Smart Fan1 Configuration
Press <Enter> to access the submenu.

Hardware Monitor > Smart Fan1 Configuration



Fan Mode
Fan1 output mode selection.

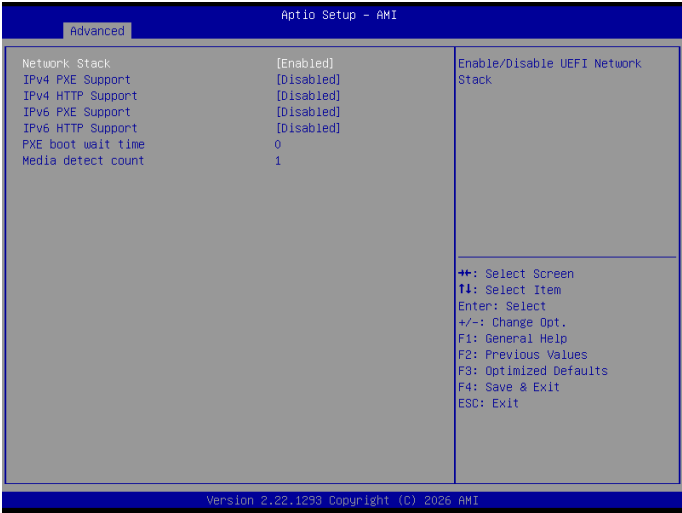
S5 RTC Wake Settings



Wake system from S5
Enable or disable system wake on alarm event.

Wake up hour/minute/second
Configure the timer to wake up the system.

Network Stack Configuration



Network Stack

Enable or disable UEFI network stack. More options will be available for configuration when enabled.

IPv4 PXE Support

Enable or disable IPv4 PXE support. If disabled, the IPv4 boot option will not be available.

IPv4 HTTP Support

Enable or disable IPv4 HTTP support. If disabled, the IPv4 boot option will not be available.

IPv6 PXE Support

Enable or disable IPv6 PXE support. If disabled, the IPv6 boot option will not be available.

IPv6 HTTP Support

Enable or disable IPv6 HTTP support. If disabled, the IPv6 boot option will not be available.

PXE boot wait time

Wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value.

Media detect count

Number of times presence of media will be checked. Use either +/- or numeric keys to set the value.



NVMe Configuration



This section is used to configure NVMe devices. The options become available once the system detects an installed NVMe device. Press the option to access additional configuration settings.

NVMe Configuration > NVMe Device



Self Test Option

Select either short or extender self test. Short option will take couple of minutes and extended option will take several minutes to complete.

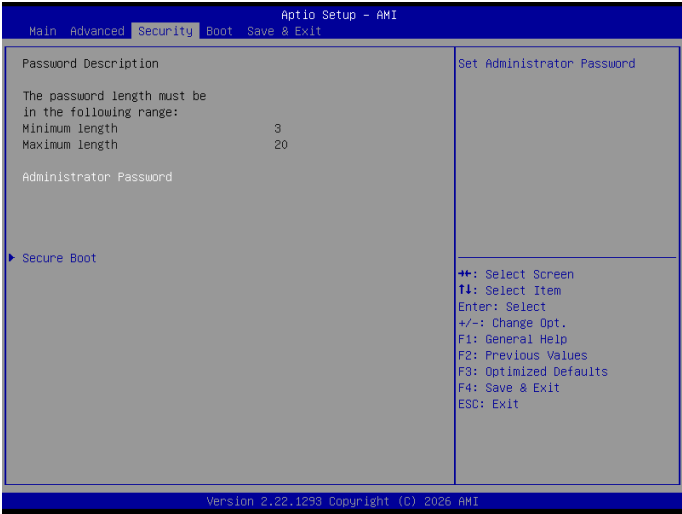
Self Test Action

Configure the items used for self test. Controller Only Test and Controller and NameSpace Test options are available. Selecting Controller and NameSpace Test will take longer to complete.

Run Device Self Test

Run the device self test according to the self test option and action selected.

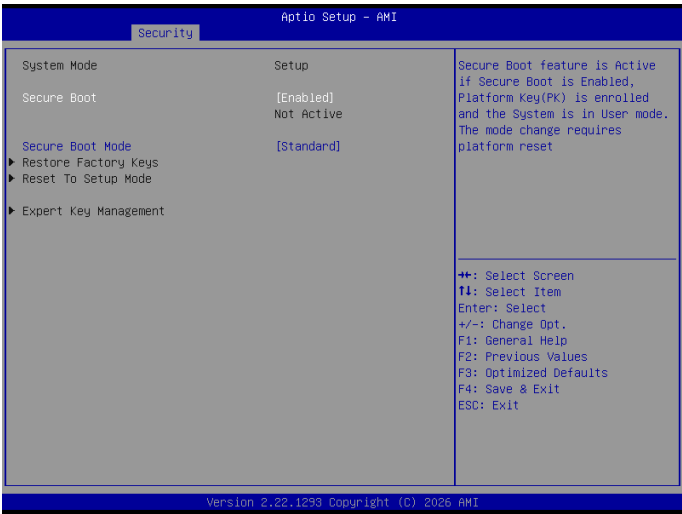
Security



Administrator Password
Set administrator's password.

