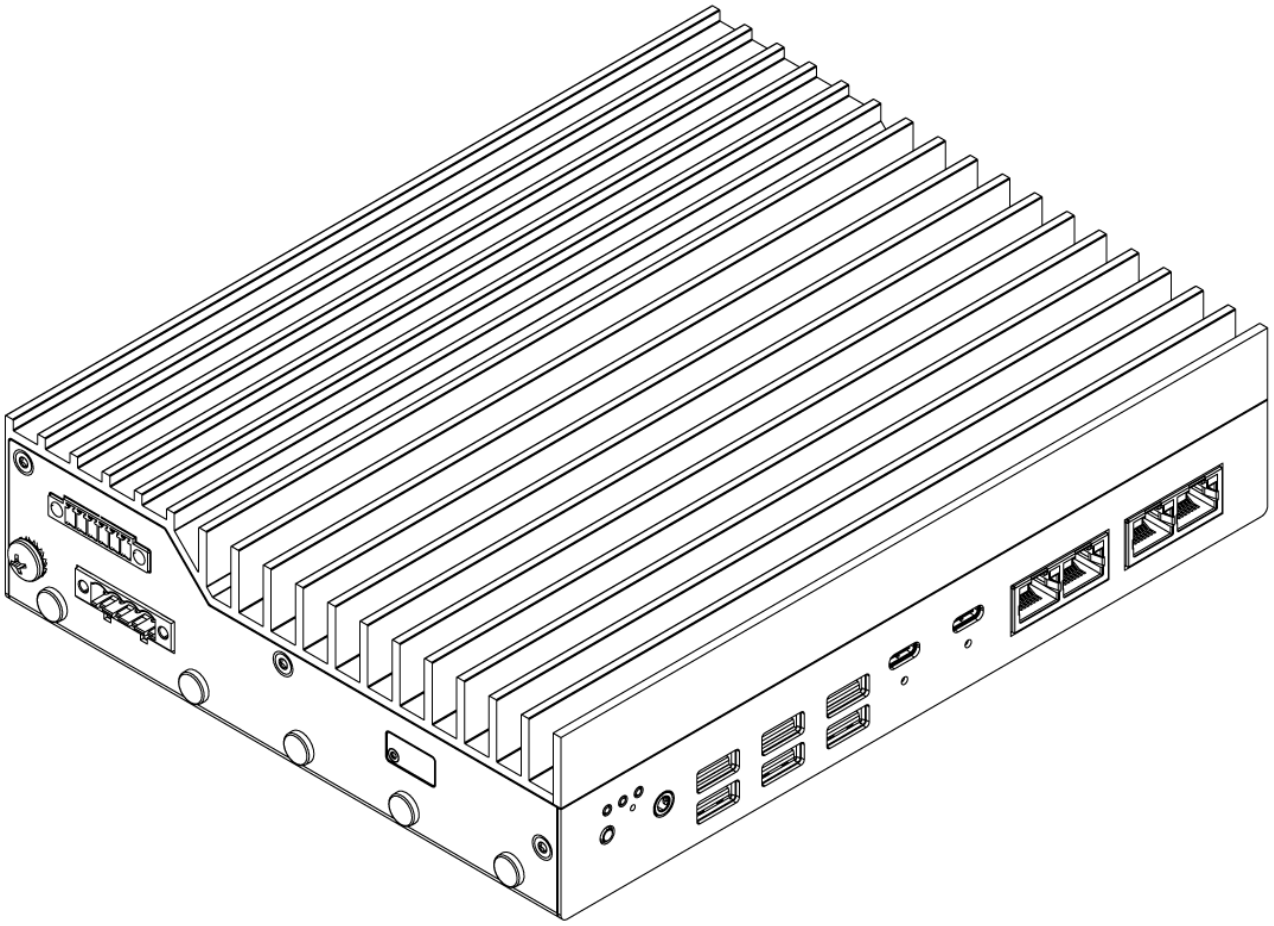
HX52x Industrial Computer

Product Manual



1. Revision History

Revision	Description	Date
0.5	Pre-Release	03/06/2024

2. Table of Contents

3. Safety Precautions, Safeguards & Information

Do not open and modify the device! The device complies with various national and international Safety, EMC and Environmental requirements per various standards.

Modification of the device may void certifications, warranty and/or cause possible injury to the user.

Safe use and installation instructions

3.1. Care must be taken handling the device to prevent injury to self or possibility of damaging the unit.

3.2. Read the entire manual before using the product.

3.3. Install the device securely per user's manual instructions.

3.4. Wall or ceiling mounting device requires use of OnLogic mounting plate or bracket.

3.5. Use M3x0.5mm Flat Head screws to attach mounting plate or mounting brackets to threaded holes on bottom or rear of chassis. Screws should be a minimum length of 4mm. Add 1mm of screw length for every mm of additional thickness of plate or bracket beyond 1.5mm.

3.6. **Caution, Hot Surface!** It is normal for the unit to heat up and be hot to touch. **Do not touch** the heatsink area or enclosure during operation and 30 minutes after shutdown allowing the unit to cool down.

3.7. Ambient operating temperature must be between 0°C to 50°C for Industrial and -40°C to 70°C with a non-condensing relative humidity of 10-85%.

3.8. The device can be stored at temperatures between -10 °C to 85 °C. Note: Unit must be stabilized within operating temperature before use, minimum 3HR.

3.9. Keep the device away from liquids and flammable materials. Not to be installed in a hazardous environment.

3.10. Do not clean the device with liquids. The chassis can be cleaned with a dry cloth or duster only. To prevent injury to self and/or damage to the device the unit must be powered down and all connecting power and other peripherals shall be disconnected prior to cleaning.

3.11. Allow adequate space around all sides of the device for proper cooling and to not exceed its maximum operating temperature limit. If the device is mounted to a vertical surface then recommended device orientation is such that heatsink fins allow air to rise unobstructed. Alternative orientations may result in reduced operational temperature range.

3.12. This device is intended for indoor operation only.

3.13. **Caution, Risk of Electric Shock!** The unit is powered by low voltage DC (Direct Current) only! Do not connect AC (Alternating Current) into the device!

3.14. To power the device use only UL ITE Listed external power supplies with DC output of 12-24VDC for Industrial Models and 12-48VDC for Rugged Models, see specs for details.

3.15. Install the device only with shielded network cables.

3.16. The installer should be experienced in aftermarket installation and familiar with general practices for installing electronics.

3.17. Service and repair of the device must be done by qualified skilled service personnel.

This includes, but is not limited to, replacement of the CMOS battery. Replacement CMOS battery must be UL recognized and of a similar type as the original.

3.18. Proper disposal of the CMOS battery must comply with local governance.

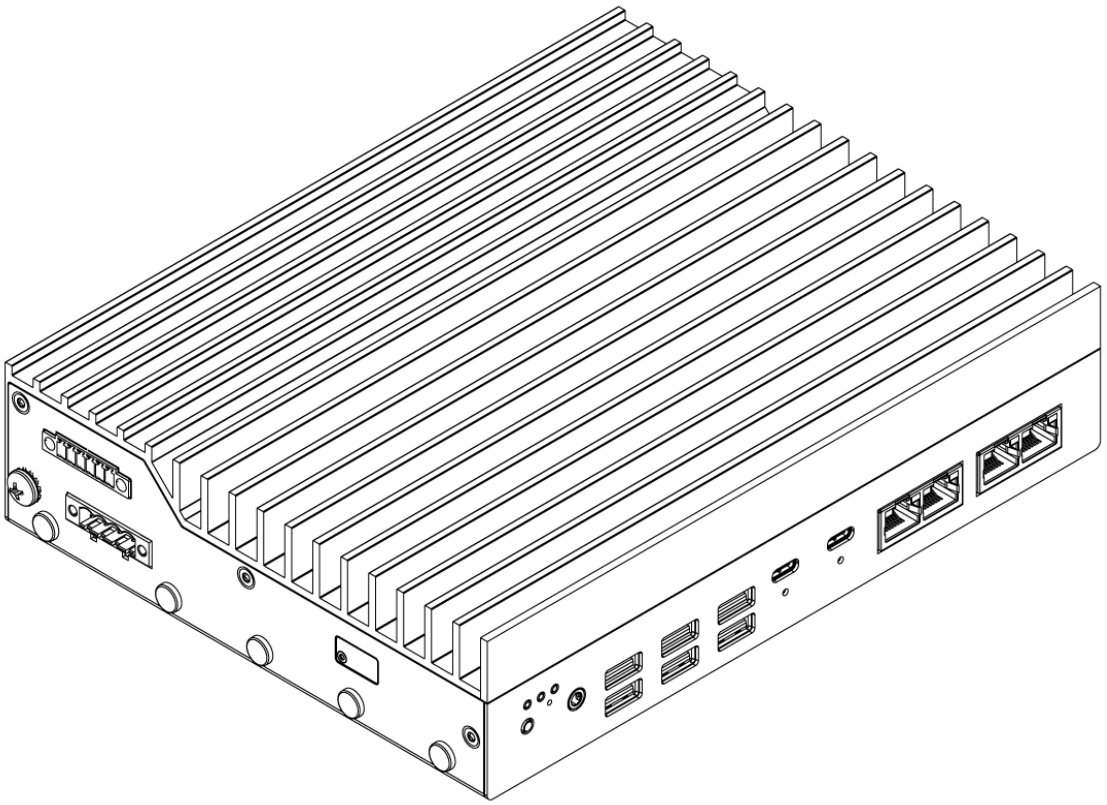
3.19. Radio device is not intended for emergency service use.

