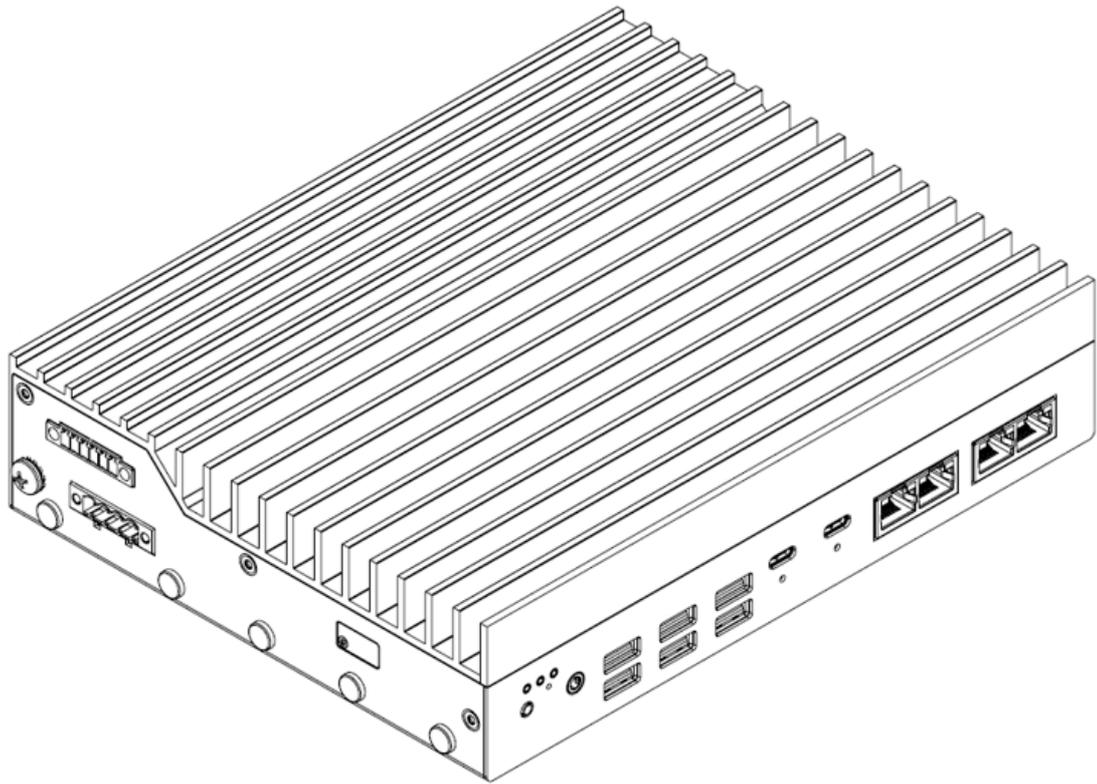


HX520 / K520

1- Product Overview

1.1- Introduction

The Helix and Karbon 520 Series computers harness the advanced power and integrated edge AI capabilities of Intel® Core™ Ultra processors, delivering highly scalable performance in a fanless, robust design. Engineered for the evolved edge, these systems offer versatile connectivity, including ModBay™ expansion, and robust reliability within their 0°C to 50°C and -40° to 70°C operating temperature ranges, to meet the demands of diverse industrial applications. Comprehensive features like cable retention and remote management capabilities (including Intel vPro®) ensure streamlined deployment and long-term operational efficiency.



HX521 Industrial Computer

For more information on accessories and additional features, visit the following product pages:

- <https://www.onlogic.com/store/computers/industrial/fanless/helix-500/> ↗
- <https://www.onlogic.com/store/computers/rugged/karbon-520/> ↗

1.2- Safety

- > [Safety Precautions, Safeguards & Information](#)
- > [Précautions de sécurité, sauvegardes et informations](#)
- > [安全預防措施、保障措施和訊息](#)

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

1.3- Box Contents & Accessories

Any included or additional accessories, such as mounting brackets, power supplies, or antennas, are located in the accessory box at the bottom of the system box. All drivers and product guides can be found on the product's dedicated webpage.

1.4- Product Specifications

Feature	HX520 Series	K520 Series
Variants	<p>HX521 - Base System</p> <p>HX522 - SATA/HotSwap Expansion</p> <p>HX523 - ModBay Expansion</p> <p>HX524 - PCIe Expansion</p> <p>HX525 - MXM Expansion</p>	<p>K521 - Base System</p> <p>K522 - SATA/HotSwap Expansion</p> <p>K523 - ModBay Expansion</p> <p>K524 - PCIe Expansion</p> <p>K525 - MXM Expansion</p>
Processor	<p>MTL-H Core Ultra 5 125H</p> <p>MTL-H Core Ultra 5 135H</p> <p>MTL-H Core Ultra 7 165H</p> <p>ARL-H Core Ultra 5 225H</p> <p>ARL-H Core Ultra 7 265H</p>	<p>MTL-H Core Ultra 5 125H</p> <p>MTL-H Core Ultra 5 135H</p> <p>MTL-H Core Ultra 7 165H</p> <p>ARL-H Core Ultra 5 225H</p> <p>ARL-H Core Ultra 7 265H</p>
Memory	2x DDR5 5600 SO DIMM Up to 96GB Total	2x DDR5 5600 SO DIMM Up to 96GB Total
Integrated Graphics	<p>Intel UHD Graphics</p> <p>Intel Arc (Dual Channel Memory Required)</p>	<p>Intel UHD Graphics</p> <p>Intel Arc (Dual Channel Memory Required)</p>
Front I/O	<p>1x Power Button</p> <p>1x Factory Reset Switch</p> <p>1x 3.5mm Audio Jack</p> <p>6x USB 3.2 Gen 2 (Type A)</p> <p>2x Thunderbolt 4, USB Type C (40 Gb/s)</p> <p>4x 2.5Gb LAN</p>	<p>1x Power Button</p> <p>1x Factory Reset Switch</p> <p>1x 3.5mm Audio Jack</p> <p>6x USB 3.2 Gen 2 (Type A)</p> <p>2x USB4, USB Type C (40 Gb/s)</p> <p>4x 2.5Gb LAN</p>
Top I/O	<p>1x 4 pin Terminal Block Power</p> <p>1x 3ff SIM Slot (Mapped to M.2 B-Key)</p>	<p>1x 5 pin Terminal Block Power</p> <p>1x 3ff SIM Slot (Mapped to M.2 B-Key)</p>

	5x Antenna Mounting Holes 1x Grounding Lug	5x Antenna Mounting Holes 1x Grounding Lug
Bottom I/O	1x Remote Switch 2x DisplayPort 2.1 UHBR20 2x Dual COM (RS-232, RS-485, RS-422) 1x Fan Hat Connector	1x Remote Switch 2x DisplayPort 2.1 UHBR20 2x Dual COM (RS-232, RS-485, RS-422) 1x Fan Hat Connector
Expansion & Storage	1x M.2 M-Key 2280/2260 (PCIe Gen4 x4) 1x M.2 E-Key 2230 (WiFi), PCIe Gen4 x1, USB2.0) 1x M.2 B-Key 3042/3052/2280 (PCIe Gen4 x2, USB2.0 or PCIe Gen4 x1, USB3.2 Gen 1 or SATA III, USB3.2 Gen 1) 1x PCIe Gen5 x16 mechanical/x8 electrical FHHL	1x M.2 M-Key 2280/2260 (PCIe Gen4 x4) 1x M.2 E-Key 2230 (WiFi), PCIe Gen4 x1, USB2.0) 1x M.2 B-Key 3042/3052/2280 (PCIe Gen4 x2, USB2.0 or PCIe Gen4 x1, USB3.2 Gen 1 or SATA III, USB3.2 Gen 1) 1x PCIe Gen5 x16 mechanical/x8 electrical FHHL
Special Features	1x Kensington Lock	1x Kensington Lock
Optional Add-On Modules	1x 8 Pin Isolated CAN 1x 20 Pin Isolated DIO	1x 8 Pin Isolated CAN 1x 20 Pin Isolated DIO
Operating Systems	Windows 11 IoT Enterprise LTSC2024 Windows 11 Pro (Pending Intel Enablement) Ubuntu 24.04 Desktop/Server Red Hat Enterprise Linux 9.6+ / Red Hat Enterprise Linux 10.0+ (HX520 Series)	Windows 11 IoT Enterprise LTSC2024 Windows 11 Pro (Pending Intel Enablement) Ubuntu 24.04 Desktop/Server Red Hat Enterprise Linux 9.6+ / Red Hat Enterprise Linux 10.0+ (K520 Series)
LAN Controllers	4x I226-V (Core Ultra 5 125H/225H)	4x I226-IT

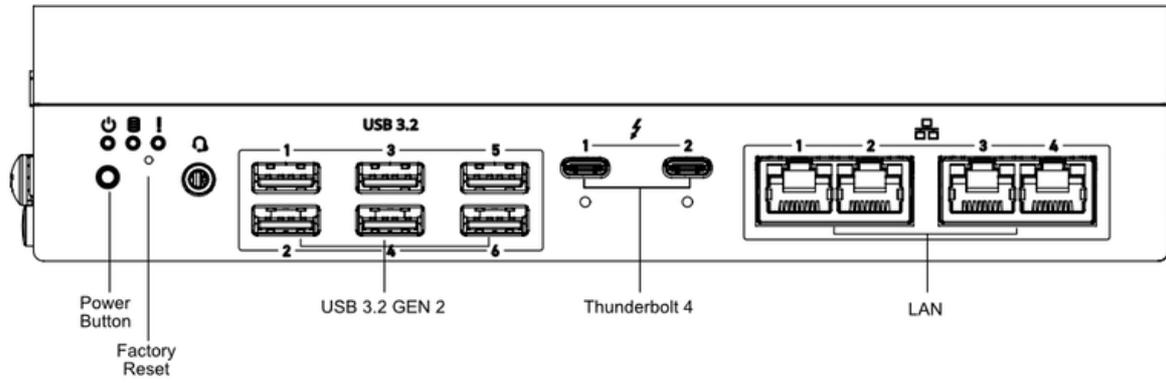
	3x I226-V, 1x I226-LM (Core Ultra 7 165H/265H & Core Ultra 5 135H/235H)	
Antenna Holes	6x Antenna holes	6x Antenna holes
Voltage Input	Rated Input 12-24VDC HX521 Rated Input 12-24VDC HX522 Rated Input 19-24VDC HX523/4/5	Rated Input 12-48VDC K521 Rated Input 12-48VDC K522 Rated Input 19-48VDC K523/4/5
Dimensions	HX521: 50.8mm x 177 mm x 225mm HX522/523/524/525: 108mm x 177mm x 225mm	K521: 50.8mm x 177 mm x 225mm K522/523/524/525: 108mm x 177mm x 225mm
Mounting	DIN VESA In-Line VESA Wall	DIN VESA In-Line VESA Wall
Operating Temperature	0°C to 50°C	-40°C to 70°C
Storage Temperature	-40°C to 85°C	-40°C to 85°C
Operating Humidity	5% to 95% Non-Condensing	5% to 95% Non-Condensing

Category	Certification / Standard
	UL/IEC CB Scheme 62368-1 Product Safety EU Low Voltage Directive 2014/35/EU
	FCC 47 CFR Part 15 Subpart B (Class A)
	EN 55032 CISPR 32/EN 55035 CISPR 35/EN 55035 Radio Equipment Directive (2014/53/EU)
	RoHS Directive (2011/65/EU, (EU)2015/863)
	WEEE Directive (2012/19/EU)
	IEC60601-1-2, 4th ed.
	EN 60945, 4th ed.

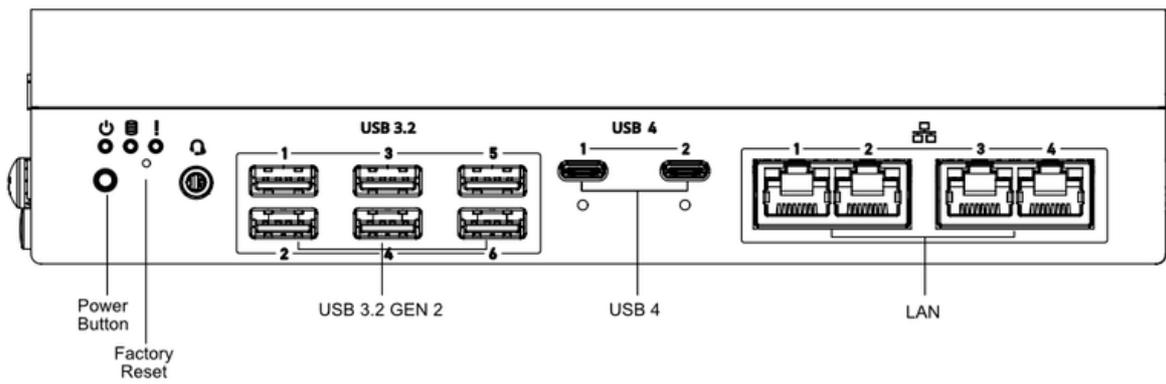
2- Technical Specifications

2.0- External Features

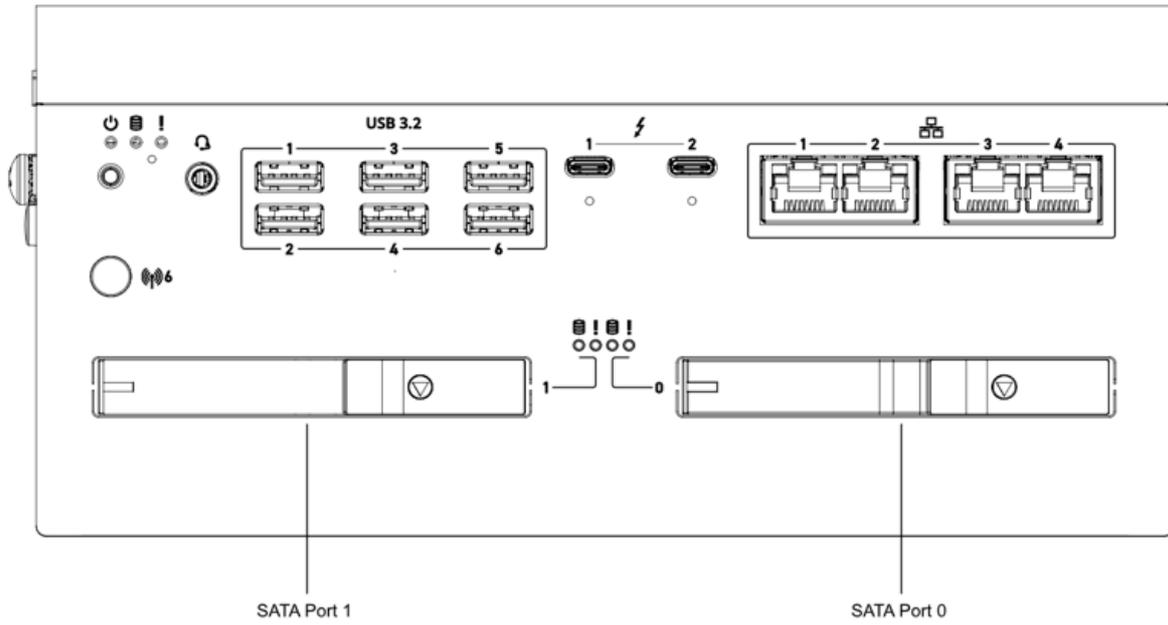
Front I/O (HX521)



