



# Intel® NUC X15 Laptop Kit

LAPKC51E

LAPKC71E

LAPKC71F

## Product Specification

Version 1.4

Regulatory Model Name: KC57

*September 2022*

Intel® NUC X15 Laptop Kits LAPKC51E, LAPKC71E and LAPKC71F may contain design defects or errors known as errata that may cause the product to deviate from published specifications. Current characterized errata, if any, are documented in this Product Specification.

# Revision History

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<b>Revision</b>	<b>Revision History</b>	<b>Date</b>
1.0	First Release	May 2021
1.1	Updated feature summary table and identification information table	September 2021
1.2	Clarified graphics TGP in feature summary table	November 2021
1.3	Updated figure 2 to reflect new Windows 11 key icon	March 2022
1.4	Added Errata Number 1: 64GB unsupported memory configuration	September 2022

# Disclaimer

This product specification applies to only the standard Intel® NUC X15 Laptop Kits LAPKC51E, LAPKC71E, LAPKC71F with BIOS identifier starting with KCTGL357.

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# Intel® NUC X15 Laptop Kits LAPKC51E, LAPKC71E and LAPKC71F Identification Information

## Intel® NUC X15 Laptop Kits LAPKC51E, LAPKC71E and LAPKC71F Identification Information

Original SA Revision	Product Code	Original BIOS Revision	Notes
M38547-402	BKC51EBBU6000	KCTGL357.0037.2021.0712.0948	1,2
M38558-402	BKC71EBFU6000	KCTGL357.0037.2021.0712.0948	1,2
M38561-402	BKC71EBGU6000	KCTGL357.0037.2021.0712.0948	1,2
M38674-402	BKC71FBGU6000	KCTGL357.0037.2021.0712.0948	1,2
M38718-402	BKC71FBFU6000	KCTGL357.0037.2021.0712.0948	1,2
M38556-402	BKC51EBBN6002	KCTGL357.0037.2021.0712.0948	1,2
M38560-402	BKC71EBFN6002	KCTGL357.0037.2021.0712.0948	1,2
M38684-402	BKC71FBGN6002	KCTGL357.0037.2021.0712.0948	1,2
M38549-402	BKC51EBBL6001	KCTGL357.0037.2021.0712.0948	1,2
M38548-402	BKC51EBBB6000	KCTGL357.0037.2021.0712.0948	1,2
M38559-402	BKC71EBFB6000	KCTGL357.0037.2021.0712.0948	1,2
M38562-402	BKC71EBGB6000	KCTGL357.0037.2021.0712.0948	1,2
M38679-402	BKC71FBGB6000	KCTGL357.0037.2021.0712.0948	1,2
M38721-402	BKC71FBFB6000	KCTGL357.0037.2021.0712.0948	1,2

### Notes:

1. The SA number is found on the back cover.
2. The processors used on this SA revision may consist of the following components:

Device	Stepping	Spec Code
Intel® Core™ i5-11400H	R0	SRKT1
Intel® Core™ i7-11800H	R0	SRKT3

## Specification Changes or Clarifications

The table below indicates the Specification Changes or Specification Clarifications, if any, that apply to the Intel® NUC X15 Laptop Kits LAPKC51E, LAPKC71E, and LAPKC71F

### Specification Changes or Clarifications

Date	Type of Change	Description of Changes or Clarifications
November 2021	Clarification	Clarified graphics TGP

## Errata

Current characterized errata, if any, will be documented in a separate section of this Product Specification.

# Preface

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This Product Specification specifies the layout, components, connectors, power, and environmental features for the Intel® NUC X15 Laptop Kits LAPKC51E, LAPKC71E, and LAPKC71F.



## NOTE

In this document, the use of "Intel® NUC X15 Laptop Kits will refer to the LAPKC51E, LAPKC71E, and LAPKC71F versions of the laptop kit.

## Intended Audience

This document is intended to provide technical information about LAPKC51E, LAPKC71E, and LAPKC71F and its components to the vendors, system integrators, and other engineers and technicians who need this level of information. It is specifically *not* intended for general audiences.

## What This Document Contains

Chapter	Description
1	A description of the LAPKC51E, LAPKC71E, and LAPKC71F features
2	A technical description of the LAPKC51E, LAPKC71E, and LAPKC71F

## Typographical Conventions

This section contains information about the conventions used in this specification. Not all of these symbols and abbreviations appear in all specifications of this type.