3.20. To protect against excessive RF exposure, maintain at least 20cm from any user and the RF antennas. Only use provided dual band PIFA antennas with 2dBi/2dBi gain (2.4 and 5Ghz) for Wifi/BT.

3.21. This equipment is not suitable for use in locations where children are likely to be present.

WARNING: There is danger of explosion if the CMOS battery is replaced incorrectly. Disposal of battery into fire or a hot oven, or mechanically crushing or cutting of a battery can result in an explosion.

4. System Overview



4.1. Accessories

Any included or additional accessories such as mounting brackets, power supplies or antennas, will be located in the accessory in the bottom of the system box.

All drivers and product guides can be found on the corresponding product page. For more information on accessories and additional features, visit the HX520 pages at:

[HX52x Product Page]

4.2. Product Specifications

OnLogic HX520 Series	
Variants	HX521 - Base System HX522 - SATA/HotSwap Expansion HX523 - ModBay Expansion HX524 - PCIe Expansion HX525 - MXM Expansion
Processor	MTL-H Core Ultra 5 125H MTL-H Core Ultra 7 165H
Memory	2x DDR5-5600 S-DIMM Up to 96gb Total (In-Band ECC)
Integrated Graphics	Intel® UHD Graphics Intel® Arc® (Dual Channel Memory Required)
Front I/O	1x Power Button 1x Factory Reset Switch 1x 3.5mm Audio Jack 6x USB 3.2 Gen 2 2x Thunderbolt 4, USB Type C (40 Gb/s) 4x 2.5Gb LAN
Top I/O	1x 4 pin Terminal Block Power 1x 3ff SIM Slot (Mapped to M.2 B-Key) 5x Antenna Mounting Holes 1x Grounding Lug
Bottom I/O	1x Remote Switch 2x DisplayPort 2.1 UBHR20 2x Dual COM (RS-232, RS484, RS-422) 1x FanHat
Expansion & Storage	1x M.2 3052/3042/2280 M-Key (PCIe Gen4 x4) 1x M.2 E-Key (WiFi) PCIe Gen4 x1, USB 2.0) 1x M.2 B-Key (PCIe Gen4 x2/USB 2.0, PCIe Gen4 x1/USB3.2 Gen 1)
Special Features	1x Kensington Lock
Optional Add-On Modules	1x 6 Pin Isolated CAN 1x 20 Pin DIO
Operating Systems	
LAN Controllers	4x I226-V (Core Ultra 5 125H) 3x I226-V, 1x I226-LM (Core Ultra 7 165H)
Voltage Input	Rated Input 12-24VDC HX521 Rated Input 12-24VDC HX522 Rated Input 19-24VDC HX523/4/5
Dimensions	HX521: 50.8mm x 177 mm x 225mm HX522/3/4/5: 106mm x 177mm x 225mm
Mounting	DIN

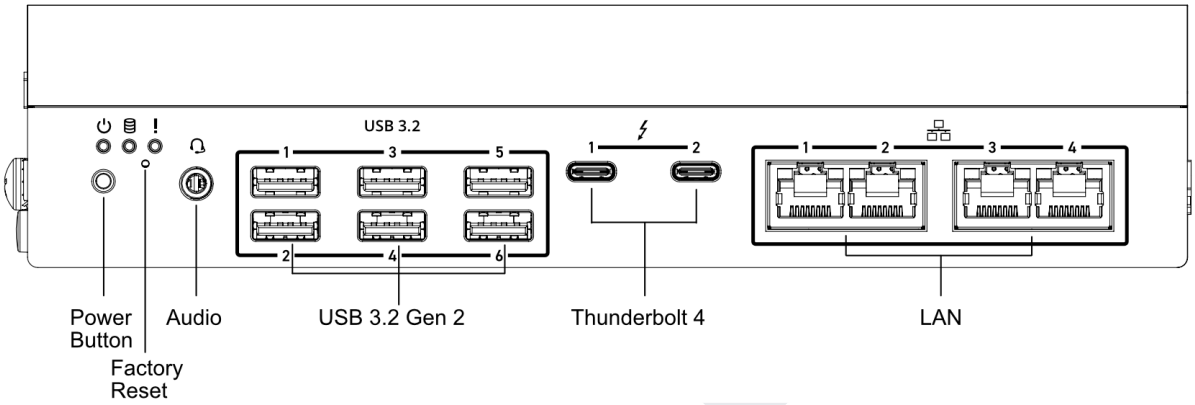
	VESA In-Line VESA Wall
Operating Temperature	0ºC to 50ºC
Storage Temperature	-10ºC to 85ºC
Operating Humidity	5% to 95% Non-Condensing
Certifications	FCC 47 CFR Part 15 Subpart B (Class A) EN 60950-1 & EN 63268-1 CISPR 32/EN 55032 CISPR 35/EN 55035 Radio Equipment Directive (2014/53/EU) RoHS 3 (2015/863/EU) WEEE Directive (2012/19/EU) IEC 60068-2-27 IEC 60068-2-64 MIL-STD-810H Power Immunity According to E-Mark ISO 7637-2 & ISO 16750-2 EN 50121-3-2 IEC 60601-1-2, 4th ed. EN 60945, 4th ed.

Radio Specifications when equipped with Intel AX-210 Wi-Fi (device for indoor use)	
Frequency Bands	
Operating Frequency	
Channel spacing / Bandwidth	
RF output power	
Type of Modulation	
Type of Antenna	
Modes of operation	
Duty cycle (access protocol)	

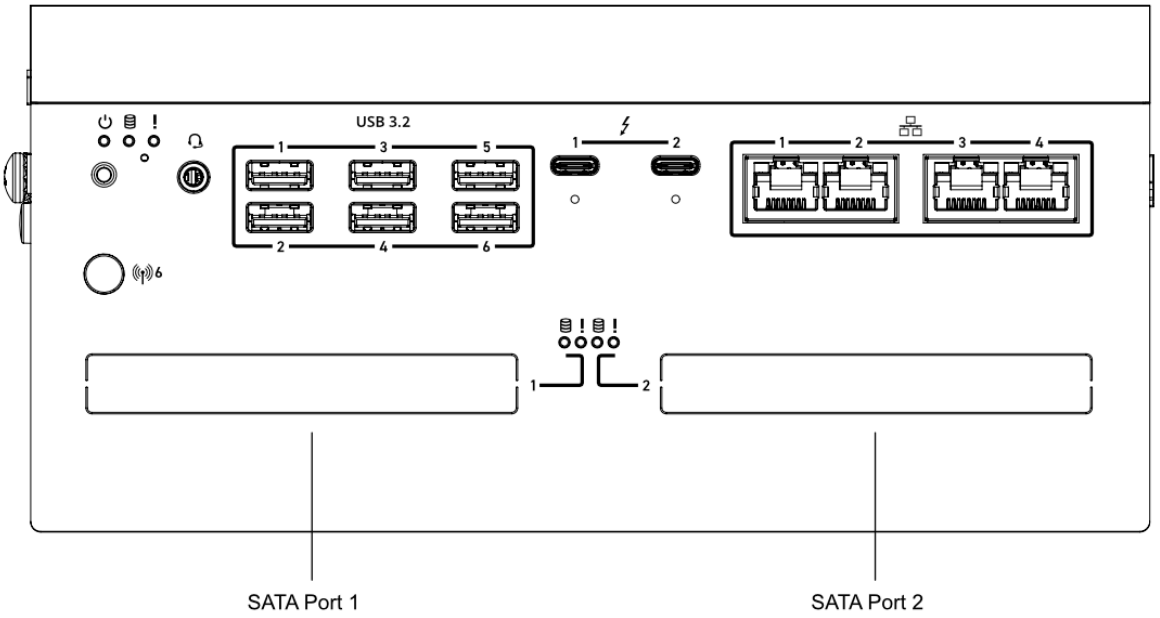
Radio Specifications when equipped with Intel BE-200 Wi-Fi (device for indoor use)	
Frequency Bands	
Operating Frequency	
Channel spacing / Bandwidth	
RF output power	
Type of Modulation	
Type of Antenna	
Modes of operation	
Duty cycle (access protocol)	