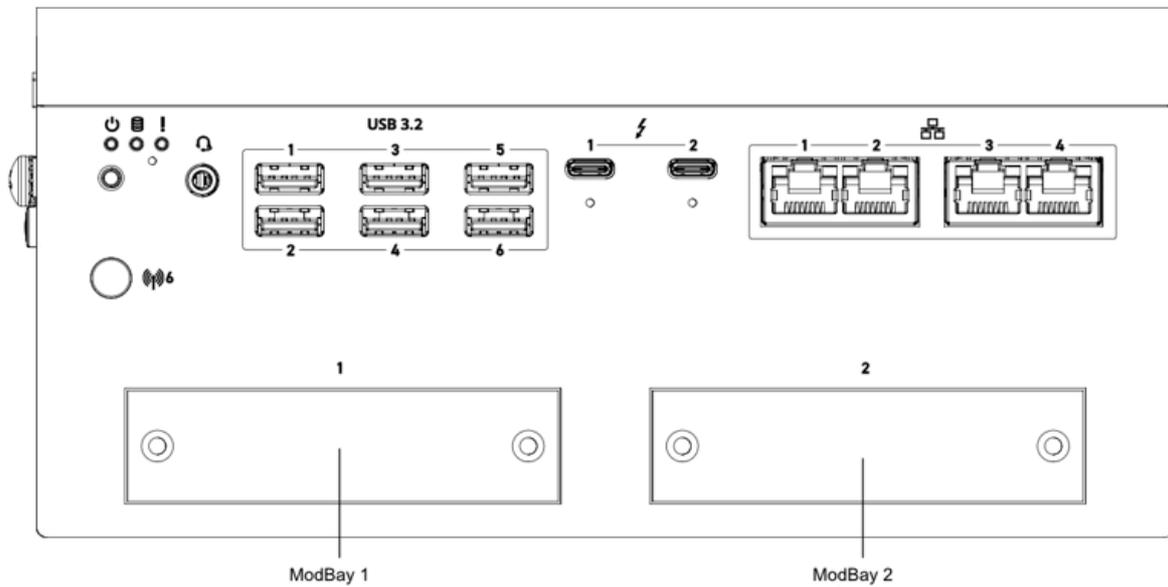
Front I/O (K521)



Front I/O (HX522 / K522 Only)

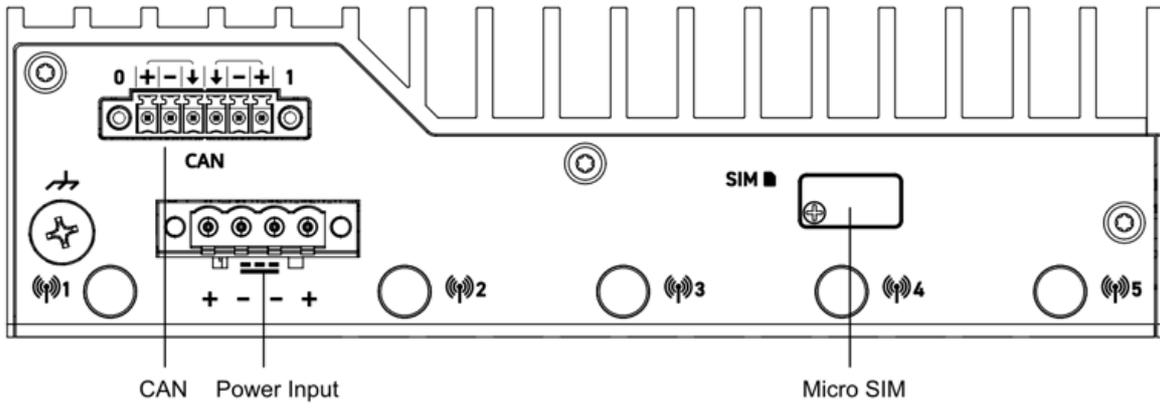


Front I/O (HX523 / K523 Only)

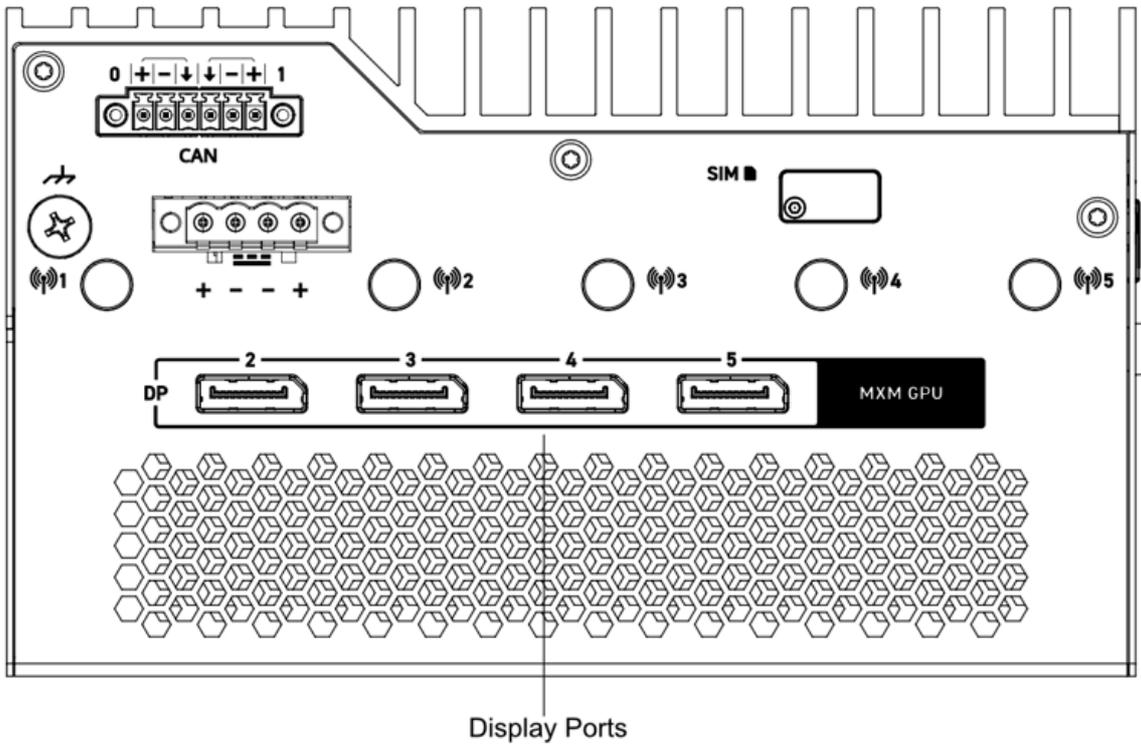


Top I/O

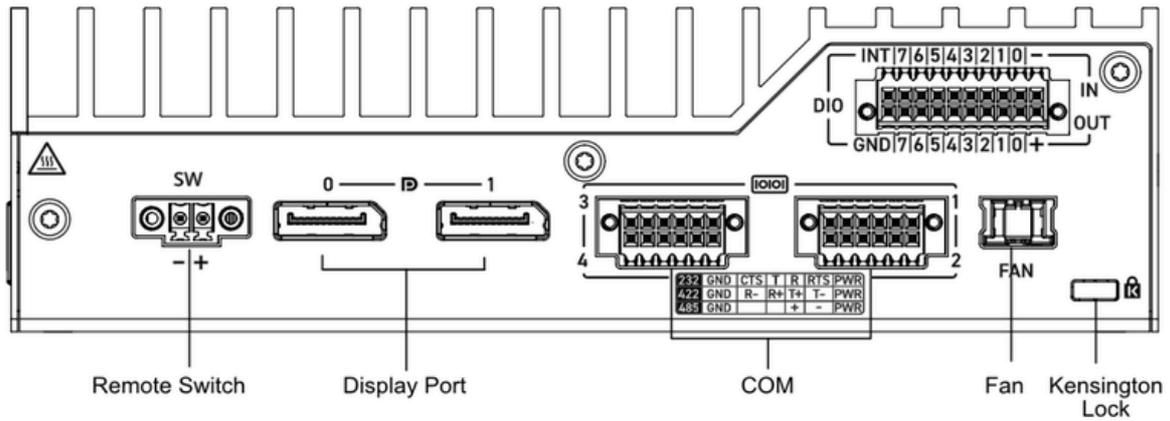
Top I/O (HX521 / K521 Only)



Top I/O (HX525 / K525 Only)



Bottom I/O



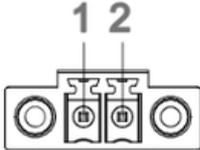
2.1- I/O Definitions

Serial Ports

	COM	Pin	RS-232	RS-422	RS-485
	COM 1 / COM 3	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 / COM 4	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*	
<i>NC = Not Connected</i>					

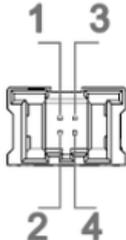
Note: Pin 6 and 12 are motherboard GND pins.

Remote Switch

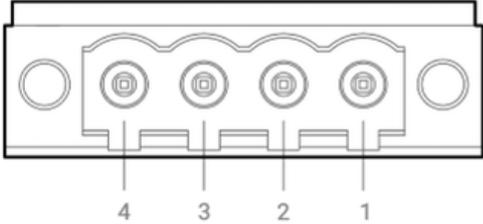
	Pin	Definition
	1	SW+
	2	GND*

Note: Pin 2 or the "-" label is the motherboard GND pin.

External Fan

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

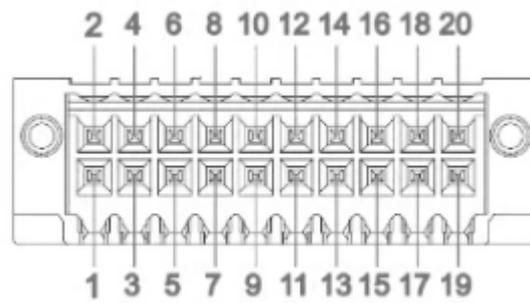
Terminal Block Power (HX520 Series)

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

Terminal Block Power (K520 Series)

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

Optional Isolated DIO Expansion



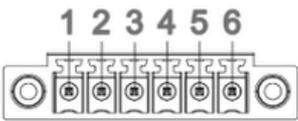
Pin	Definition	Pin	Definition
1	ISO_GND*	2	V_DIO+
3	In0	4	Out0
5	In1	6	Out1
7	In2	8	Out 2
9	In3	10	Out3
11	In4	12	Out4
13	In5	14	Out5
15	In6	16	Out6
17	In7	18	Out7
19	Intrusion	20	ISO_GND*

Note: Pin 1 and pin 20 are isolated DIO ground pins, which are different from the motherboard GND. It is not recommended to connect them directly to the motherboard GND unless your application requires it.

 Additional information can be found in the [HX520 / K520 MCU Manual](#)

Optional Isolated CAN Expansion

Pin	Definition
1	CAN1_H ¹
2	CAN1_L ²
3	ISO1_GND ³
4	ISO2_GND ³
5	CAN2_L ²
6	CAN2_H ¹



Notes:

1. The CAN H pins are labeled "+" on the system.
2. The CAN L pins are labeled "-" on the system.
3. The ISO GND pins are labeled with the GND symbol on the system, however both are independent isolated grounds. It is not recommended to connect them together if both CAN bus channels are not on the same network.

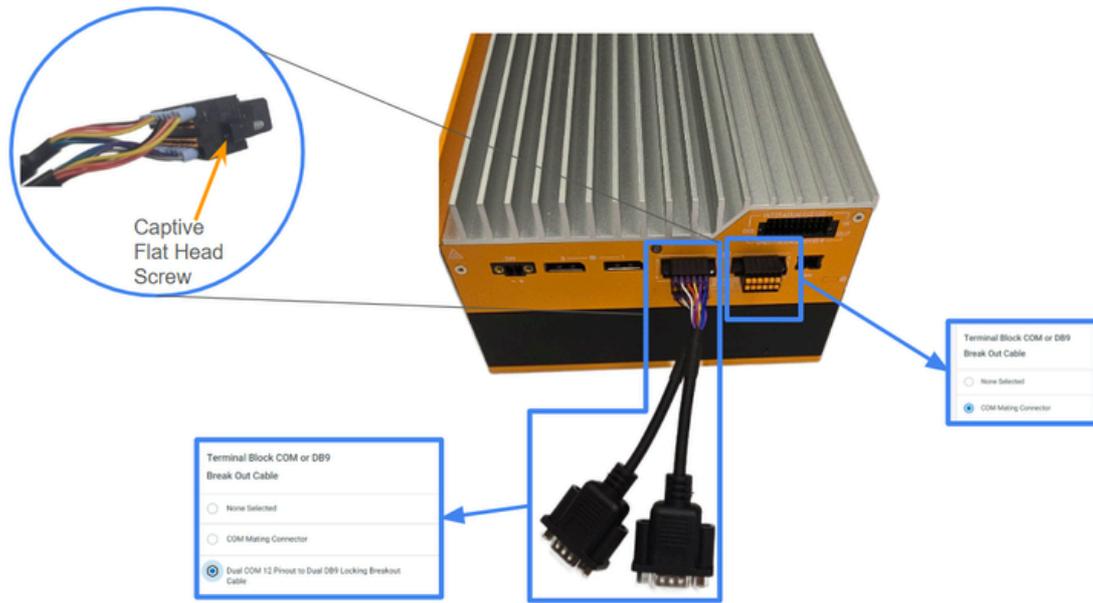
 Additional information can be found in the [HX520 / K520 MCU Manual](#)

Optional 2x DB9 Serial Breakout Cable

The CBDT122 serial breakout cable converts an HX520/K520 serial connector to two DB9 connectors.