## Notes, Cautions, and Warnings



### NOTE

*Notes call attention to important information.*



### CAUTION

*Cautions are included to help you avoid damaging hardware or losing data.*

## Other Common Notation

#	Used after a signal name to identify an active-low signal (such as USBP0#)
GB	Gigabyte (1,073,741,824 bytes)
GB/s	Gigabytes per second
Gb/s	Gigabits per second
KB	Kilobyte (1024 bytes)
Kb	Kilobit (1024 bits)
kb/s	1000 bits per second
MB	Megabyte (1,048,576 bytes)
MB/s	Megabytes per second
Mb	Megabit (1,048,576 bits)
Mb/s	Megabits per second
TDP	Thermal Design Power
Xxh	An address or data value ending with a lowercase h indicates a hexadecimal value.
x.x V	Volts. Voltages are DC unless otherwise specified.
*	This symbol is used to indicate third-party brands and names that are the property of their respective owners.

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# 1 Product Description

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## 1.1 Overview

The Intel® X15 Laptop Kit LAPKC51E, Intel® X15 Laptop Kit LAPKC71E and Intel® X15 Laptop Kit LAPKC71F are premium, metal, thin and light performance laptops.

## 1.2 Version Summary

There are four different versions of LAPKC51E, five different versions of LAPKC71E and five LAPKC71F available which are summarized in Table 1. Unless otherwise noted in this document, not all features are available on all versions.

**Table 1. Version Summary**

Version	CPU	GPU	Display	Keyboard	AC Cord
BKC51EBBU6000	Intel® Core™ i5-11400H	RTX 3060	FHD 144Hz	ANSI US English	None
BKC71EBFU6000	Intel® Core™ i7-11800H	RTX 3060	QHD 165Hz	ANSI US English	None
BKC71EBGU6000	Intel® Core™ i7-11800H	RTX 3060	FHD 240Hz	ANSI US English	None
BKC71FBGU6000	Intel® Core™ i7-11800H	RTX 3070	FHD 240Hz	ANSI US English	None
BKC71FBFU6000	Intel® Core™ i7-11800H	RTX 3070	QHD 165Hz	ANSI US English	None
BKC51EBBN6002	Intel® Core™ i5-11400H	RTX 3060	FHD 144Hz	ISO Nordic	Type F
BKC71EBFN6002	Intel® Core™ i7-11800H	RTX 3060	QHD 165Hz	ISO Nordic	Type F
BKC71FBGN6002	Intel® Core™ i7-11800H	RTX 3070	FHD 240Hz	ISO Nordic	Type F
BKC51EBBL6001	Intel® Core™ i5-11400H	RTX 3060	FHD 144Hz	ISO Latin Spanish	Type B
BKC51EBBB6000	Intel® Core™ i5-11400H	RTX 3060	FHD 144Hz	ISO Blank	None
BKC71EBFB6000	Intel® Core™ i7-11800H	RTX 3060	QHD 165Hz	ISO Blank	None
BKC71EBGB6000	Intel® Core™ i7-11800H	RTX 3060	FHD 240Hz	ISO Blank	None
BKC71FBGB6000	Intel® Core™ i7-11800H	RTX 3070	FHD 240Hz	ISO Blank	None
BKC71FBFB6000	Intel® Core™ i7-11800H	RTX 3070	QHD 165Hz	ISO Blank	None