5. Exterior Features & Dimensions

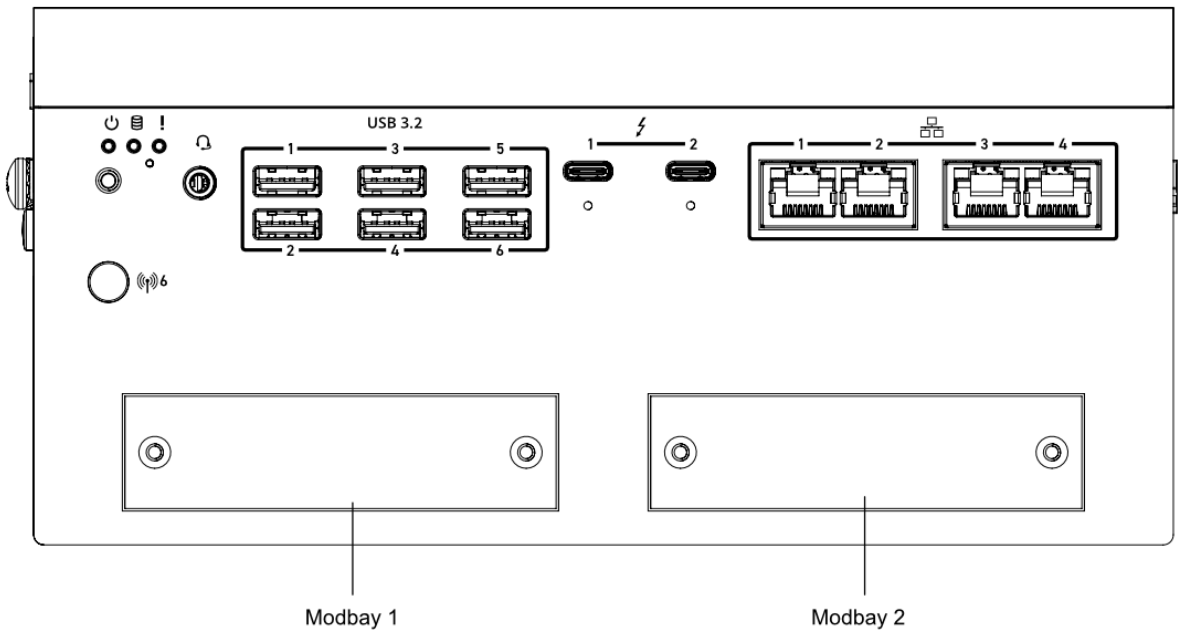
5.1. Front I/O HX521



5.2. Front I/O HX522

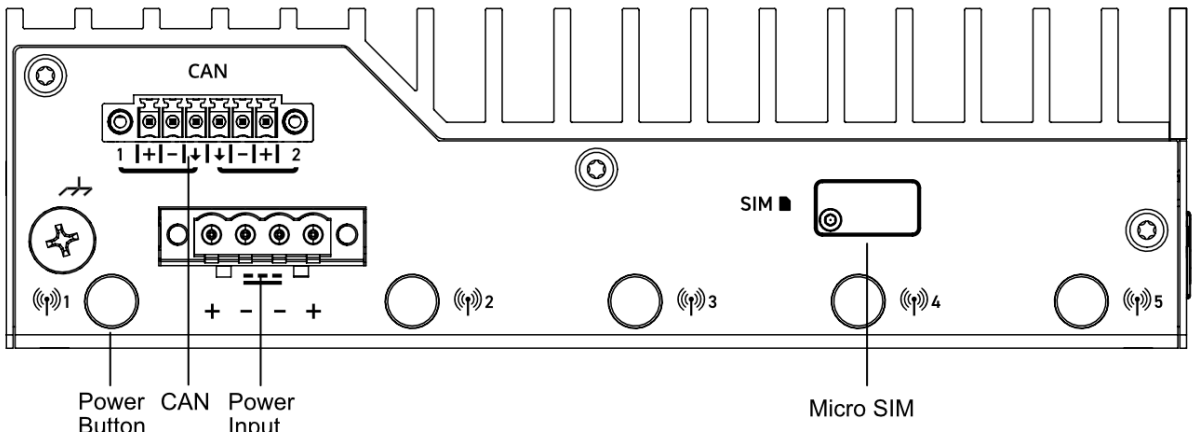


5.3. Front I/O HX523

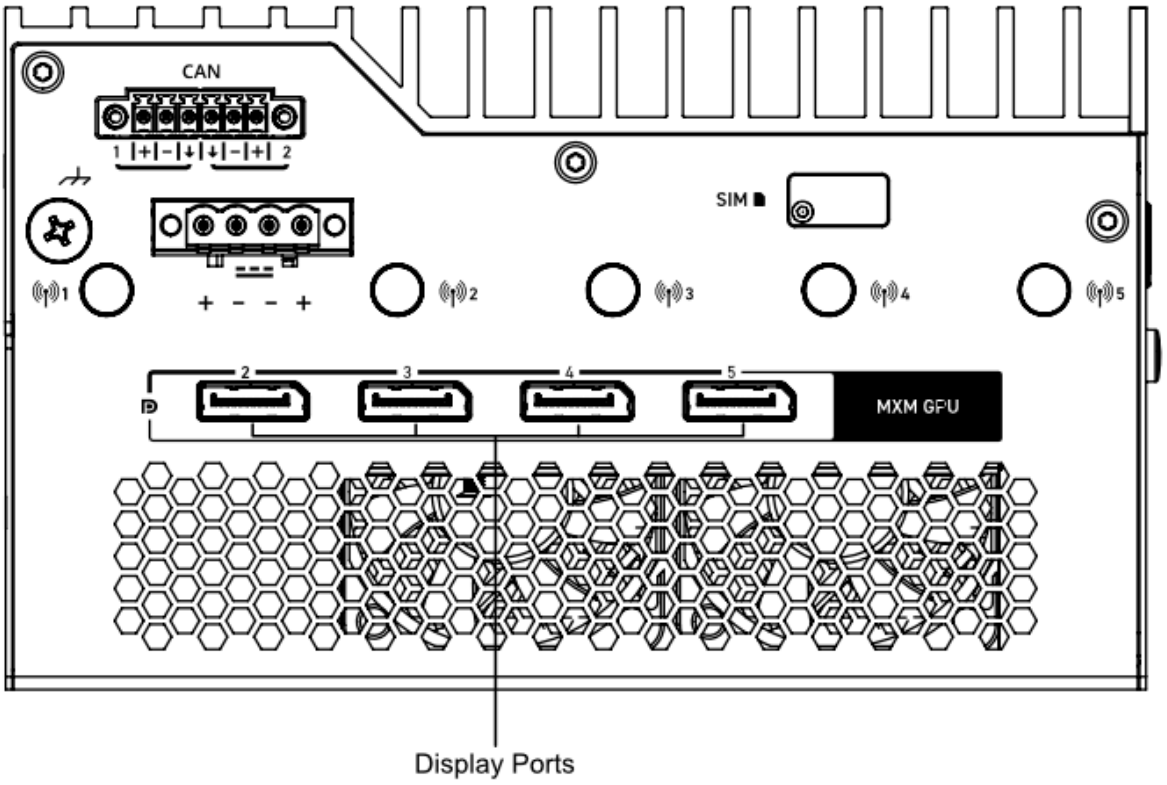


5.4. Top I/O

5.4.1. Top I/O HX521

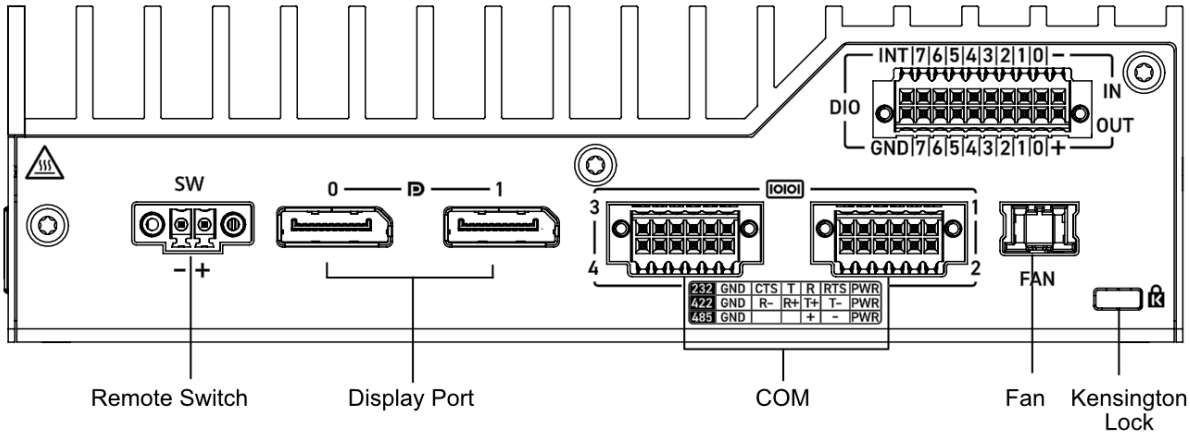


5.4.2. Top I/O HX525



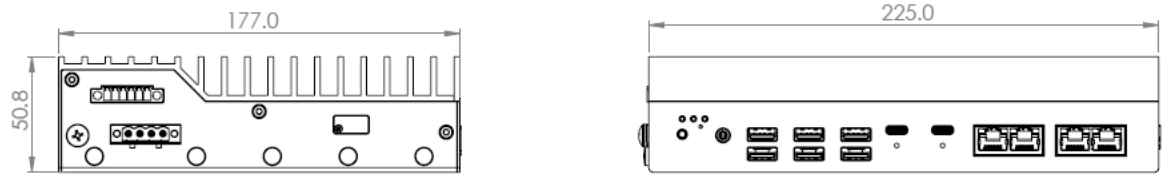
5.5. Bottom I/O

5.5.1. Bottom I/O HX521

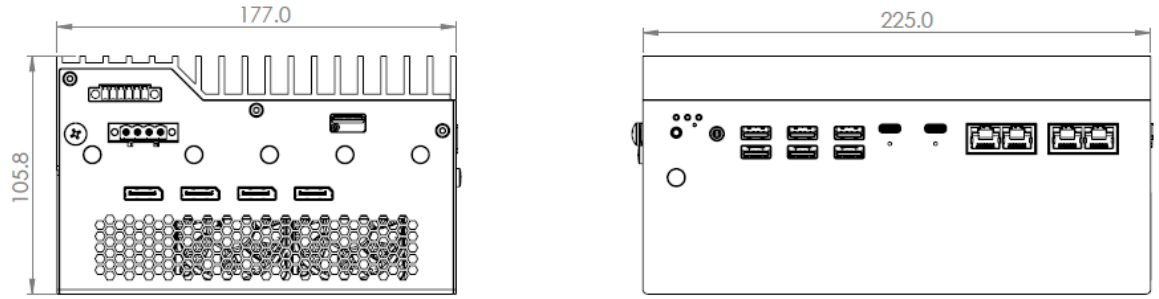


6. System Dimensions

6.1. HX521 System