Pin	RS-232	RS-422	RS-485
1	NC	NC	NC
2	RX	TX+	TX+/ RX+
3	TX	RX+	NC
4	NC	RX-	NC
5	GND	NC	NC
6	NC	NC	NC
7	RTS	TX-	TX-/ RX-
8	CTS	RX-	NC
9	RI/PWR	NC/PWR	NC/PWR

This image shows the difference between the 2x DB9 Breakout Cable and the standard COM Mating Connector:



LEDs

Status LEDs

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

Power LED Definition

- **Off:** Power off.
- **Slow Blink (1/3Hz):** Low/Standby Power State.
- **On:** Power On/Normal Power State.
- **Fast blink (25Hz):** GPU Power Brake Active.

Drive Activity LED

- **Blinking:** Read/Write activity on m.2 storage device.

Error LED Definition

- **Slow Blinking (0.5Hz):** Boot Issue (no boot device found).
- **Fast Blinking (4Hz):** Voltage fault.
- **Solid:** Memory Fault or no DIMMs installed.

Status LEDs (HX522/K522 Only)

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

Network Activity LEDs

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

USB Ports (Type A)

The Helix and Karbon 520 Series have six USB 3.2 Gen 2 Type A ports (10 Gbps, 5V @ 900mA). Optional ModBay cards can add up to eight more USB 3.2 Gen2 Ports.

Thunderbolt 4 (USB-C) (HX520 Series Only)

The Helix 520 Series has two Thunderbolt Gen 4 compliant ports (40 Gbps). Maximum 5V@3A/port or 5V@4.5A total for 2 ports. Single port maximum power is 15W and 2 ports maximum power is 22.5W.

USB 4 (USB-C) (K520 Series Only)

The Karbon 520 Series has two USB 4 ports (40 Gbps). Maximum 5V@3A/port or 5V@4.5A total for 2 ports. Single port maximum power is 15W and 2 ports maximum power is 22.5W.

DisplayPort

The Helix and Karbon 520 Series have two full-size DisplayPorts, both supporting DP 2.1 up to UHBR20. Please refer to Intel documentation for additional Core Ultra Series 1 and Core Ultra Series 2 display output specifications:

<https://ark.intel.com/> ↗.

SIM Cards

The Helix and Karbon 520 Series have 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.

Factory Reset

The Helix and Karbon 520 Series allow 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.

LAN 4 (vPRO) - i226-LM / i226-IT

The Intel i226 LAN Port on the Helix 520 (i226-LM) and Karbon 520 (i226-IT) Series support up to 2.5Gbps link speeds over standard shielded CAT5e or CAT6 cables. The connector is the industry standard RJ45 connector. This port also features Intel's vPro® technology enabling remote out-of-band management and security features (supported on motherboards with Intel Core Ultra 5 135H and Intel Core Ultra 7 165h/265H Processors). The LAN link state is shown by the two LEDs on the port. The description of LED activity is shown in section 6.4.3 above.

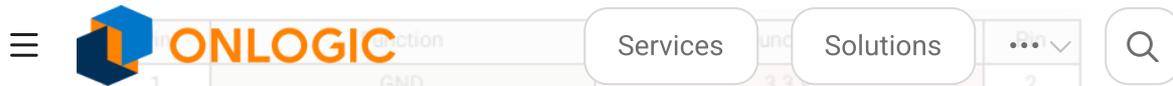
For instructions on enabling vPro/AMT on the Helix 520 and Karbon 520 Series of systems, refer to the [HX520/K520 Series BIOS Manual](#).

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+	PLN#/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	VIO_CFG/GND	3.3V	74
75	CONFIG_2		

M.2 M-key Pinout



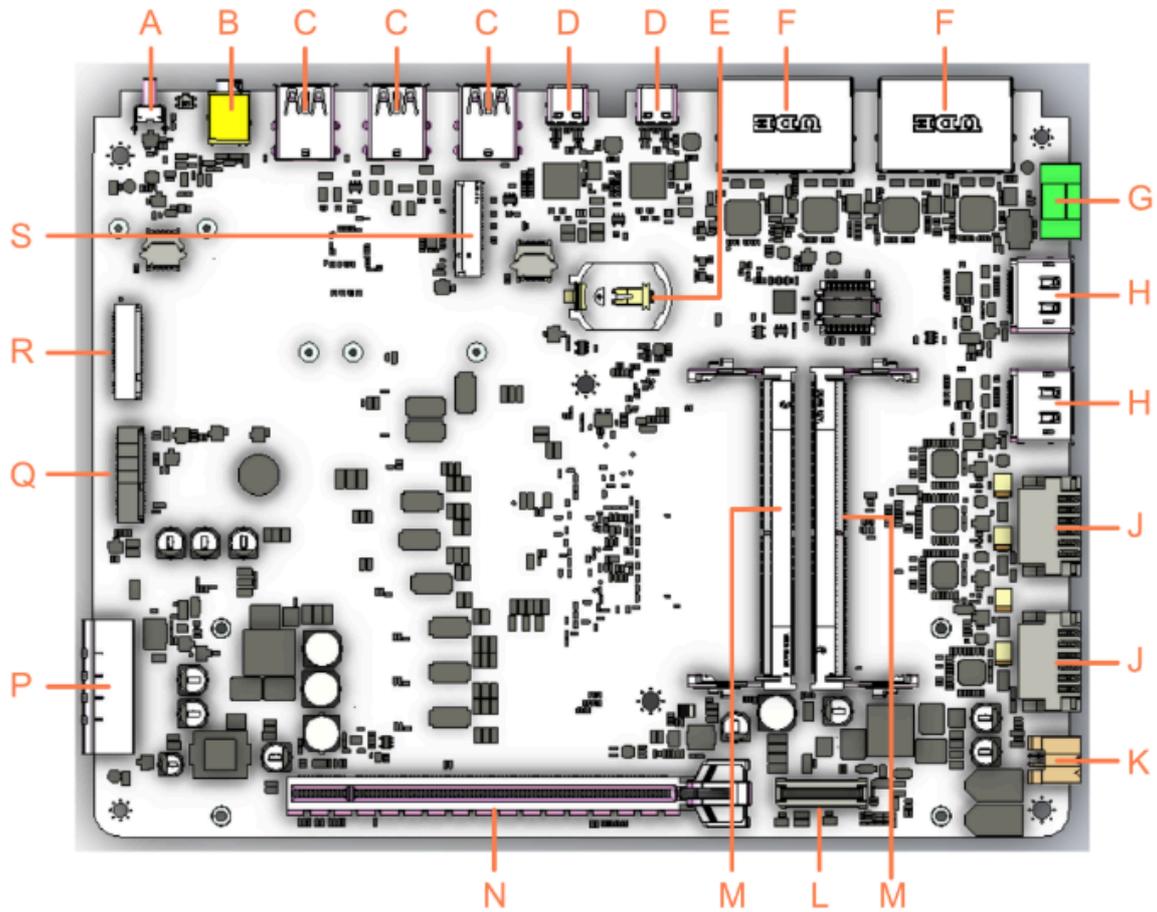
1	GND	3.3 V	2
3	GND	3.3 V	4
5	PERn3	NC	6
7	PERp3	NC	8
9	GND	DAS/DSS (I/O)/LED_1# (I)(0/3.3V)	10
11	PETn3	3.3 V	12
13	PETp3	3.3 V	14
15	GND	3.3 V	16
17	PERn2	3.3 V	18
19	PERp2	NC	20
21	GND	NC	22
23	PETn2	NC	24
25	PETp2	NC	26
27	GND	NC	28
29	PERn1	NC	30
31	PERp1	NC	32
33	GND	NC	34
35	PETn1	NC	36
37	PETp1	DEVSLP (0)	38
39	GND	SMB_CLK (I/O)(0/1.8V)	40
41	PERn0/SATA-B+	SMB_DATA (I/O) (0/1.8V)	42
43	PERp0/SATA-B-	ALERT# (I) (0/1.8V)	44
45	GND	NC	46
47	PETn0/SATA-A-	NC	48
49	PETp0/SATA-A+	PERST# (0)(0/3.3V) or NC	50
51	GND	CLKREQ# (I/O)(0/3.3V) or NC	52
53	REFCLKn	PEWAKE# (I/O)(0/3.3V) or NC	54
55	REFCLKp	NC	56
57	GND	NC	58
	CONNECTOR Key M	CONNECTOR Key M	
	CONNECTOR Key M	CONNECTOR Key M	
	CONNECTOR Key M	CONNECTOR Key M	
	CONNECTOR Key M	CONNECTOR Key M	
67	NC	SUSCLK(32kHz) (0)(0/3.3V)	68
69	PEDET (NC-PCIe/GND-SATA)	3.3 V	70
71	GND	3.3 V	72
73	VIO_CFG/GND	3.3 V	74
75	GND		

M.2 E-key Pinout

Pin	Function	Function	Pin
1	GND	3.3 V	2
3	USB_D+	3.3 V	4
5	USB_D-	NC	6
7	GND	PCM_CLK	8
9	RESERVED	CNV_RF_RESET#_R	10
11	RESERVED	BT_PCMIN	12
13	GND	BT_PCMOUT	14
15	RESERVED	NC	16
17	RESERVED	VIO_CFG/GND	18
19	GND	NC	20
21	RESERVED	RESERVED	22
23	RESERVED	KEY	24
25	KEY	KEY	26
27	KEY	KEY	28
29	KEY	KEY	30
31	KEY	RESERVED	32
33	GND	RESERVED	34
35	PETp0	RESERVED	36
37	PETn0	RESERVED	38
39	GND	RESERVED	40
41	PERp0	RESERVED	42
43	PERn0	RESERVED	44
45	GND	RESERVED	46
47	REFCLKp0	RESERVED	48
49	REFCLKn0	SUSCLK(32kHz)	50
51	GND	PERST0#	52
53	CLKREQ0#	W_DISABLE2#	54
55	PEWAKE0#	W_DISABLE1#	56
57	GND	NC	58
59	RESERVED	NC	60
61	RESERVED	NC	62
63	GND	RESERVED	64
65	RESERVED	NC	66
67	RESERVED	NC	68
69	GND	NC	70
71	RESERVED	3.3V	72
73	RESERVED	3.3V	74
75	GND		

2.2- Motherboard Connectors

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) *HX520 Series) USB 4 (40Gb/s) (USB-C)(2x) *K520 Series)
E	CMOS Battery
F	2.5 GbE LAN ports (4x)
G	Remote Switch
H	DisplayPorts (2x)
J	COM RS-232/422/485 ports (2x)
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
S	M.2 M-Key PCIe Gen4 x4

Please Note: There is a difference in labeling of front USB C ports between the HX520 series and K520 series. The HX520 series carries a Thunderbolt 4 logo while the K520 Series carries a USB 4 logo.

M.2 2260/2280 M-key

This slot supports PCIe Gen 4 x4 and is designed for NVMe or storage drives. A full pinout table for this expansion slot is provided in the [Expansion Port Pinouts](#).

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 one SIM card input 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 the [Expansion Port Pinouts](#).

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)

M.2 2230 E-key

This slot supports PCIe Gen 4 x1 and USB 2.0 signals and is designed for M.2 2230 Wi-Fi expansion cards.

PCIe Gen 5.0 Connector (x16 Physical/x8 Electrical)

The systems have one PCIe x16 connector on the motherboard. It is used with OnLogic risers for various PCIe configurations in models HX/K522/3/4/5.

PCIe x16 (x16 Physical/x8 Electrical) for HX/K523/4/5

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.

DDR5 SO-DIMM Slots

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

2.3- Power Management

Power Consumption

The power consumption of the Helix 520 Series was measured for various system configurations, workloads, and power states at a 24V system input voltage. Tests were conducted using Furmark and Burnintest v9.0 to stress system components. These tests were performed with Intel Turbo Boost Enabled. The build configurations and power consumption are listed in the tables below. The power consumption listed below is the average power draw over a 5 minute window from the test start. This includes a brief period of PL2 power levels (Intel turbo Boost) where the power consumption is elevated. The highest power consumption seen during the period of turbo PL2 is shown at the bottom of each table. The data collected is similarly representative of systems in the Karbon 520 series.

System Configuration	HX521/K521	HX522/K522	HX523/K523	HX524/K524	HX525/K524
CPU	Meteor Lake i7 (165H)	Meteor Lake i7 (165H)	Meteor Lake i7 (165H)	Meteor Lake i7 (165H)	Meteor Lake i7 (165H)
Memory 1	TS4GSA64V4E-I				
Memory 2	-	-	TS4GSA64V4E-I		
M.2M Slot	DGM28-04TDP1KWCEF-H-27W				
M.2B Slot	-	-	TS2TMTS970T-I	TS2TMTS970T-I	DEM28-02TDK1KWA QF
M.2E Slot	-	-	BE200.NGWG		INT-AX210-NGWGIE
LAN 1	Connected 1GbE				
LAN 2	-	Connected 1GbE			
LAN 3	-	-	-	-	-
LAN 4	-	-	-	-	-
USB Expansion 1	CAN CARD				
USB Expansion 2	DIO CARD				
PCIe x16 MB	-	Sata Riser Card	Gen5 Riser Card		
PCIe x16 Riser	-	Sata Carrier Card	2xModbay Carrier Card	-	MXM Carrier Card
Sata 0	-	TS4TSSD470K-I	-	-	-
Sata 1	-	TS4TSSD470K-I	-	-	-
Modbay 0	-	-	4LAN PoE	-	-
Modbay 1	-	-	4LAN PoE	-	-
PCIe x16 Expansion	-	-	-	Nvidia A4000	Aetina A4500
Monitor Display	2 DP	2 DP	2 DP	1 DP + 2 Mini DP	1 DP + 2 DP

The power consumption for each system configuration is recorded below.