Secure Boot
Press <Enter> to access the submenu.

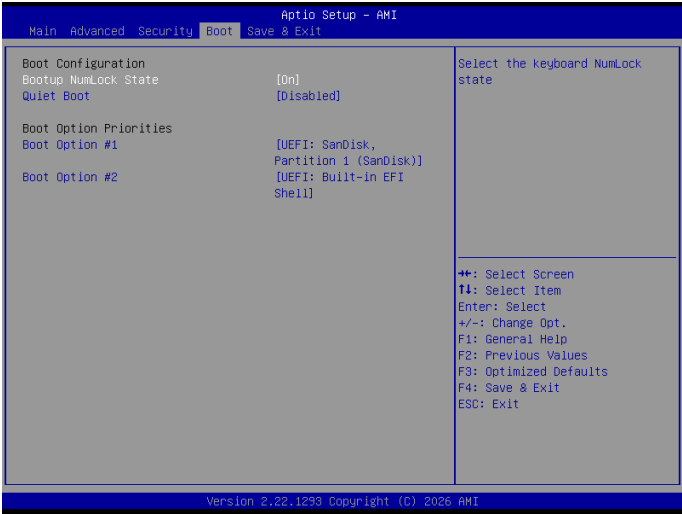
Secure Boot



Secure Boot
Secure boot feature is active if secure boot is enabled. Platform key (PK) is enrolled and the system is in user mode. The mode change requires platform reset.

Secure Boot Mode
Select a secure boot mode for the system. The options are Standard and Custom. When in custom mode, secure boot policy variables can be configured by a physically present user without full authentication. More options are available if the option is set to Custom.

Boot



Bootup NumLock State

Select the keyboard NumLock state.

Quiet Boot

Enable or disable Quiet Boot option.

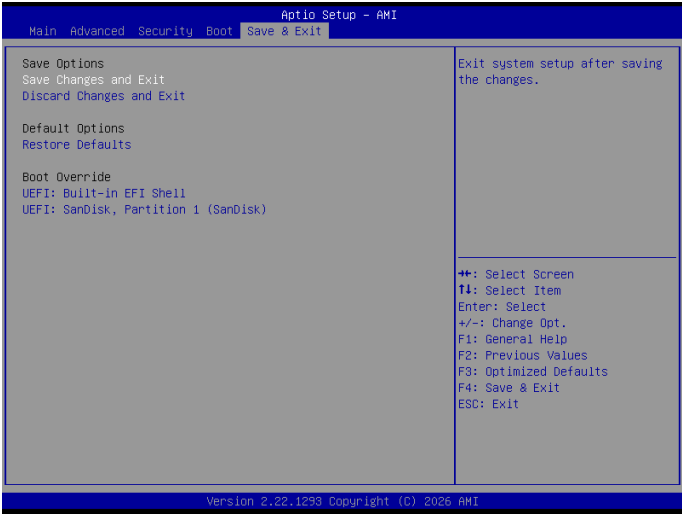
Enabled: Display OEM logo instead of the POST messages.

Disabled: Display normal POST messages.

Boot Option Priorities

Adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be #2 and so forth.

Save & Exit



Save Changes and Exit

To save the changes and exit the Setup utility, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes. You can also press <F4> to save and exit Setup.

Discard Changes and Exit

To exit the Setup utility without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting. You can also press <ESC> to exit without saving the changes.

Restore Defaults

To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Boot Override

To bypass the boot sequence from the Boot Option List and boot from a particular device, select the desired device and press <Enter>.

APPENDIX A: POWER CONSUMPTION

System Feature and Configuration

Item	Description
System	SPPC16-10N105-PD
CPU	Intel® Processor N150
System Memory	16GB DDR5 5600 SO-DIMM
Wi-Fi Module	WIFI 6E-AX210GW
5G Module	Quectel RM520NGLAA
Storage Device	M.2 Key M 2280 128GB SSD
Operating System	Windows10 Enterprise x64 (22H2)

Test Data

Test Voltage	28V	
S3	Watts(W)	4.48
Idle	Watts(W)	20.2
Full Load	Watts(W)	92.4

Test Condition

Burn-in Item (100%)	Test	Burn-in Item (100%)	Test
2D Graphic	✓	Serial Port COM1/COM2	✓
3D Graphic	✓	Sound	✓
CPU	✓	Video Playback	✓
Disk (M.2 SATA)	✓	USB 2.0 Port x2 (Keyboard/Mouse)	✗
GPGPU	✓	USB 3.0 Port x3 USB Dummy Load (1A x2)	✓
Memory (RAM)	✓	Network	✓
TPM	✓		