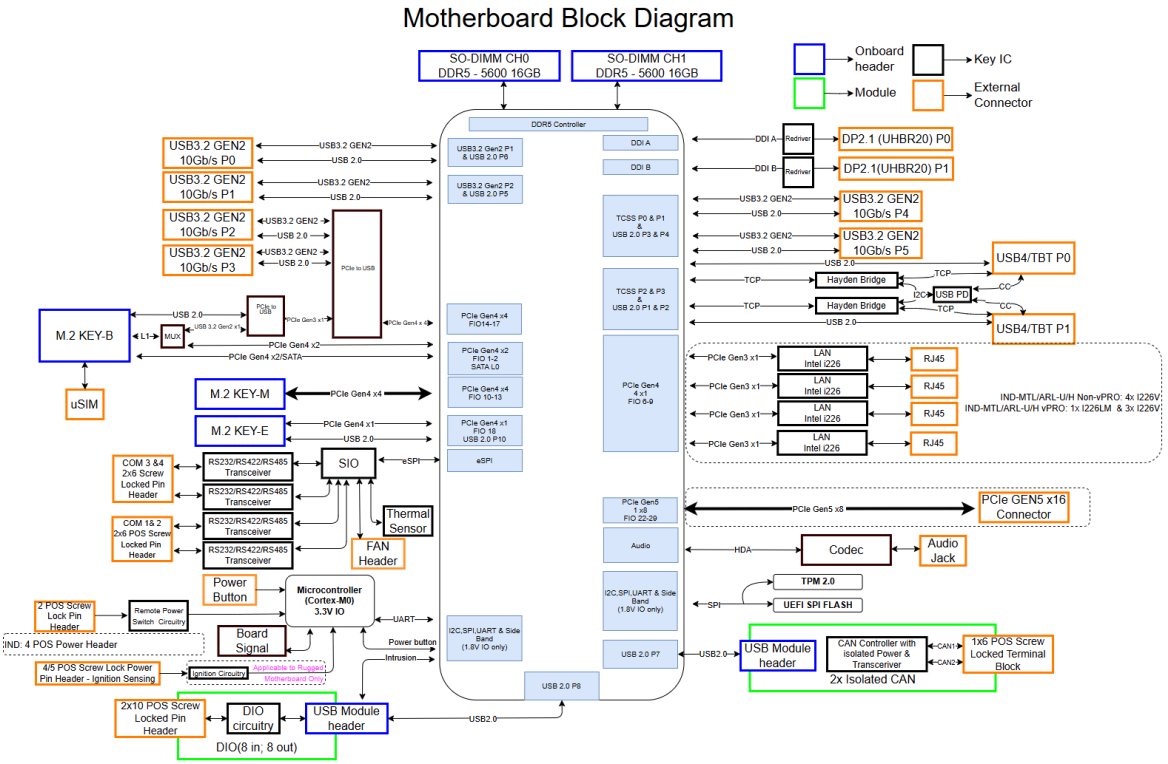


6.2. HX52x Expanded Systems

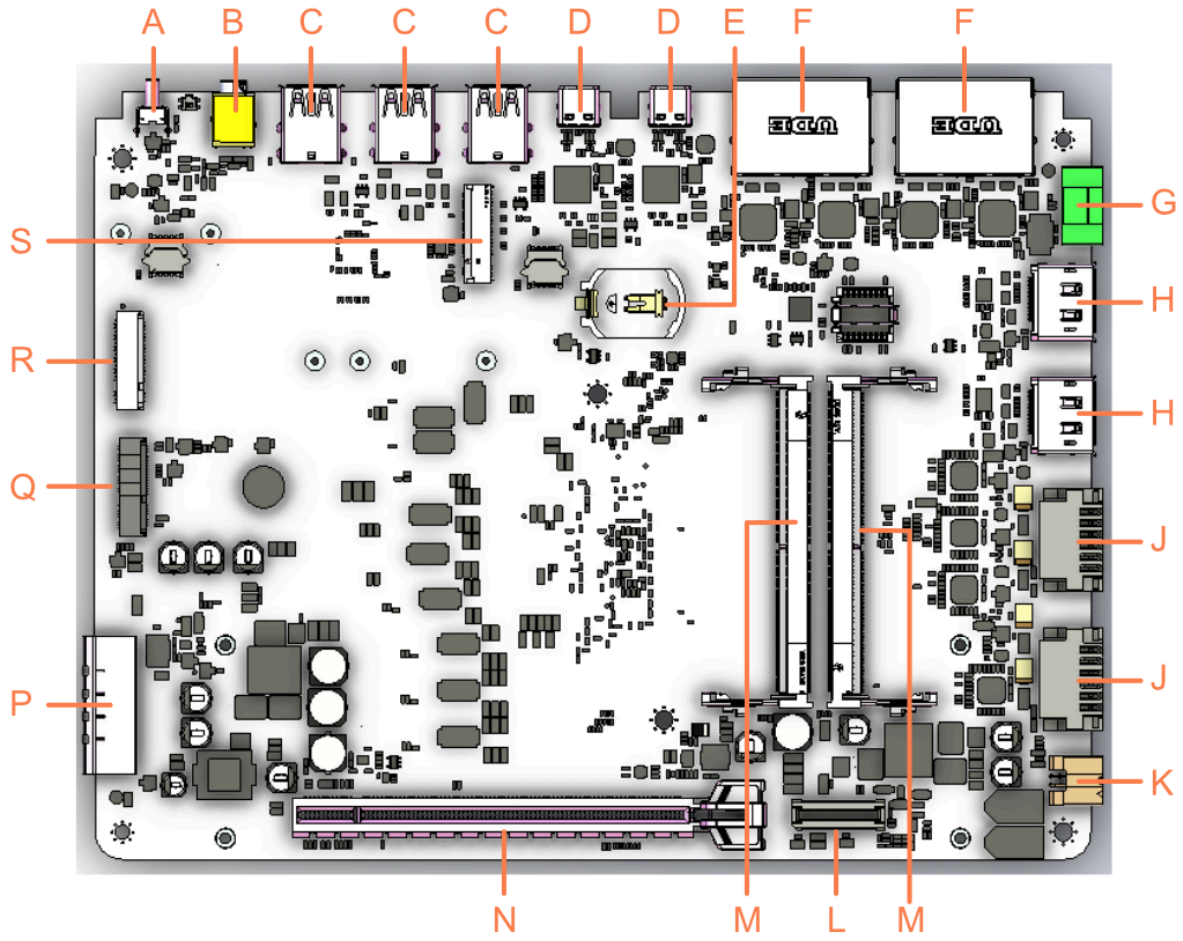


7. Motherboard Overview

7.1. System Block Diagram



7.2. Motherboard Features

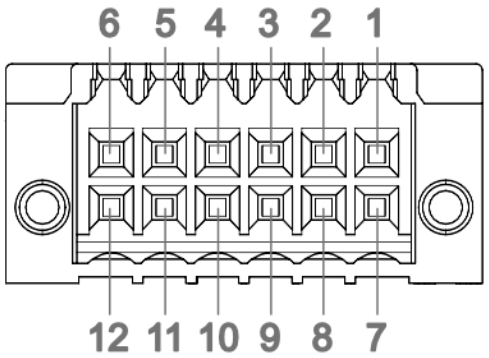


Item	Description
A	Power Button
B	Audio Jack
C	USB 3.2 Gen 2 Type-A ports (6x)
D	Thunderbolt 4 (USB-C) (2x)
E	CMOS Battery
F	2.5 GbE LAN ports (4x)
G	Remote Switch
H	DisplayPorts (2x)
J	COM RS-232/422/485 ports (4x)
K	External fan header
L	PCIe Aux power and fan control header