HX521/K521 Config Measurements (24V Power Input)	
Power Consumption	Avg [W]
Shutdown PG3	0.1
Shutdown S5	3.1
Hibernate S4	3.1
Sleep S3	3.9
Windows Idle	13.1
Windows + BIT Test	44.1

HX521/K521 Config Measurements (24V Power Input)	
Power Consumption	Avg [W]
Shutdown PG3	0.1
BIT Test + Furmak** 2 USB-C & 5 USB-A fully loaded	95.4

HX522/K522 Config Measurements (24V Power Input)	
Power Consumption	Avg [W]
Shutdown PG3	0.1
Shutdown S5	3.1
Hibernate S4	3.3
Sleep S3	4.3
Windows Idle	19.3
Windows + BIT Test	51.2
BIT Test + 2 USB-C & 5 USB-A fully loaded	101.6

HX523/K523 Config Measurements (24V Power Input)	
Power Consumption	Avg [W]
Shutdown PG3	0.2
Shutdown S5	6.4
Hibernate S4	6.4
Sleep S3	9
Windows Idle	40.1
Windows + BIT Test	72.7
BIT Test + 2 USB-C & 5 USB-A fully loaded	122.3
Windows + BIT Test + PoE fully loaded	183.5
Windows + BIT Test + 2 USB-C & 5 USB-A fully loaded + PoE fully loaded	233.3

HX524/K524 Config Measurements (24V Power Input)	
Power Consumption	Avg [W]
Shutdown PG3	0.1
Shutdown S5	4.2
Hibernate S4	4.3
Sleep S3	5.1
Windows Idle	41.8
Windows + BIT Test	95.4
BIT Test + 2 USB-C & 5 USB-A fully loaded	147.1

HX525/K525 Config Measurements (24V Power Input)	
Power Consumption	Avg [W]
Shutdown PG3	0.1
Shutdown S5	4.4
Hibernate S4	4.5
Sleep S3	5.9
Windows Idle	38.7
Windows + BIT Test	141.8
BIT Test + 2 USB-C & 5 USB-A fully loaded	175.5

Wake-Up Events

The Helix and Karbon 520 Series support 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	S5, S4, S3*	Must be enabled in BIOS[cite: 324].
USB Type C / Thunderbolt	S5, S4, S3*	Only supported with Thunderbolt vPro Docking system[cite: 324].
USB Type A	S3*	

**Only supports legacy S3*

Protection Circuitry

The DC voltage levels specified are the absolute maximum allowable values for the system to function safely. The protection circuitry allows for brief transient voltages above these levels.

Parameter	HX520 Series	K520 Series
Nominal operating voltage	12-24V	12-48V
Maximum safe DC voltage	28.8V	57.6V
Minimum safe reverse voltage	-24V	-48V

GPU Power Brake

When an external GPU card is installed, the MCU will start monitoring the input voltage. The GPU power brake will be asserted when the input voltage is less than 15.6V to avoid excessive current draw from the power source in order to protect the power cable and input connector from damage. This GPU power brake will be de-asserted when the input voltage is higher than 17.1V.

Assertion of the GPU Power Brake is necessary at low voltages where high power draw from CPU, GPU, and platform devices would result in high input currents that may exceed ratings of the power connectors. The GPU brake will limit GPU power at these voltages until input voltage is returned to safe levels.

When the power brake is activated, the power LED blinks at 25 Hz.

2.4- Add-in Modules

ModBay Expansion

ModBay 4x LAN Expansion

The 4x LAN Expansion (MODBAY-4LAN02) adds additional RJ45 GbE LAN ports to the HX523 and K523. This ModBay uses dedicated Intel I210-IT network controllers for each port which support speeds up to 1 Gbps.

Operating Temperature: HX523 0°C to 50°C

Operating Temperature: K523 -40°C to 70°C

ModBay 4x PoE Expansion

The 4x PoE Expansion (MODBAY-4POE01) adds RJ45 GbE PoE LAN ports to the HX523 and K523. Each port supports up to 1 Gbps and PoE output. PoE power budget depends on system power input.

Operating Temperature: HX523 0°C to 50°C

Operating Temperature: K523 -40°C to 70°C

ModBay 3x M12 LAN Expansion

The 3x M12 LAN Expansion (MODBAY-M12LAN01) adds additional M12 X-coded GbE LAN ports to the HX523 and K523. 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: HX523 0°C to 50°C

Operating Temperature: K523 -40°C to 70°C

ModBay 3x M12 PoE Expansion

The 3x M12 PoE Expansion (MODBAY-M12POE01) adds additional M12 X-coded GbE PoE LAN ports to the HX523. 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: HX523 0°C to 50°C

Operating Temperature: K523 -40°C to 70°C

ModBay 2x 10Gb LAN Expansion

The 2x 10Gb LAN Expansion (MODBAY-10GLAN01) adds RJ45 10 GbE LAN ports to the HX523. 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: HX523 0°C to 40°C

Operating Temperature: K523 -40°C to 40°C

ModBay 4x USB3 Expansion

The 4x USB3 Expansion (MODBAY-04USB-02) adds additional USB 3.2 Gen 2 Type-A ports to the HX523. This ModBay uses two USB controllers which support individual port speeds up to 10 Gbps and a maximum combined speed up to ~26 Gbps across all ports. The controllers are the PCI11400 (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 sleep and are not active in Hibernate system states.

Operating Temperature: HX523 0°C to 50°C

Operating Temperature: K523 -40°C to 70°C

PoE Power Budget

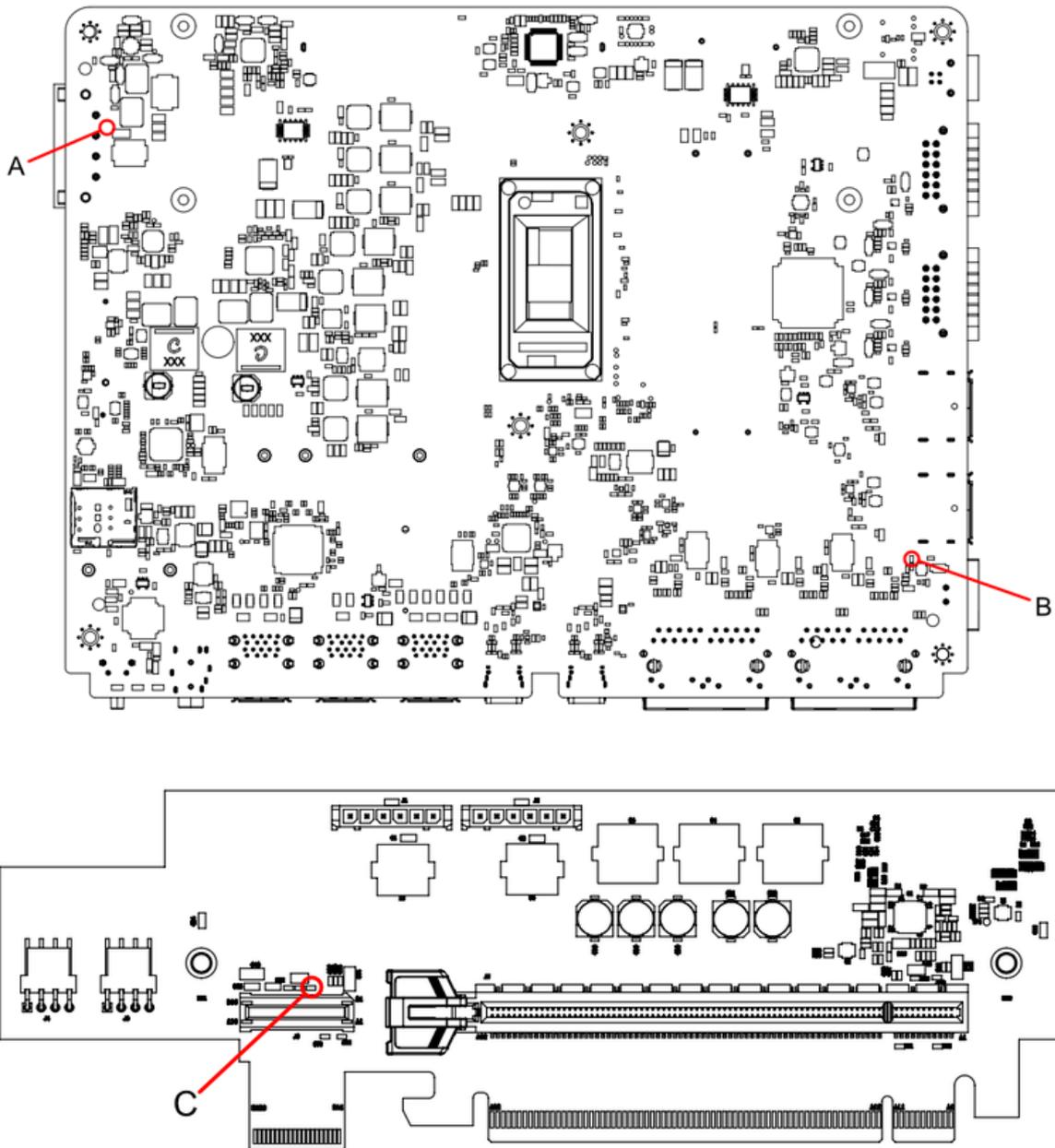
The nominal power budget for all PoE ports on the Helix 520 and Karbon 520 Series is provided below. These values are provided for room temperature operating conditions. Please contact OnLogic for specific derating information for your installation.

Input Voltage	ModBay 1 Power Budget	ModBay 2 Power Budget	Notes
12V	30W	N/A	Vadc
24V	60W	60W	
48V	90W	90W	K520 Series Only

2.5- System Thermals

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	Not Characterized
B	POWER_PWRBTN_NTC	Temperature sensor near remote switch and LAN connectors of the CPU side of the motherboard	Not 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.	Not Characterized

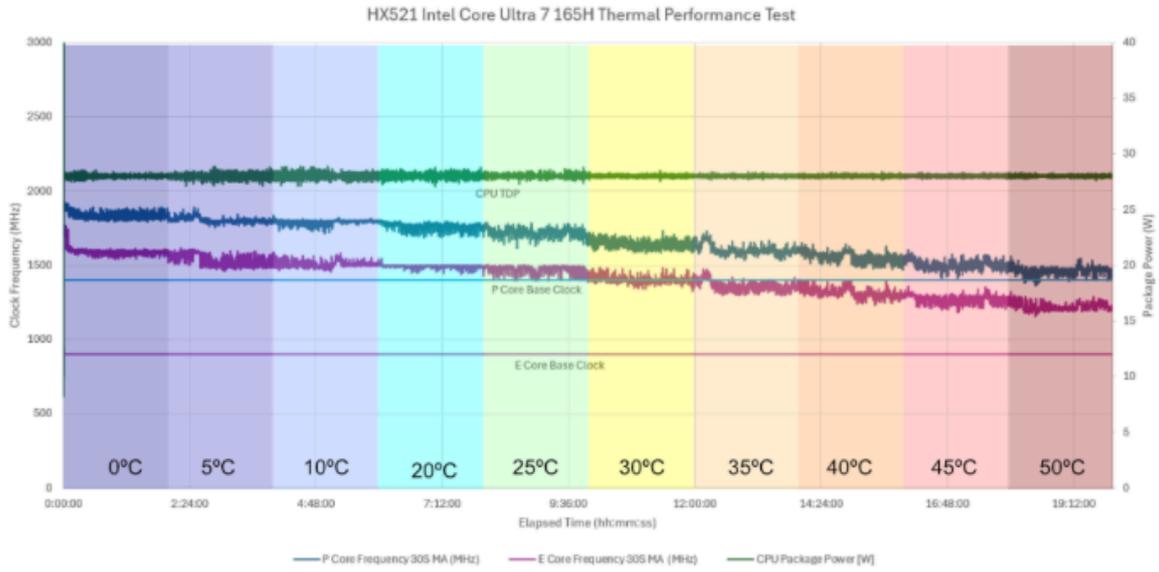


System Thermal Results (HX520)

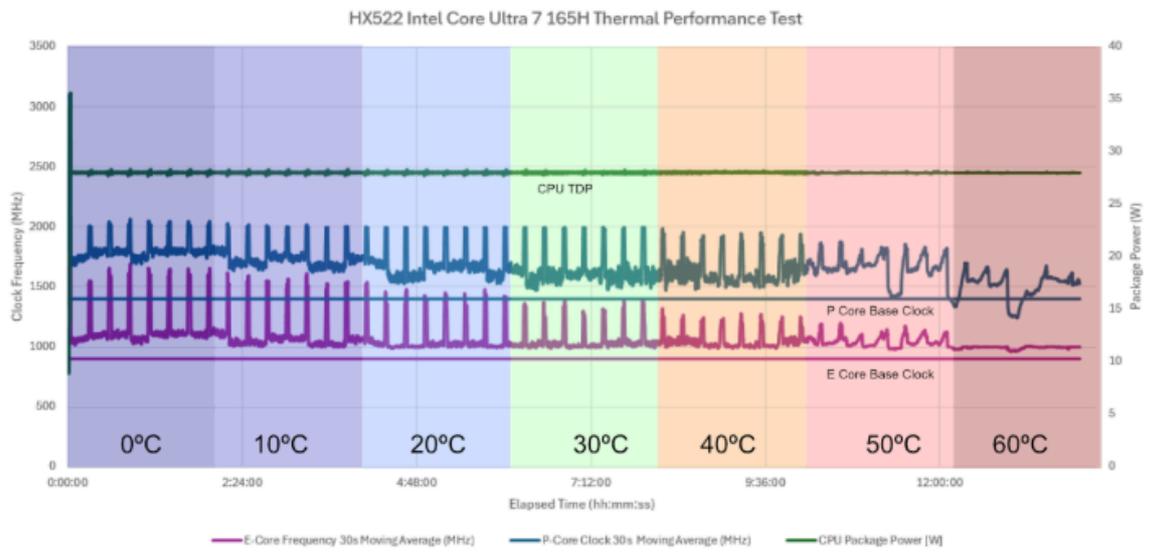
Testing Conditions

- Temperature Range: 0°C to 50°C
- Step size: 5°C / 10°C
- Stress Levels
 - CPU (100% - Intel PTAT)
 - SSD, and RAM (80% - Passmark Bit)
 - GPU (100% if applicable - Furmark)