M	DDR5 SO-DIMM slots (2x)
N	PCIe Gen 5.0 (x16 Physical/x8 Electrical)
P	4-pin Power Input
Q	M.2 E-Key PCIe Gen4 x1 / USB 2.0
R	M.2 B-Key PCIe Gen4 x2, USB 2.0 / PCIe Gen4 x1, USB 3.2 Gen 1 / SATA Gen3 x1, USB 3.2 Gen 1 / USB3.2 Gen 1
S	M.2 M-Key PCIe Gen4 x4

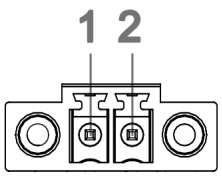
7.3. I/O Definitions

7.3.1. Serial Ports



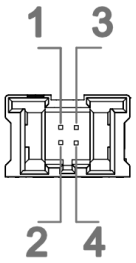
	Pin	RS-232	RS-422	RS-485
COM 1	1	PWR	PWR	PWR
	2	NC / RTS	TX-	TX-/ RX-
	3	RX	TX+	TX+/ RX+
	4	TX	RX+	NC
	5	NC / CTS	RX-	NC
	6	GND	GND	GND
COM 2	7	PWR	PWR	PWR
	8	NC / RTS	TX-	TX-/ RX-
	9	RX	TX+	TX+/ RX+
	10	TX	RX+	NC
	11	NC / CTS	RX-	NC
	12	GND	GND	GND
	NC = Not Connected			

7.3.2. Remote Switch



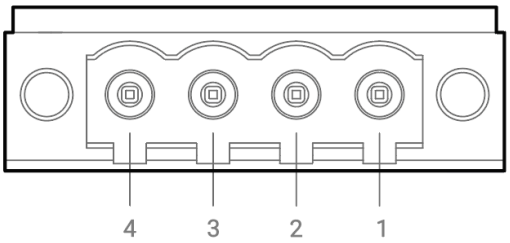
Pin	Definition
1	SW+
2	GND

7.3.3. External Fan



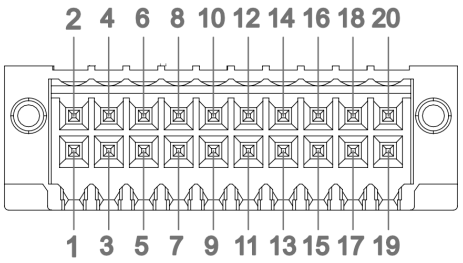
Pin	Definition
1	Power (+)
2	FG/Fan Tach.
3	PWM
4	Power (-)

7.3.4. Terminal Block Power



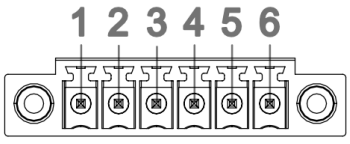
Pin	Definition
1	Power (+)
2	Power (-)
3	Power (-)
4	Power (+)

7.3.5. DIO Expansion



Pin	Definition		
1	FGND	2	Intrusion
3	Out7	4	In7
5	Out6	6	In6
7	Out5	8	In5
9	Out4	10	In4
11	Out3	12	In3
13	Out2	14	In2
15	Out1	16	In1
17	Out0	18	In0
19	V_DIO-/FGND	20	GND

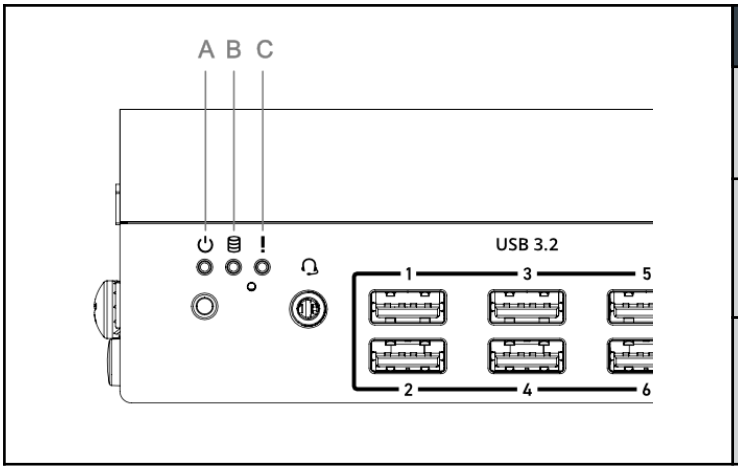
7.3.6. CAN Expansion



Pin	Definition
1	CAN_H
2	CAN_L
3	GND
4	GND
5	CAN_L
6	CAN_H

7.4. LEDs

7.4.1. HX52x Status LEDs



Ref	Color	Definition
A	Blue	Power LED
B	White	Drive Activity LED
C	Orange	Error LED

7.4.1.1. Power LED Definition

- Off - Power off
- Slow Blink (1/3Hz) Low/Standby Power State
- On - Power On/ Normal Power State

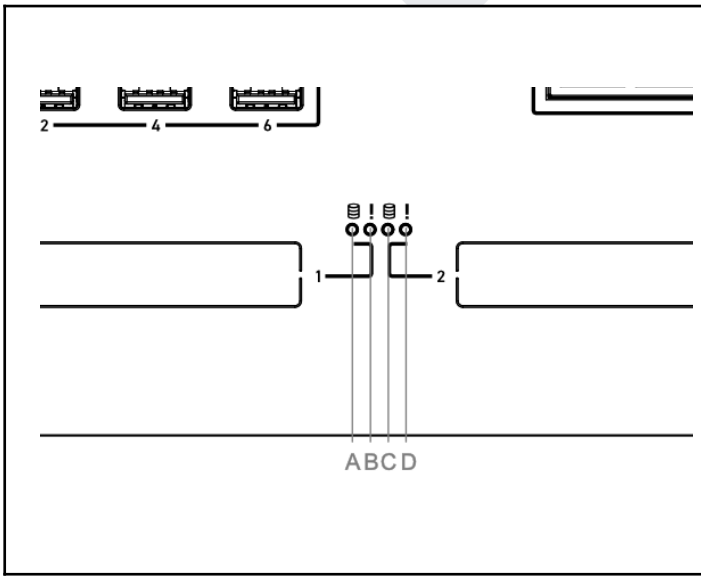
7.4.1.2. Drive Activity LED

- Blinking - Read/Write Activity on m.2 storage device

7.4.1.3. Error LED Definition

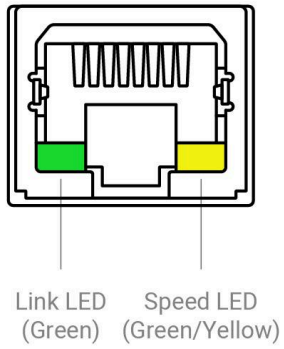
- Slow Blinking: (0.5Hz): Boot Issue, no boot device is found
- Fast Blinking (4Hz): Voltage fault
- Solid: Memory Fault or No DIMMs Installed

7.4.2. HX522 Status LEDs



Ref	Definition
A	SATA_1 Activity
B	SATA_1 Error
C	SATA_2 Activity
D	SATA_2 Error

7.4.3. HX52x Network Activity LEDs



LED	Color	State	Condition
Link	-	Off	LAN link not established
	Green	On	LAN link established
		Blinking	LAN activity occurring
Speed	-	Off	100 or 10 Mb/s data rate
	Yellow	On	1000 Mb/s data rate
	Green	On	2500 Mb/s data rate

7.5. USB Ports

Helix 520 series has six USB 3.2 Gen 2 Type A ports (10 Gbps, 5V @ 900mA). Optional ModBay cards add up to eight more USB 3.2

7.6. DisplayPort

Helix 520 series has two full-size DisplayPorts, both supporting DP 2.1 up to UHBR20. Please refer to Intel documentation for additional Meteor/Arrow Lake H display output specifications: https://ark.intel.com/

7.7. SIM Cards

Helix 520 series has one 3FF Micro-SIM card slot on the top panel that works with 4G LTE and 5G cellular modems. The SIM card is mapped to the M.2 B-key slot. The SIM slot is push-push; push to insert and push to remove.

7.8. Factory Reset

The Helix 520 series allows the enablement of a factory reset switch accessible through the front I/O face of the system that, when depressed, resets system BIOS settings back to factory defaults or custom set values.

8. Motherboard Connectors

8.1. M.2 2280 M-key

This expansion slot is capable of supporting PCIe Gen 4 x4. This slot is designed to support NVMe or storage drives. A full pinout table for this expansion slot is provided in Appendix C.

8.2. M.2 3042/3052/2280 B-key

This expansion slot is capable of supporting PCIe Gen 4 x2, SATA III, USB 3.2 Gen 2, USB 2.0, and dual SIM card inputs from the external I/O. This slot is designed to support various expansion cards such as SATA storage drives and 4G LTE or 5G cellular cards. A full pinout table for this expansion slot is provided in Appendix C.

B-Key Configuration Option
PCIe GEN4 x2 lane + USB2.0
PCIe GEN4 x1 Lane + USB3.2 Gen1 (inclusive of USB2.0)
SATA GEN3 x1 Lane + USB3.2 GEN1 (inclusive of USB2.0)
USB3.2 GEN1 (inclusive of USB2.0)

8.3. M.2 2230 E-key

This expansion slot is capable of supporting PCIe Gen 4 x1 and USB 2.0 signals. This slot is designed to support M.2 2230 Wi-Fi expansion cards. A full pinout table for this expansion slot is provided in Appendix C.

8.4. PCIe Gen 5.0 Connector (x16 Physical/x8 Electrical)

The Helix 520 series features one PCIe x16 connector on the motherboard. This connector is paired with OnLogic risers to support multiple PCIe configurations in the K803 and K804 models.

8.4.1. PCIe x16 (x16 Physical/x8 Electrical)

This riser supports a dual slot, full height, half length PCIe Gen 5 (x16 Physical/ x8 Electrical) expansion card in the HX524. There are two fan headers on the riser as well to support the fan in the chassis.

8.5. DDR5 SO-DIMM Slots

The Helix 520 series supports up to two DDR5 SO-DIMM slots rated up to 5600MTUs (MTL) and 6400MTUs (ARL).

9. Modbay Expansion

9.1. Modbay 4x LAN Expansion

The 4x LAN Expansion (MODBAY-4LAN02) adds additional RJ45 GbE LAN ports to the H523. This ModBay uses dedicated Intel I210-IT network controllers for each port which support speeds up to 1 Gbps.

Operating Temperature: 0~50°C

9.2. Modbay 4x PoE Expansion

The 4x PoE Expansion (MODBAY-4POE01) adds RJ45 GbE PoE LAN ports to the HX523 and K804. Each port supports up to 1 Gbps and PoE output. PoE power budget depends on system power input.

Operating Temperature: 0~50°C

9.3. Modbay 3x M12 LAN Expansion

The 3x M12 LAN Expansion (MODBAY-M12LAN01) adds additional M12 X-coded GbE LAN ports to the HX523. This ModBay uses dedicated Intel I210-IT network controllers for each port which support speeds up to 1 Gbps.

Supported cables:

- CABLE-M12-RJ45-5M (5 Meter X-coded M12 to RJ45)
- CABLE-M12-RJ45-10M (10 Meter X-coded M12 to RJ45)

Operating Temperature: 0~50°C

9.4. Modbay 3x M12 PoE Expansion

The 3x M12 PoE Expansion (MODBAY-M12POE01) adds additional M12 X-coded GbE PoE LAN ports to the K802 and K804. This ModBay uses dedicated Intel I210-IT network controllers for each port which support speeds up to 1 Gbps. Additionally, each port supports PoE output. The power budget for PoE is dependent on the voltage of the system power input. Refer to Appendix C for PoE power budgets.

Supported cables:

- CABLE-M12-RJ45-5M (5 Meter X-Coded RJ45 to M12)
- CABLE-M12-RJ45-10M (10 Meter X-Coded RJ45 to M12)

Operating Temperature: 0~50°C

9.5. Modbay 2x 10Gb LAN Expansion

The 2x 10Gb LAN Expansion (MODBAY-10GLAN01) adds RJ45 10 GbE LAN ports to the K802 and K804. This ModBay uses a single X550 network controller which supports individual port speeds up to 10 Gbps and a maximum combined speed up to 15 Gbps across both ports.

Operating Temperature: 0~40°C

9.6. Modbay 4x USB3 Expansion

The 4x USB3 Expansion (MODBAY-4USB01) adds additional USB 3.2 Gen 2 Type-A ports to the K802 and K804. This ModBay uses two USB controllers which support individual port speeds up to 10 Gbps and a maximum combined speed up to 15 Gbps across all ports. The controllers are the ASM3142 (PCIe Gen 3 x2 to 2x USB 3.2 Gen 2) and the USB7206i (1x USB 3.2 Gen 2 to 2x USB 3.2 Gen 2). Each port is rated to 5V @ 900mA of power delivery per USB-IF specification. These ports can only wake in Modern Standby and are not active in Sleep and Hibernate system states.

Operating Temperature: 0~50°C

10. Power Management

10.1. Wake-Up Events

Helix 520 supports multiple power states. The wake-up events can be configured in the MCU and BIOS. This section describes the power management functions you can perform and gives information on protection circuitry for power adapters.

Wake-Up Event	From ACPI State	Comments
Power Button	Ultra-low power(PG3) S5 S3	
LAN & USB Type C / Thunderbolt	S5 S4 S3	Must be enabled in BIOS
USB A	S3	Included Legacy S3

10.2. Protection Circuitry

Parameter	Value
Nominal operating voltage (Rated DC value of input)	12~24V
Maximum safe DC voltage (system not damaged)	28.8V
Minimum safe reverse voltage (system not damaged)	-24V

These DC levels specified are the absolute max values for the pins for function and safety of the system. The protection circuitry allows for brief transient voltages above these levels without the system turning off.

11. Regulatory Compliance

11.1. CE

The computer system was evaluated for medical, IT equipment, automotive, maritime and railway EMC standards as a class A device. The computer complies with the relevant IT equipment directives for the CE mark. Modification of the system may void the certifications. Testing includes: EN 55032, EN 55035, EN 60601-1, EN 62368-1, EN 60950-1, EN 50121-3-2, EN 60945 and UN Regulation No. 10 ISO 17650-2 & ISO 7637-2.

11.2. FCC Statement

This device complies with part 15 of the FCC rules as a Class A device. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

11.3. ISED

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-003(A) / NMB-003(A)

11.4. UKCA

The computer system was evaluated for medical, IT equipment, automotive, maritime and railway EMC standards as a class A device. The computer complies with the relevant IT equipment directives for the UKCA mark.

11.5. VCCI

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI). If this equipment is used in a domestic environment, radio interference may occur, in which case the user may be required to take corrective actions.

この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI-A

Appendices

Appendix A: Software Documentation

Additional documentation for the Helix 520 series including drivers, BIOS manuals, and configuration examples can be found on our support website.

[Link to Product Page]

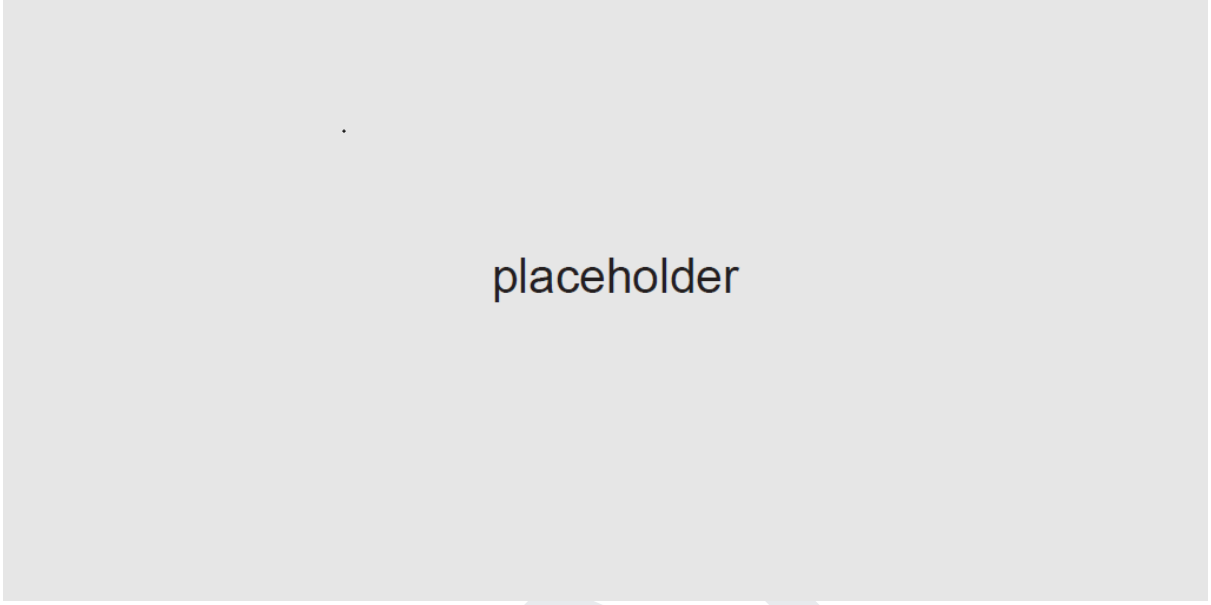
Appendix B: System Thermal Results

Testing Conditions

- Temperature Range:

- Step size: 10°C
- CPU, SSD, and RAM loaded

Results Summary



Appendix C: PoE Power Budget

The nominal power budget for all PoE ports on the HX520 series is provided below. These values are provided for room temperature operating conditions. Increased ambient temperature will limit the maximum safe operating power for the Helix 520 series. Please contact OnLogic for specific derating information for your installation.

	Mobo PoE Exp (2 ports)	Modbay 1 (3-4 ports)	Modbay 2 (3-4 ports)	Notes
12v	**802.3at Type II**	**802.3at Type II**	**802.3at Type II**	
24v	**802.3at Type II**	**802.3at Type II**	**802.3at Type II**	
Notes	**Combined power <30W**			

Appendix D: Expansion Port Pinouts

M.2 B-key Pinout

Pin	Function	Function	Pin
1	CONFIG_3	3.3V	2
3	GND	3.3V	4
5	GND	FULL_CARD_POWER_OFF#	6
7	USB 2.0 D+	W_DISABLE1#	8
9	USB 2.0 D-	NC	10
11	GND	KEY	12
13	KEY	KEY	14
15	KEY	KEY	16
17	KEY	KEY	18
19	KEY	NC	20
21	CONFIG_0	NC	22
23	NC	NC	24
25	NC	GPIO_10/W_DISABLE2#	26
27	GND	NC	28
29	PERn1/USB3.1-Rx-	UIM-RESET	30
31	PERp1/USB3.1-Rx+	UIM_CLK	32
33	GND	UIM_DATA	34
35	PETn1/USB3.1-Tx-	UIM_PWR	36
37	PETp1/USB3.1-Tx+	NC	38
39	GND	NC	40
41	PERn0/SATA-B+	NC	42
43	PERp0/SATA-B-	NC	44
45	GND	NC	46
47	PETn0/SATA-A-	NC	48
49	PETp0/SATA-A+	PERST#	50
51	GND	CLKREQ#	52
53	REFCLKn	PEWAKE#	54
55	REFCLKp	NC	56
57	GND	NC	58
59	NC	NC	60
61	NC	NC	62
63	NC	NC	64
65	NC	SIM_DETECT	66
67	RESET_N	SUSCLK	68
69	CONFIG_1	3.3V	70
71	GND	3.3V	72
73	GND	3.3V	74
75	CONFIG_2		

M.2 M-key Pinout

Pin	Function	Function	Pin
1			2
3			4
5			6
7			8
9			10
11			12
13			14
15			16
17			18
19			20
21			22
23			24
25			26
27			28
29			30
31			32
33			34
35			36
37			38
39			40
41			42
43			44
45			46
47			48
49			50
51			52
53			54
55			56
57			58
59			60
61			62
63			64
65			66
67			68
69			70
71			72
73			74
75			

M.2 E-key Pinout

Pin	Function	Function	Pin
1			2
3			4

5			6
7			8
9			10
11			12
13			14
15			16
17			18
19			20
21			22
23			24
25			26
27			28
29			30
31			32
33			34
35			36
37			38
39			40
41			42
43			44
45			46
47			48
49			50
51			52
53			54
55			56
57			58
59			60
61			62
63			64
65			66
67			68
69			70
71			72
73			74
75			

Appendix D: Errata

Overview

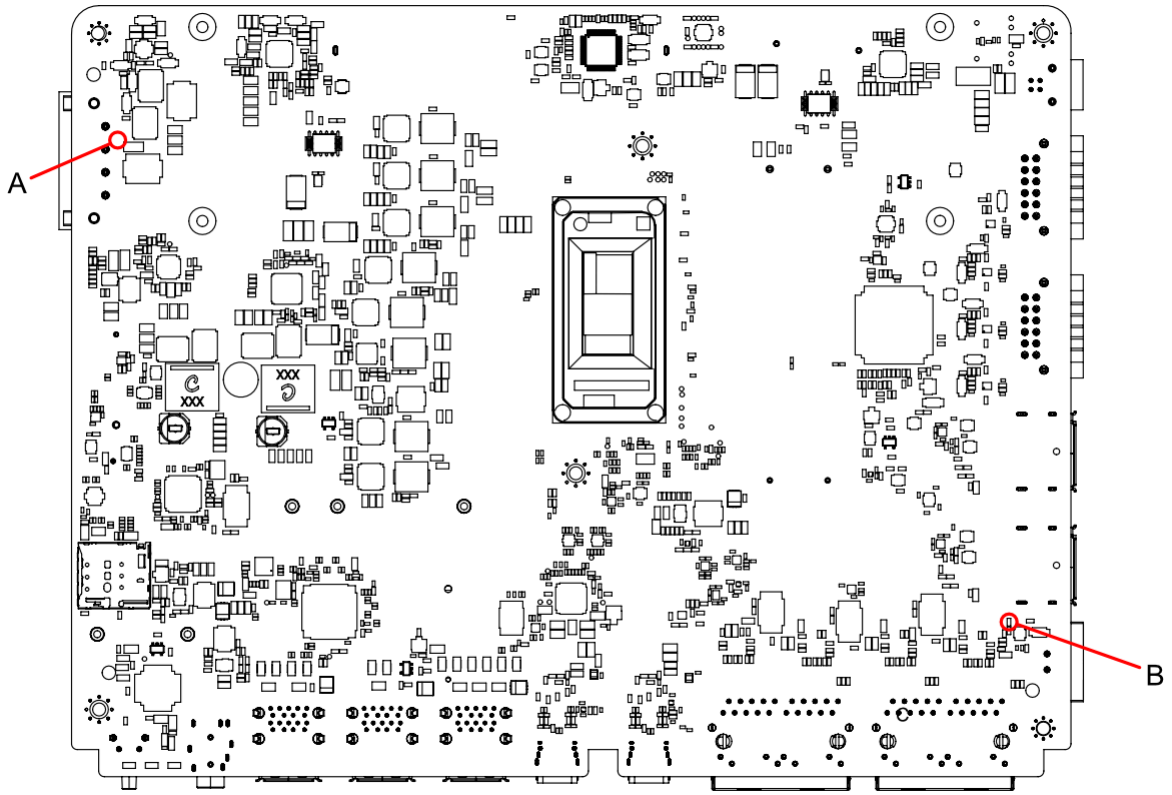
Category: x
SKU(s) Affected: x
Revision(s) Affected: x
Revision Resolved: x
Severity: x

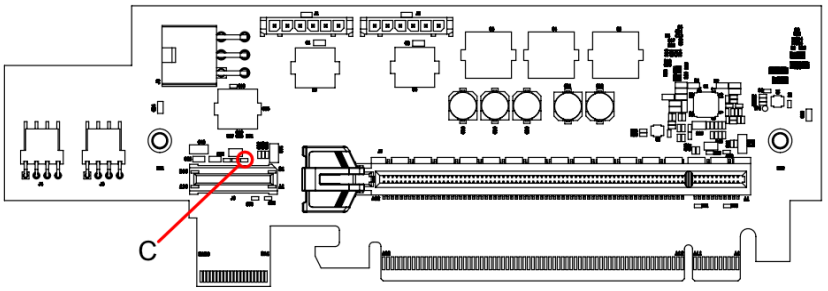
Description

Resolution

Appendix E: Motherboard Temperature Sensor Locations

ID	Definition	Description	Typical Temperatures
A	POWER_ENTRANCE_NTC	Temperature sensor near the power input connector on the CPU side of the motherboard	To be characterized
B	POWER_PWRBTN_NTC	Temperature sensor near remote switch and LAN connectors of the CPU side of the motherboard	To be characterized
C	RISER_TEMP_NTC	Temperature sensor located on the PCIe riser card near the aux power connector. Primary driver for the fan control scheme of the PCIe expansion bay.	To be characterized





Appendix F: Compliance Information

Do not open or modify the device. The device uses components that comply with FCC and CE regulations. Modification of the device may void these certifications.