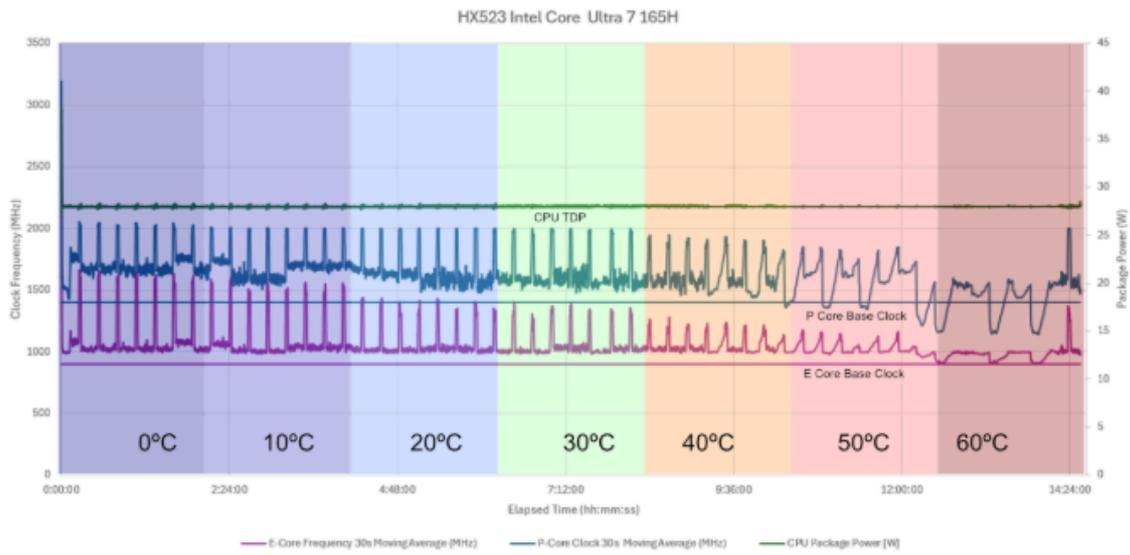
Results Summary



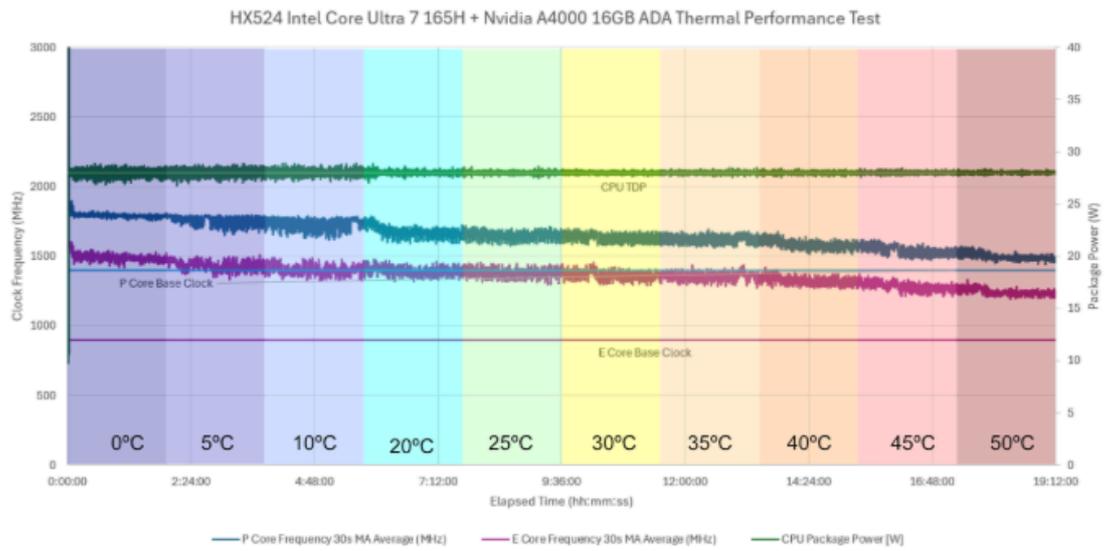
HX521 Thermal Test Results



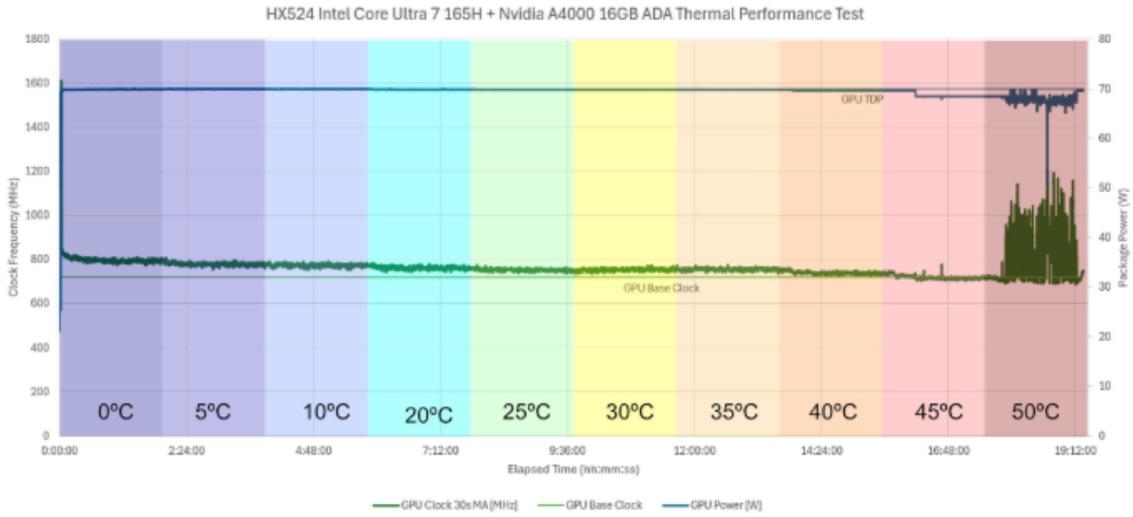
HX522 Thermal Test Results



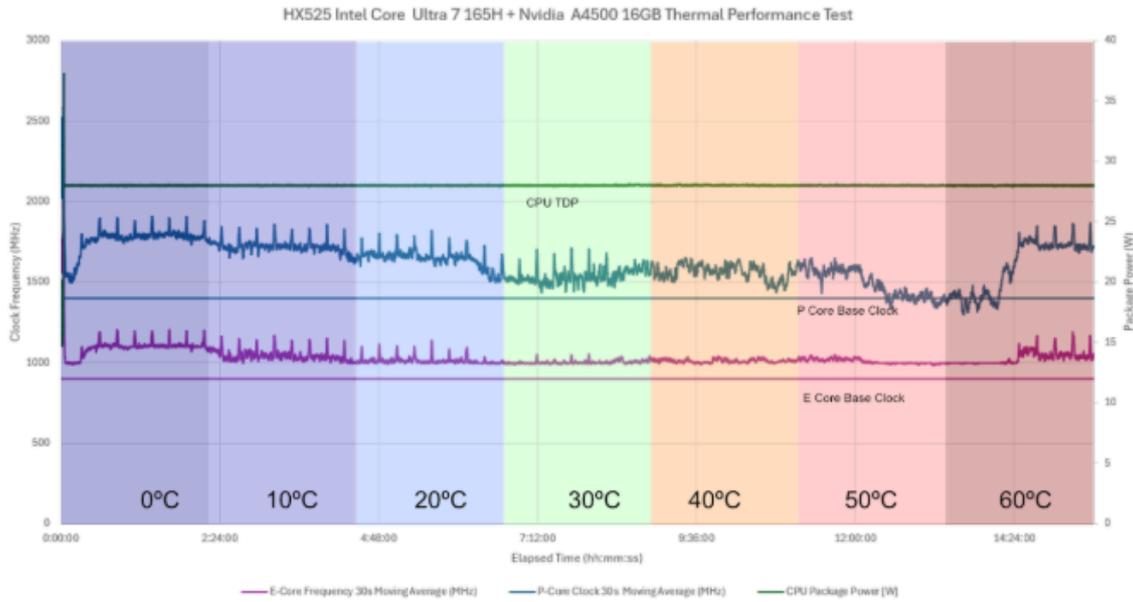
HX523 Thermal Test Results



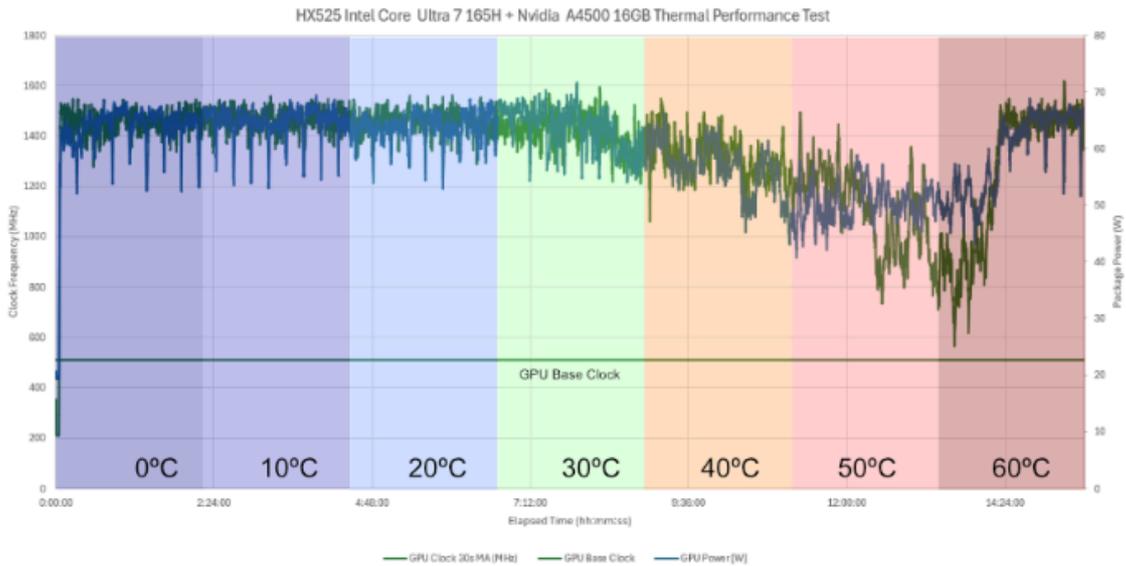
HX524 Thermal Test Results - Processor



HX524 Thermal Test Results - A4000 GPU



HX525 Thermal Test Results - Processor



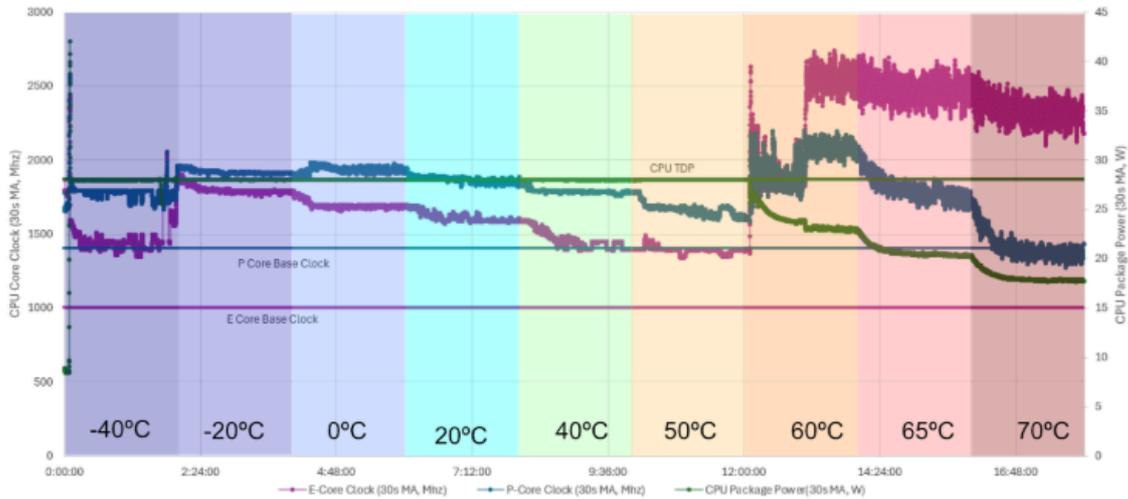
HX525 Thermal Test Results - A4500 MXM GPU

System Thermal Results (K520)

Testing Conditions

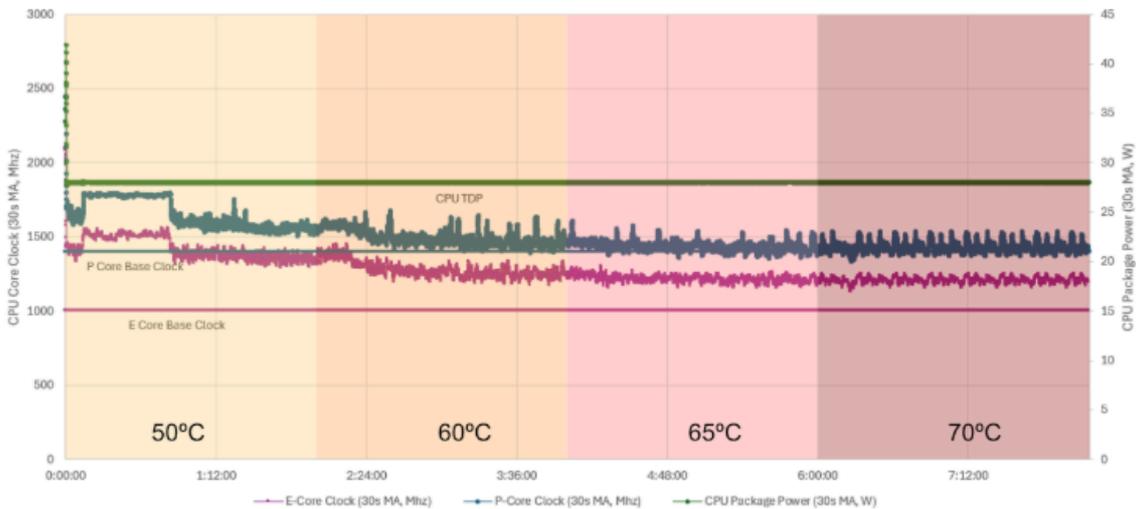
- Temperature Range: -40°C to 70°C
- Step size: 5°C / 10°C / 20°C
- Stress Levels
 - CPU (100% - Intel PTAT)
 - SSD, and RAM (80% - Passmark BiT)
 - GPU (100% if applicable - Furmark)