Safe use and installation instructions

1. Install the device securely. Be careful handling the device to prevent injury and do not drop.
2. Equipment is intended for installation in the Restricted Access Area.
3. To protect against excessive RF exposure, maintain at least 20cm from any user and the RF antennas. Only use provided dual band antennas of 2dBi/2dBi gain.
4. Wall or ceiling mounting device requires use of a mounting plate or bracket. The plate or bracket must be of metal construction and have a minimum thickness of 1mm.

5. Use M4x0.5mm Flat Head screws to attach mounting plate or mounting brackets to threaded holes on bottom or rear of chassis. Screws should be a minimum length of 4mm. Add 1mm of screw length for every mm of additional thickness of plate or bracket beyond 1.5mm.
6. Safe operating temperature and non-condensing humidity ratings must be adhered to, please refer to the specifications table for safe operating temperature and humidity ratings.
7. Safe Storage temperature must be adhered to, please refer to the specifications table for safe storage temperature ratings.
8. Keep the device away from liquids and flammable materials.
9. Do not clean the device with liquids. The chassis can be cleaned with a cloth.
10. Allow at least 2 inches of space around all sides of the device for proper cooling. If the device is mounted to a vertical surface then recommended device orientation is so that heatsink fins allow air to rise unobstructed. Alternative orientations may result in reduced operational temperature range.
11. This device is intended for indoor operation only.
12. Use UL Listed external power supply with rated output 12-48Vdc.
13. Wiring methods used for the connection of the equipment to the mains supply shall be in accordance with the National Electrical Code, NFPA 70, and the Canadian Electrical Code, Part I, CSA C22.1.
14. Allow ample space for terminal block wiring connections such that the wires do not bend and are protected from accidental damage.
15. Install the device only with shielded network cables
16. Radio device is not intended for emergency service use.
17. Service and repair of the device must be done by qualified service personnel. This includes, but is not limited to, replacement of the CMOS battery. Replacement CMOS battery must be of the same type as the original.
18. Proper disposal of CMOS battery must comply with local governance.
19. Product must only be connected to a certified router, switch or similar network equipment
20. Product is intended for indoor use only.
21. Product cannot be connected to the public network.

WARNING: There is danger of explosion if the CMOS battery is replaced incorrectly. Disposal of battery into fire or a hot oven, or mechanically crushing or cutting of a battery can result in an explosion.

Précautions et guide d’installation

Ne pas ouvrir ou modifier l'appareil. L'appareil utilise des composants conformes aux réglementations FCC et EC. La modification de l'appareil peut annuler ces certifications.

1. Installez l'appareil en toute sécurité. Manipulez l'appareil avec précaution pour éviter de vous blesser et ne le laissez pas tomber.
2. L'équipement est destiné à être installé dans une zone à accès restreint
3. Pour vous protéger contre une exposition RF excessive, maintenez au moins 20 cm de tout utilisateur et des antennes RF. Utilisez uniquement les antennes double bande fournies avec un gain de 2 dBi/2 dBi.
4. Le dispositif de montage au mur ou au plafond nécessite l'utilisation d'une plaque ou d'un support de montage. La plaque ou le support doit être en métal et avoir une épaisseur minimale de 1 mm.
5. Utilisez des vis à tête plate M4x0,5 mm pour fixer la plaque de montage ou les supports de montage aux trous filetés au bas ou à l'arrière du châssis. Les vis doivent avoir une longueur minimale de 4 mm. Ajoutez 1 mm de longueur de vis pour chaque mm d'épaisseur supplémentaire de plaque ou de support au-delà de 1,5 mm.

6. La température ambiante de fonctionnement doit être comprise entre 0 °C et 45 °C avec une humidité relative sans condensation de 10 à 90 %.
7. L'appareil peut être stocké à des températures comprises entre -10 °C et 85 °C.
8. Gardez l'appareil à l'écart des liquides et des matériaux inflammables.
9. Ne nettoyez pas l'appareil avec des liquides. Le châssis peut être nettoyé avec un chiffon.
10. Laissez au moins 2 pouces d'espace autour de tous les côtés de l'appareil pour un refroidissement correct. Si l'appareil est monté sur une surface verticale, l'orientation recommandée de l'appareil est de sorte que les ailettes du dissipateur thermique permettent à l'air de monter sans obstruction. Des orientations alternatives peuvent entraîner une plage de températures de fonctionnement réduite..
11. Cet appareil est destiné à une utilisation en intérieur uniquement.
12. Utilisez une alimentation externe homologuée UL avec une sortie nominale de 12 à 48 Vdc.
13. Les méthodes de câblage utilisées pour le raccordement de l'équipement à l'alimentation secteur doivent être conformes au Code national de l'électricité, NFPA 70, et au Code canadien de l'électricité, Partie I, CSA C22.1.
14. Prévoyez suffisamment d'espace pour les connexions de câblage du bornier afin que les fils ne se plient pas et soient protégés contre les dommages accidentels.
15. Installez l'appareil uniquement avec des câbles réseau blindés.
16. L'appareil radio n'est pas destiné aux services d'urgence.
17. L'entretien et la réparation de l'appareil doivent être effectués par un personnel qualifié. Cela inclut, mais sans s'y limiter, le remplacement de la batterie CMOS. La batterie CMOS de remplacement doit être du même type que celle d'origine.
18. L'élimination appropriée de la batterie CMOS doit être conforme à la gouvernance locale.
19. Le produit doit uniquement être connecté à un commutateur de routeur.
20. Le produit est destiné à une utilisation en intérieur uniquement.
21. Le produit ne peut pas être connecté au réseau public.

ATTENTION: Il existe un risque d'explosion si la pile CMOS n'est pas remplacée correctement. L'élimination de la batterie dans le feu ou dans un four chaud, ou l'écrasement ou le découpage mécanique d'une batterie peut entraîner une explosion.

安全使用和安裝說明

請勿打開或修改設備。該設備使用符合FCC和CE法規的組件。修改設備可能會使這些認證無效。

牢固地安裝設備。小心處理設備以防止受傷，不要跌落。

設備旨在安裝在受限訪問區域。

為防止過度暴露於射頻，請與任何用戶和射頻天線保持至少 20 厘米的距離。僅使用提供的 2dBi/2dBi 增益的雙頻天線。

牆壁或天花板安裝設備需要使用安裝板或支架。板或支架必須是金屬結構，並且最小厚度為 1 毫米。

使用 M4x0.5mm 平頭螺釘將安裝板或安裝支架連接到機箱底部或後部的螺紋孔。螺釘的最小長度應為 4 毫米。超過 1.5mm 的板或支架每增加 1mm 的厚度，就增加 1mm 的螺釘長度。

環境工作溫度必須在 0 °C 至 45 °C 之間，非冷凝相對濕度為 10-90%。

該設備可在 -10 °C 至 85 °C 的溫度下儲存。

使設備遠離液體和易燃材料。

請勿使用液體清潔設備。機箱可以用布清潔。

在設備四周留出至少 2 英寸的空間，以便適當冷卻。如果設備安裝在垂直表面上，則推薦的設備方向是散熱片允許空氣暢通無阻地上升。替代方向可能會導致工作溫度範圍減小。

該設備僅適用於室內操作。

使用額定輸出為 24-36Vdc 的 UL 認證外部電源。

用於將設備連接到主電源的接線方法應符合國家電氣規範 NFPA 70 和加拿大電氣規範第 I 部分 CSA C22.1。

為端子塊接線連接留出足夠的空間，以使電線不會彎曲並防止意外損壞。

僅使用屏蔽網線安裝設備。

僅使用 SAE 批准的電纜進行汽車安裝。

安裝人員應具有售後安裝經驗並熟悉在車輛中安裝電子設備的一般做法。

該設備不應安裝在車輛的駕駛員區域。

該設備應按照公認的售後市場慣例和車輛安裝材料進行安裝。

僅使用 UL 列名的連接器連接汽車保險絲板。

無線電設備不適用於緊急服務。

設備的維護和修理必須由合格的服務人員進行。這包括但不限於更換 CMOS 電池。更換的 CMOS 電池必須與原裝電池的類型相同。

CMOS 電池的正確處置必須遵守當地的管理規定。

產品只能連接到路由器交換機。

產品僅供室內使用。

產品無法連接到公共網絡。

警告：如果 CMOS 電池更換不正確，有爆炸的危險。將電池丟入火中或熱烘箱中，或以機械方式壓碎或切割電池都可能導致爆炸。

8.6.4 警語(本體及說明書):須以中文標示。

警告:為避免電磁干擾, 本產品不應安裝或使用於住宅環境 Warning: To avoid electromagnetic interference, this product should not be installed or used in a residential environment