K521 (28W Core Ultra 7 165H) Thermal Results



K521 Thermal Test Results

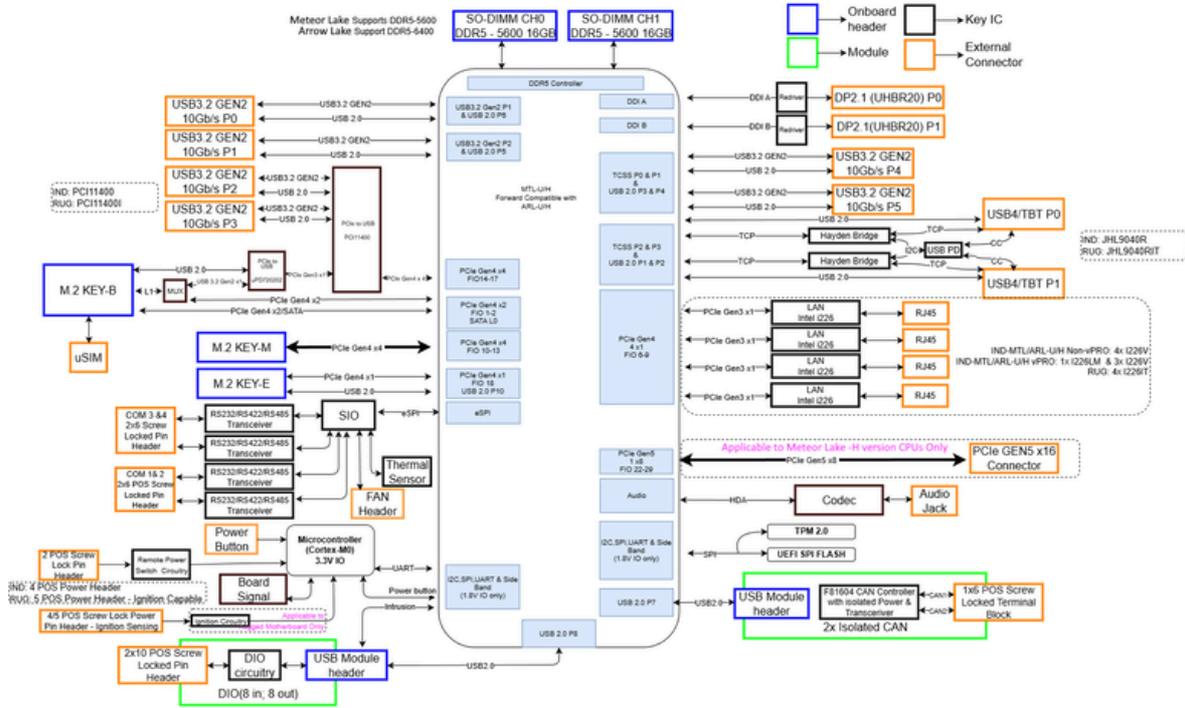
K521 (28W Core Ultra 7) With Fanhat Thermal Results



K521 Thermal Test Results With Fanhat

- Based on OnLogic testing, a fanhat is not required for system operation across the full specified ambient temperature range - the system will operate without failures. However, especially above 50°C but also generally, and depending on application/use case, a fanhat can provide a beneficial performance bump. The improvement will vary depending on anticipated workload(s) and environment(s), and more specific customer validation is recommended to determine if fanhat use is warranted.

2.7 - Block Diagram



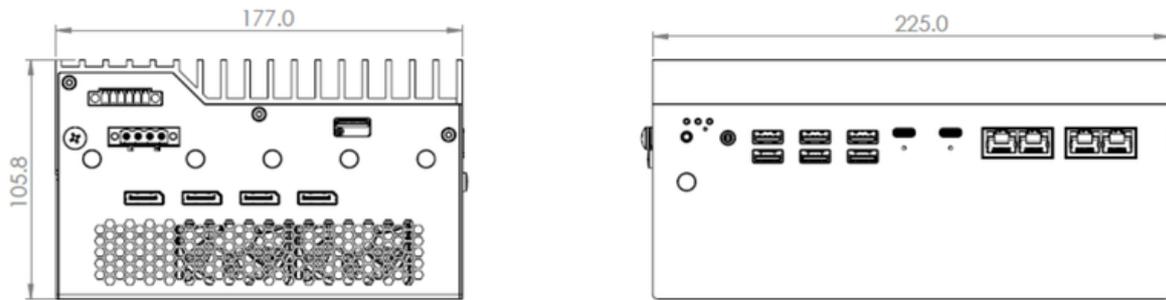
3- Installation & Mechanical

3.1- Dimensions

HX521 / K521 System

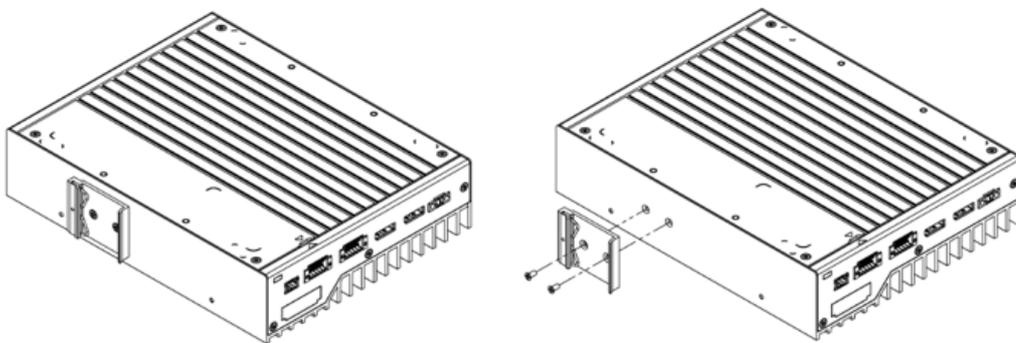


HX522/K522, HX523/K523, HX524/K523, HX525/K525 Expanded Systems



3.2- Mounting

HX521/K521 DIN Clip (MTD103/MTD109)



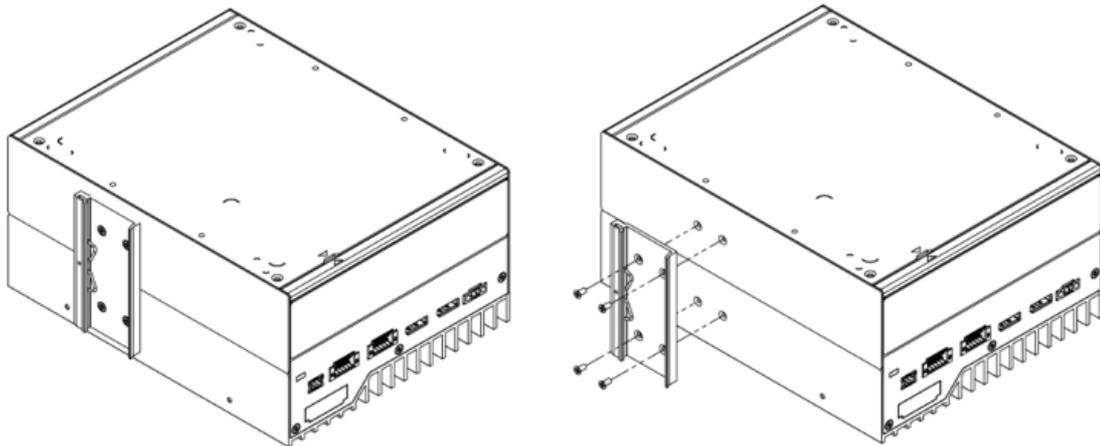
Step 1: Remove the two screws in the rear of the system.

Step 2: Align the two screw holes on the back of the system with the holes in the DIN clip.

Step 3: Fasten the din clip with the screws removed in step 1 (M3X0.5 Flathead Screw, 6mm Long) **WARNING:** Using a screw longer than 6mm may damage the system.

Step 4: Hook the spring side of the DIN clip onto the DIN rail, then press firmly until the clip snaps over the other side of the rail.

HX522-HX525 / K522-K525 DIN Clip (MTD110)



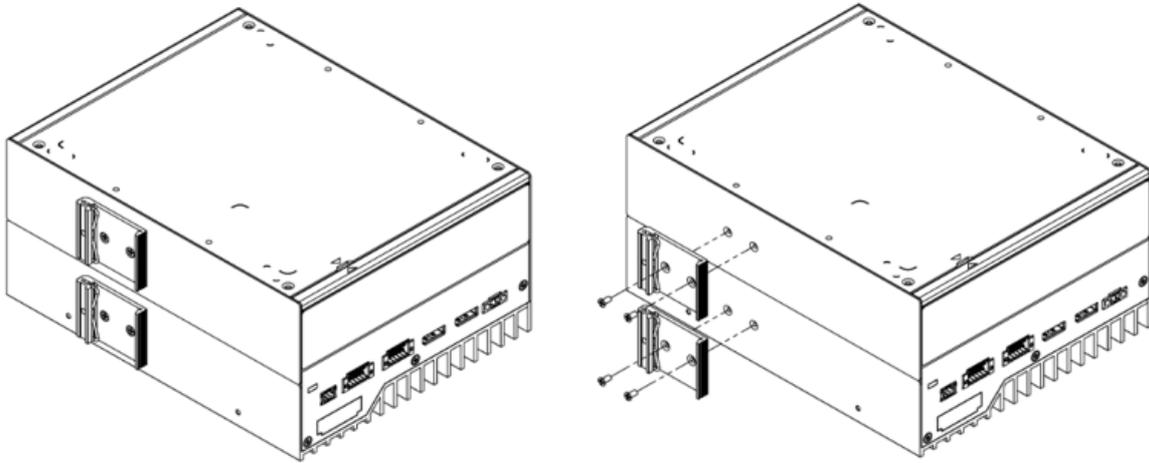
Step 1: Remove the four screws in the rear of the system.

Step 2: Align the four screw holes on the back of the system with the holes in the DIN clip.

Step 3: Fasten the DIN clip with the screws removed in step 1 (M3X0.5 Flathead Screw, 6mm Long) **WARNING:** Using a screw longer than 6mm may damage the system.

Step 4: Hook the spring side of the DIN clip onto the DIN rail, then press firmly until the clip snaps over the other side of the rail.

HX522-HX525 / K522-K525 Dual DIN Clip (2x MTD103)



Step 1: Remove the four screws in the rear of the system.

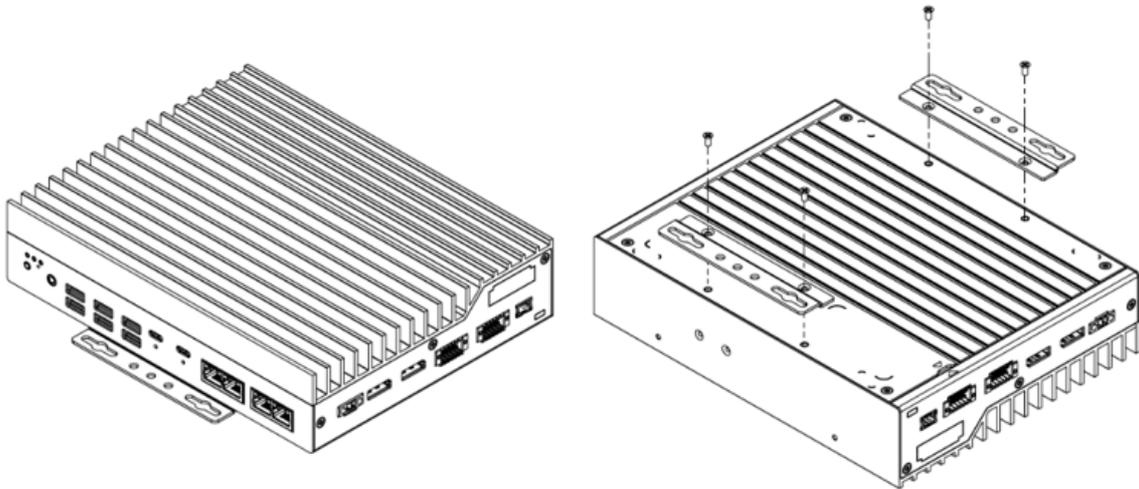
Step 2: Align the first 2 screw holes on the back of the system with the holes in the DIN clip.

Step 3: Fasten the DIN clip with the screws removed in step 1 (M3X0.5 Flathead Screw, 6mm Long) **WARNING:** Using a screw longer than 6mm may damage the system.

Step 4: Repeat steps 2-3 for the second DIN clip. Ensure the second DIN clip is oriented in the same direction as the first DIN clip

Step 5: Hook the spring side of the DIN clip onto the DIN rail, then press firmly until the clip snaps over the other side of the rail.

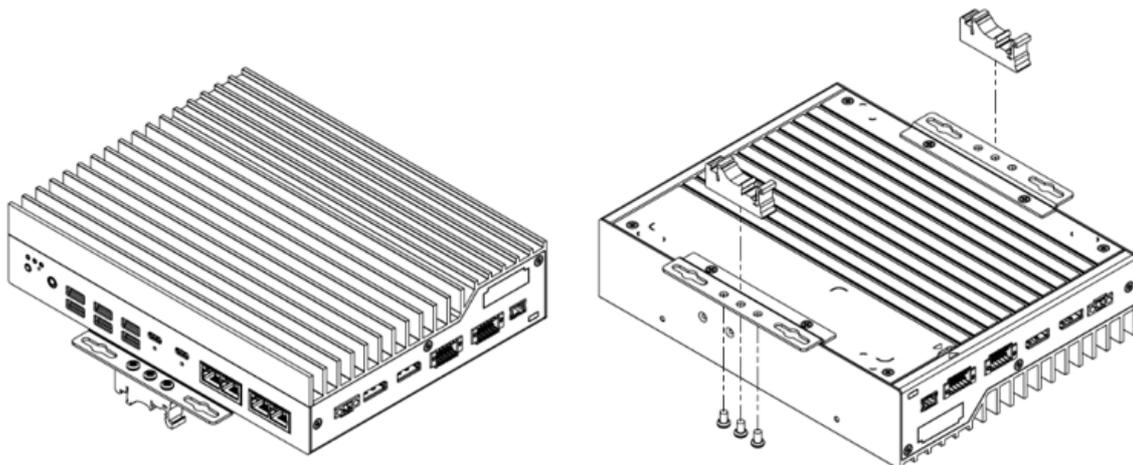
Wall Mount Bracket (MTW101)



Step 1: Align the four screw holes on the bottom of the system with the respective holes on the mounting brackets.

Step 2: Attach wall mounting brackets (MTW101) or DIN mount Bracket (MTD102-K), to the system using the supplied M3 screws (M3X0.5 Flathead Screw, 4mm Long).

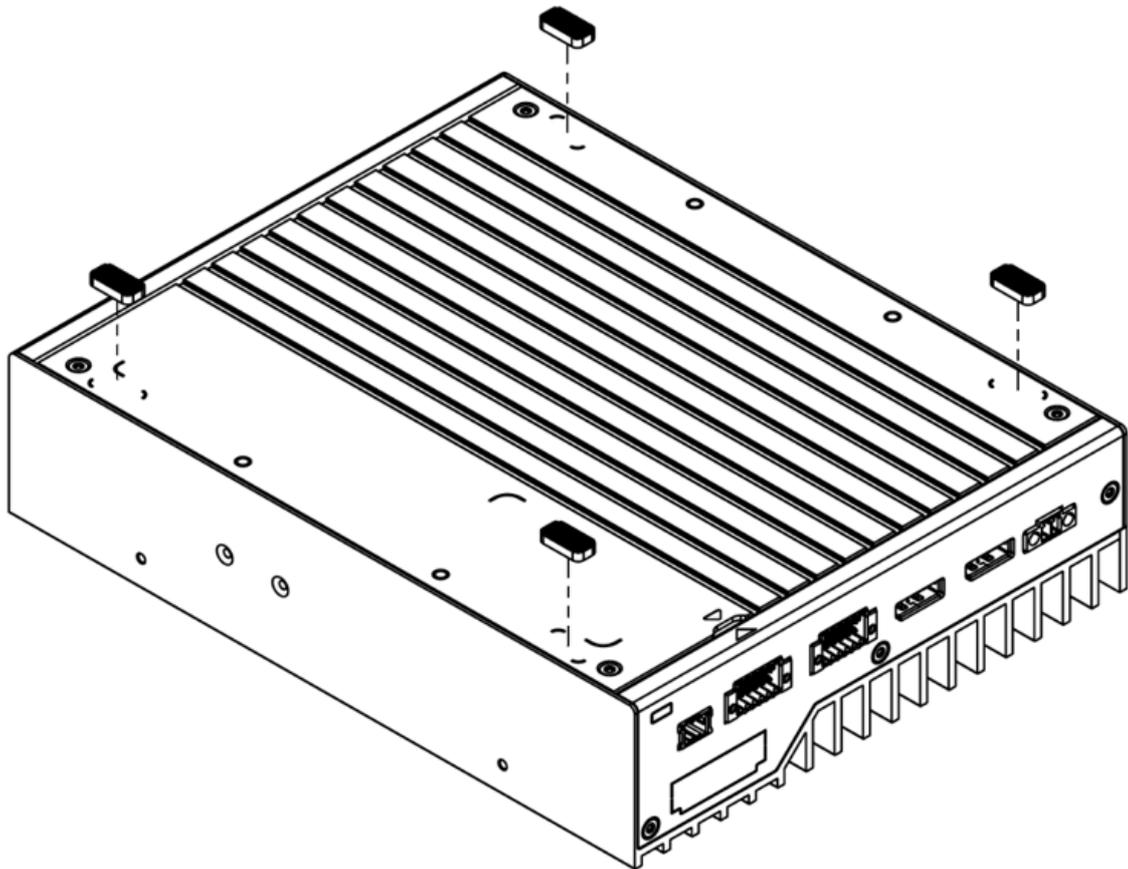
Step 3 (Wall Mount only): Install system to surface using keyhole slots on wall mount brackets and appropriate hardware for the surface (not provided).



Step 4 (DIN Bracket only): Align the mounting holes of the din clip bracket to the three mounting holes on the wall mount bracket. Install the 6x M4 screws (M4x0.7 Self Tapping, Philips Head, 6mm Long) to secure the DIN clip.

Step 5 (DIN Bracket only): Hook the solid side of the DIN clip onto the DIN rail, then press firmly until the clip snaps over the other side of the rail.

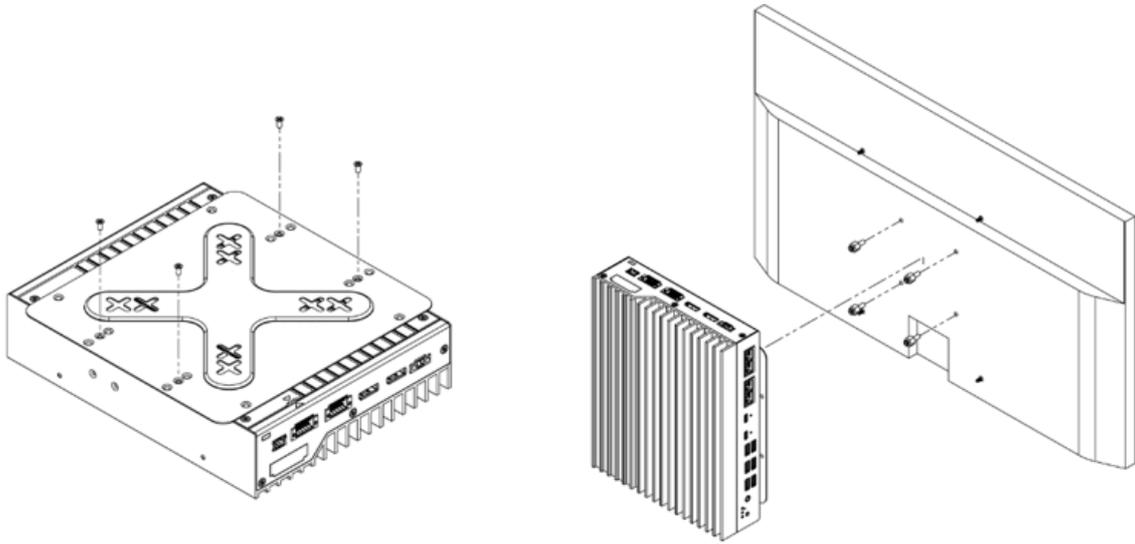
Rubber Feet (MTF100)



Step 1: Peel feet from adhesive.

Step 2: Align feet with markings on Secondary Heatsink as shown.

VESA (VMPL-2022)

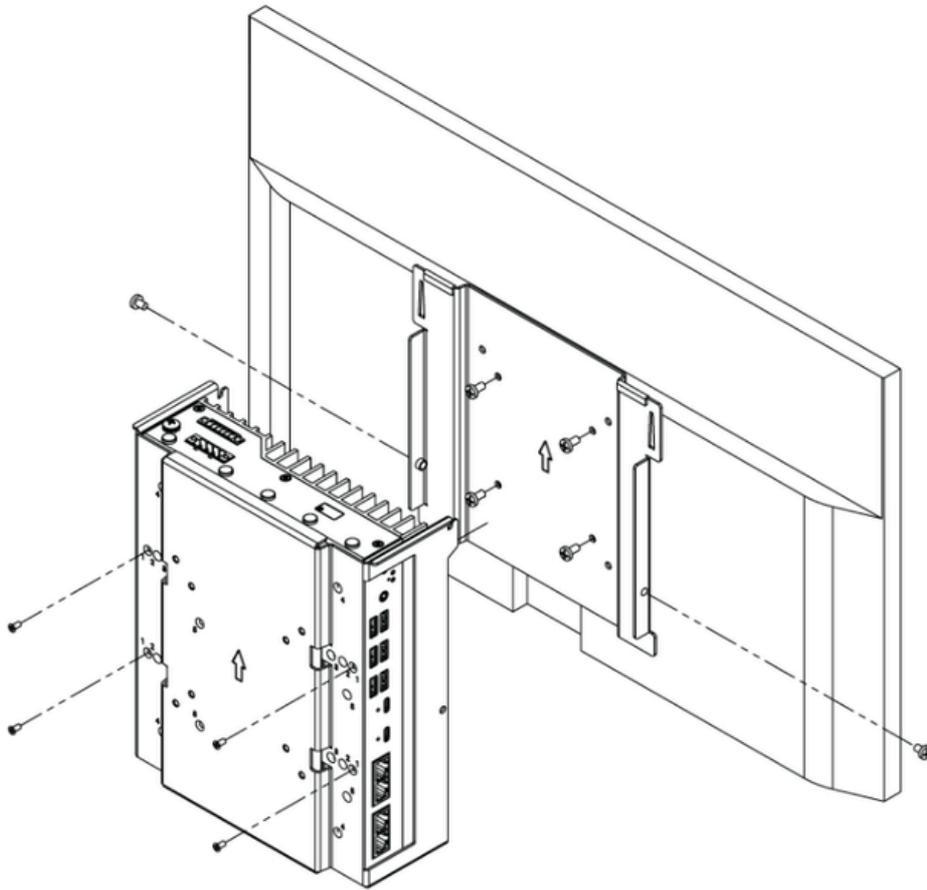


Step 1: Align the four screw holes on the bottom of the system with the respective holes on the VESA bracket.

Step 2: Attach VESA Bracket to the system using the supplied M3 screws (M3X0.5 Flathead Screw, 4mm Long) Use a torque of at least 200 N-cm (18 in-lbs) to attach the bracket.

Step 3: Install the system to VESA 75 or VESA 100 mounting pattern using provided VESA Mount screws.

VESA In-Series (VMPL-2024/VMPL-HX52x)



Step 1: Separate the two bracket segments by first removing the M4 screw on either side of the bracket (M4X0.7 Phillips head, 6 mm long). With the screws removed, the bracket segments can be separated by removing the smaller bracket from the hooked tabs on the top edge of the larger bracket.

Step 2: Align the screw holes indicated with “1” marking with the bottom holes of the system. Secure the system using the 4x supplied M3 screws (M3X0.5 Flathead Screw, 6mm Long). Use a torque of at least 200 N-cm (18 in-lbs) to attach the bracket.

Step 3: Install the large bracket/system assembly to a VESA 75 or VESA 100 mounting pattern on a monitor stand/arm using the provided M4x0.7 8mm length screws. Note the arrow marking on the bracket indicating which side of the bracket should be facing UP.

Step 4: Install the remaining smaller bracket to a monitor VESA 75 or VESA 100 mounting pattern using the provided M4x0.7 8mm long screws. Note the arrow marking on the bracket indicating which side of the bracket should be facing UP.

Step 5: Install the small bracket/monitor assembly to the large bracket/system assembly on the mounting arm by aligning the hooks/tabs and slot the pieces together. Secure the bracket segments together using the 2x M4 screws removed in Step 1.

3.3- Internal Access

Properly opening OnLogic systems does not void the warranty in most cases, however, some precautions are necessary to avoid damaging the system.

- Perform this disassembly in an area free of static discharge.
- Disconnect power, video, and any other connections to the system. It should be fully unplugged.
- Ideally, wear a grounding strap. If that is not available, regularly touch a grounded metal surface to discharge your body of static electricity.

All of the different system models in this series begin their disassembly by removing the bottom plate:

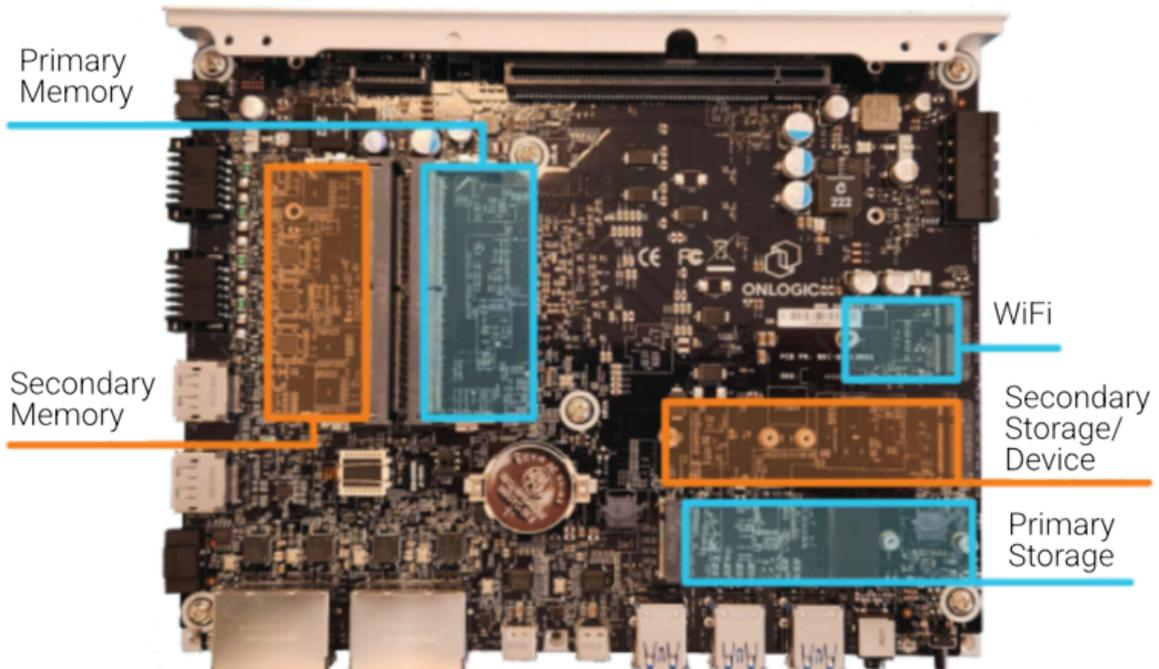


- Remove x4 screws from the bottom of the system

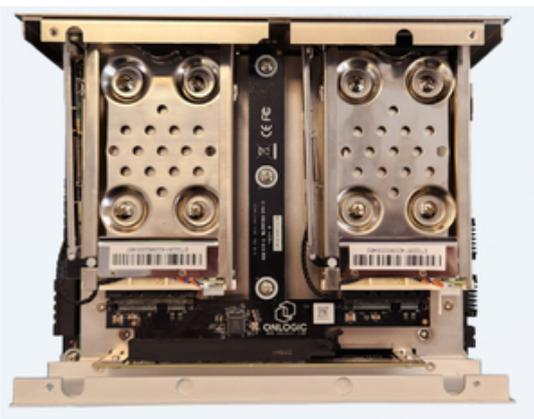
Note: Remove any/all mounting hardware.

HX521

After removing the bottom plate, you will have access to the motherboard. The motherboard used is the same for all variants in the series. Here is the layout:



HX522



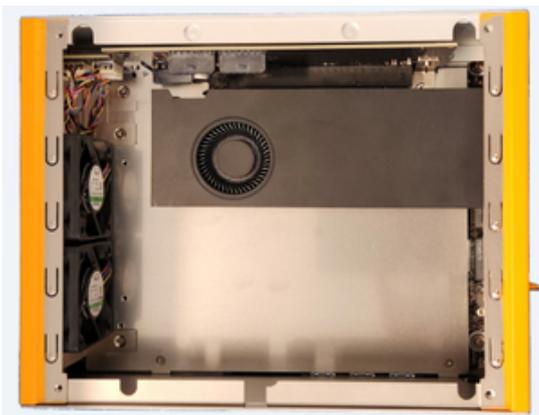
- You will now have access to the hot swap bay section of your system
- Further Disassembly is possible but not recommended. Please contact technical support before continuing.

HX523



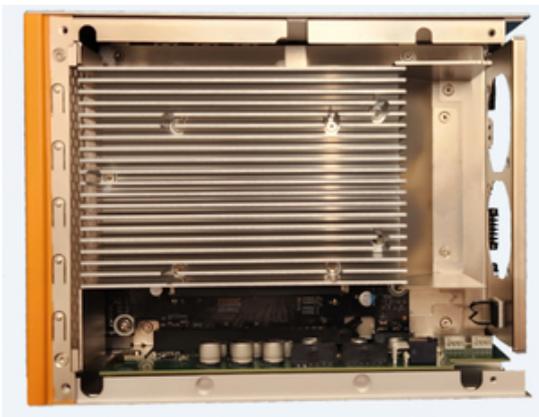
- You will now have access to the modbay section of your system
- Further disassembly is possible but not recommended. Please contact Technical support before continuing

HX524



- You will now have access to the PCIe expansion section of your system
- Further disassembly is possible but not recommended. Please contact Technical support before continuing

HX525



- You will now have access to the MXM expansion section of your system
- Further disassembly is possible but not recommended. Please contact Technical support before continuing

3.4- CAD & Drawings

[HX520 Series Dimensional Drawings](#)

 29MB	HX521.zip archive	Download	Open
 31MB	HX522.zip archive	Download	Open
 26MB	HX523.zip archive	Download	Open
 33MB	HX524.zip archive	Download	Open
 41MB	HX525.zip archive	Download	Open
 33MB	K521.zip archive	Download	Open
 31MB	K522.zip archive	Download	Open
 31MB	K523.zip archive	Download	Open
 34MB	K524.zip archive	Download	Open

K525.zip
archive[Download](#)[Open](#)

4- Software & Firmware

4.1- BIOS

BIOS Manual

Reference the full [BIOS Manual](#) here.

BIOS Updates

Version	Link
Z01-0009S102	Download ↗
Z01-0009S011	Download ↗

4.2- Drivers & Downloads

Windows Drivers

[Windows 11](#) ↗

[Windows 10](#) ↗

Please follow this link for a guide on updating your system's drivers:



LPMCU Tool

[Windows](#) ↗

[Ubuntu](#) ↗

Reference [LPMCU Update Guide](#) here.

MCU Updates

Version	Link
v9.0.0	Download ↗

DIO Python Package

[Repository Link - onlogic-m031-manager](#) ↗

Download Instructions

1. Download .zip File - For a simple copy of the files, use this direct download link:
 - <https://github.com/onlogic/onlogic-m031-manager/archive/refs/heads/main.zip> ↗
2. Clone with Git - Use a terminal to clone the repository.
 - HTTPS:
 - `git clone https://github.com/onlogic/onlogic-m031-manager.git`
 - SSH:
 - `git clone git@github.com:onlogic/onlogic-m031-manager.git`

Drivers

Drivers are available in INF formats, which can be installed via a Windows deployment server, or through the Device Manager. Follow our guide for [Installing via Device Manager here](#) ↗.

Windows 11 - [Download](#) ↗

Please follow this link for a guide on updating your system's drivers:

 [Update System Drivers | OnLogic Support Documentation
support.onlogic.com](https://support.onlogic.com) >

4.3- MCU Documentation

Reference the full [HX520/K520 MCU Manual](#).

5- Support & Compliance

5.1- Troubleshooting & FAQ

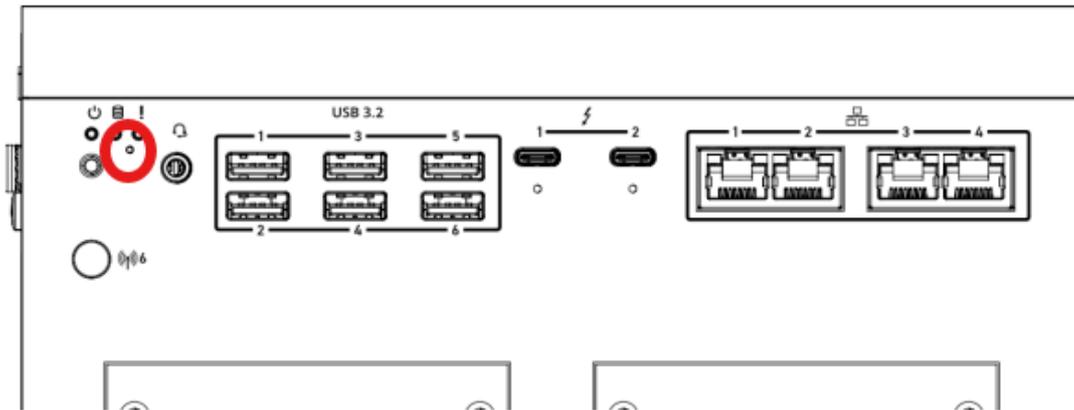
FAQs

> Why am I not getting any video from the DisplayPort on my MXM GPU?

> What are the supported operating systems for this system series?

Clear CMOS

If the system fails to power on or is unresponsive, clearing the CMOS may help. It will also restore the BIOS to factory defaults.



- The CMOS reset button on all HX52X systems can be found next to the power button, as indicated here
- To perform the reset, begin by powering off the system
- While holding the reset button, press power button to power the system on
- After 5 seconds, release the button
- The screen will show "System will reboot to reset to default." and will prompt the user to press "ok"
- The system will reset
- The reset to default completes

Windows Serial Port Number Collisions

Category:	OS Compatibility
SKU(s) Affected:	HX520 Series
Revision(s) Affected:	All
Revision Resolved:	Open
Severity:	Low

Description

Some Windows installation methods may result in serial port number collisions.

The Helix 520 Series systems implement three serial port types - PCH UART, SIO COM, and USB VCOM. Depending on the order of driver installation, Windows may assign duplicate serial port numbers (in the format COM[n]).

Resolution

Serial port numbers can be changed from the Windows Device Manager after driver installation, or drivers can be injected via enterprise deployment methods prior to first boot to mitigate this issue.

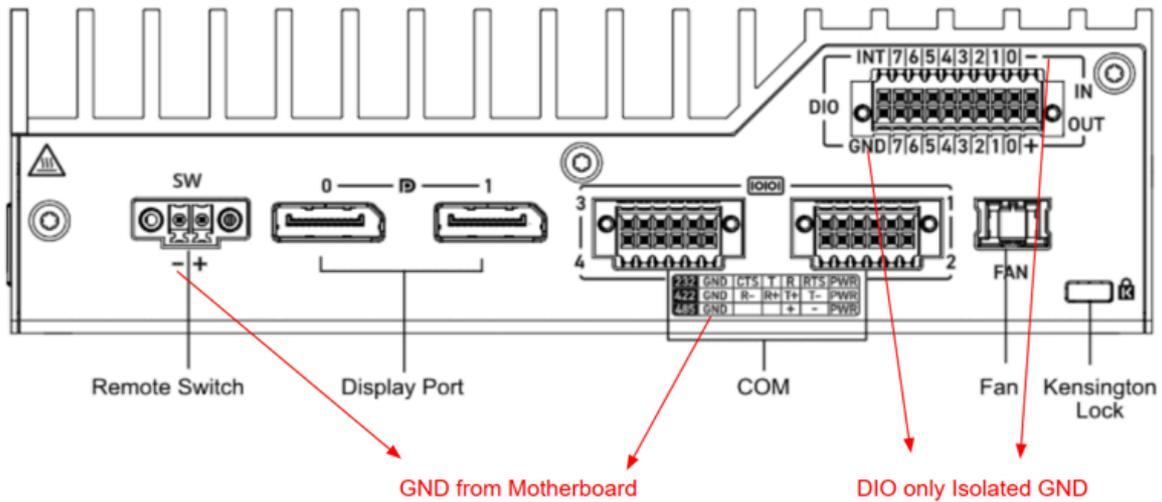
Windows installations performed by OnLogic are shipped with unique serial interface numbers.

DIO Labeling

Category:	Mechanical
SKU(s) Affected:	HX520 Series
Revision(s) Affected:	All
Revision Resolved:	Open
Severity:	Low

Description

The Helix 520 Series top plate DIO labeling has “-” and “GND” labels for pins that both connect to the DIO expansion isolated ground (ISO_GND). The other ground pins indicated by the system labeling are tied to the non-isolated DC GND. There is no functional impact to system performance, but some users may find this labelling confusing.



Resolution

GND label on the DIO connector will be changed to ISO_GND on a future revision.

Windows Ethernet Interface Numbering

Category:	Port Enumeration
SKU(s) Affected:	HX/K520 Series
Revision(s) Affected:	All
Revision Resolved:	Open
Severity:	Low

Description

Ethernet port assignments in Windows may not be issued consistently between configurations due to Windows port enumeration rules, meaning that the indicated port numbers on the front of the system may not match the numbers assigned by Windows.

Resolution

Users/installers may associate external Ethernet port numbers with the Windows-assigned scheme using the Powershell command `Get-NetAdapterHardwareInfo`.

In the results generated by the command, adapter names and PCIe Bus numbers are displayed. The external port numbers from the plate label are equivalent to the PCIe Bus numbers (Port 1 = Bus 1, etc.). The Powershell command `Rename-NetAdapter` can then be used to rename Ethernet ports to user preference.

Boot Failure with Intel VMD Enabled

Category:	Firmware
SKU(s) Affected:	HX/K520 Series
Revision(s) Affected:	Z01-009I010 and before
Revision Resolved:	Z01-009I011
Severity:	High

Description

Intel VMD is a technology allowing for internal storage to be added to RAID configurations without a discrete RAID controller. While OnLogic is not currently offering configurations that are VMD-compatible, the BIOS options for VMD are available for future use.

When VMD is enabled via the BIOS configuration menu, and drives are added to the VMD controller by enabling either VMD Global Mapping or adding individual drives to the VMD controller from the same menu page, systems may fail to boot after the configuration is applied.

Resolution

Users are advised to keep VMD and VMD Global Mapping disabled. There is no workaround.

RAID support is offered via a discrete controller in the Helix 522 model and is not affected by this issue.

“PCIxxxx GPIO Controller Driver” Yellow Bang

Category:	OS Compatibility
SKU(s) Affected:	HX/K523, MODBAY-04USB-02
Revision(s) Affected:	All
Revision Resolved:	Open
Severity:	Low

Description

The Windows driver for the GPIO subsystem of the Microchip PCI11000 family IO controllers used on the Helix 523 model and MODBAY-04USB-02 expansion card is not signed, so Windows will not load it. A yellow bang (!) warning indicator and error message is displayed in the Windows Device Manager.

This error message has no effect on system performance and may be ignored. The GPIO subsystem is required to be enabled on-chip for full function, but no direct driver/OS interaction is required.

Resolution

A signed driver release is in progress, and will be made available when it is complete.

ModBay M12 LAN WoL

Category:	System Compatibility
SKU(s) Affected:	ModBay-M12LAN01 - HX523/K523
Revision(s) Affected:	B02-00035R3
Revision Resolved:	Open
Severity:	Low

Description

When attempting to use Wake-on-LAN (WoL) from S4 (hibernate) and S5 (soft off) power states, the system may hang, preventing proper system startup. This issue is specific to the Modbay-M12LAN01 card.

Resolution

For WoL from S4 or S5 power states, the Modbay-M12PoE or Modbay-4LAN cards should be used. The Modbay-M12LAN01 card is only recommended for Wake-on-LAN from S3 (sleep) power state.

Ubuntu Unintended Wake from S4/S5 with disagreement in BIOS/OS WoL Settings

Category:	OS Compatibility
SKU(s) Affected:	HX52x, K52x
Revision(s) Affected:	All
Revision Resolved:	Open
Severity:	Low

Description

When Wake On PME is enabled in the BIOS but WoL is disabled in the operating system for LAN port 1 in Ubuntu 24.04 Desktop/Server, the disagreement in settings causes unintended wake events to occur from S4/S5.

Resolution

Ensure agreement between the wake on PME setting in the BIOS and WoL setting in the OS. If WoL functionality is desired, ensure both settings are enabled. If WoL functionality is not desired, ensure both settings are disabled.

5.2- Regulatory

CE

This device has been tested to the relevant EMC and Safety standards. Modifications by the user may invalidate certifications. Testing included EN 55032, EN 55035, EN 60601-1-2, IEC 62368-1, IEC 60945 Ed. 4, and many others, please see specifications for details.

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.

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)

UKCA

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

Maritime & DNV

This product must be used with an in-line EMI filter when connected directly to a DC mains supply in maritime and DNV applications. The recommended EMI filter is a Delta 30DKCS5. Any filter used must be appropriately rated to handle the voltage and current draw of the system and must have a minimum insertion loss of 30dB at 1MHz.

Datasheet for the 30DKCS5 including electrical specifications, wiring diagram, and dimensions.

 2MB	DK.pdf PDF	Download	Open
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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

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 146KB	HX520 Series CE Declaration - signed.pdf PDF	Download	Open
 139KB	HX52x RoHS & REACH SVHC Declaration - signed.pdf PDF	Download	Open
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 108KB	K520 Mil Spec Vibration.pdf PDF	Download	Open

5.3- Security Advisory

For the latest security advisories concerning OnLogic products, including vulnerability disclosures and necessary updates, please refer to our official Security Advisories page. It is recommended to regularly check this resource for critical security information.

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