## 1.3 Feature Summary

Table 2 summarizes the major features of the LAPKC51E and LAPKC71E

**Table 2. LAPKC51E and LAPKC71E Feature Summary**

Feature	LAPKC51E	LAPKC71E
Color	Black	Black
Materials	Magnesium Alloy	Magnesium Alloy
Processor	<b>Intel® Core™ i5-11400H</b>	<b>Intel® Core™ i7-11800H</b>
Chipset	Intel® HM570	Intel® HM570
Memory	2 DDR4 SO-DIMM Slots, 3200Mhz	2 DDR4 SO-DIMM Slots, 3200Mhz
Graphics	<b>Nvidia® GeForce® RTX 3060</b> Performance: TGP up to 115W Balanced: TGP up to 80 + 20W Dynamic Boost Low Power: TGP up to 80W	<b>Nvidia GeForce RTX 3060</b> Performance: TGP up to 115W Balanced: TGP up to 80 + 20W Dynamic Boost Low Power: TGP up to 80W
VRAM	6GB GDDR6	6GB GDDR6
Storage	1 M.2 22x80 PCIe x4 Gen4 NVMe 1 M.2 22x80 PCIe x4 Gen3 NVMe or SATA SSD	1 M.2 22x80 PCIe x4 Gen4 NVMe 1 M.2 22x80 PCIe x4 Gen3 NVMe or SATA SSD
Card Reader	SDXC v3.01 2-in-1 SD/SDHC/SDXC	SDXC v3.01 2-in-1 SD/SDHC/SDXC
Display Panel	Narrow Bezel IPS 15.6" 1920x1080, 16:9 ratio, 144Hz, LED backlight, Response Time=5ms nominal, average brightness of 300 nits.	Narrow Bezel IPS 15.6" 2560x1440, 16:9 ratio, 165Hz, LED backlight, Response Time=5ms nominal, average brightness of 400 nits.
Display Outputs	1 Full Size HDMI Output 1 DisplayPort via USB Type C	1 Full Size HDMI Output 1 DisplayPort via USB Type C
Audio	Realtek® ALC269M with Intel® HD Audio 1 3.5mm Audio Out Jack 1 3.5mm Microphone In Jack	Realtek ALC269M with Intel® HD Audio 1 3.5mm Audio Out Jack 1 3.5mm Microphone In Jack
Speakers	2 Built In, 2W each	2 Built In, 2W each
Microphones	2 Digital Microphones	2 Digital Microphones
Keyboard	Silent Mechanical with RGB backlight, 2.0mm travel	Silent Mechanical with RGB backlight 2.0mm travel
Pointing Device	Glass Click Pad with Microsoft Precision Touchpad Driver Support Enable/Disable option with LED indicator	Glass Click Pad with Microsoft Precision Touchpad Driver Support Enable/Disable option with LED indicator
Camera	HD IR with Windows Hello Support	HD IR with Windows Hello Support
Wired LAN	2.5 Gigabit Ethernet (RJ-45)	2.5 Gigabit Ethernet (RJ-45)
Wireless LAN	Intel® WiFi 6 AX 201, Bluetooth* 5.2	Intel® WiFi 6 AX 201, Bluetooth 5.2
Power Supply	19.5V, 230W 100/240V AC 50/60Hz 1 Power Input Jack	19.5V, 230W 100/240V AC 50/60Hz 1 Power Input Jack
Battery	94Whr (8200mAh) with Fast Charge Support	94Whr (8200mAh) with Fast Charge Support
Power LED	Power On: White, Power Off: Off Suspend: Blinking White	Power On: White, Power Off: Off Suspend: Blinking White
Charging and Battery LED	Charging (Power On): Blinking White Charging (Power Off): Blinking White Battery Low (<6%): Amber Charging Finish (w/AC): White, w/o AC: Off	Charging (Power On): Blinking White Charging (Power Off): Blinking White Battery Low (<6%): Amber Charging Finish (w/AC): White, w/o AC: Off
Mode LED	Battery Saver: Both LEDs Off Balanced: Left LED on Performance: Both LEDs On	Battery Saver: Both LEDs Off Balanced: Left LED on Performance: Both LEDs On
Front Light Bar	RGB	RGB
USB	3 USB 3.2 (Gen2) Type A 1 Type C Thunderbolt™ 4	3 USB 3.2 (Gen2) Type A 1 Type C Thunderbolt™ 4
Size	356.4mm x 233.8mm x 20.5mm (front) to 21.65mm (back)	356.4mm x 233.8mm x 20.5mm (front) to 21.65mm (back)
Weight	1.93kg +/- 10g	1.93kg +/- 10g
Security	1 Kensington* Lock	1 Kensington Lock

Feature	LAPKC51E	LAPKC71E
Advanced Technologies Supported	Intel® Speed Shift Technology Intel® Turbo Boost Technology Intel® Virtualization Technology (VT-x) Intel® 64 Architecture Enhanced Intel® SpeedStep® Technology Intel® Flex Memory Access Intel® Hyper-Threading Technology Intel® Virtualization Technology for Directed I/O (VT-d) Intel (VT-x with Extended Page Tables (EPT) Intel® Identity Protection Technology	Intel® Speed Shift Technology Intel® Turbo Boost Technology Intel® Virtualization Technology (VT-x) Intel® 64 Architecture Enhanced Intel® SpeedStep® Technology Intel® Flex Memory Access Intel® Thermal Intel® Hyper-Threading Technology Intel® virtualization Technology for Directed I/O (VT-d) Intel(VT-x with Extended Page Tables (EPT) Intel® Identity Protection Technology
Security and Reliability	Intel® AES New Instructions Intel® OS Guard Intel® Memory Protection Extensions (Intel® MPX) Secure Key Execute Disable Bit Intel® Software Guard Extensions (Intel® SGX) Intel® Platform Trust Technology (Intel® PTT)	Intel® AES New Instructions Intel® OS Guard Intel® Memory Protection Extensions (Intel® MPX) Secure Key Execute Disable Bit Intel® Software Guard Extensions (Intel® SGX) Intel® Platform Trust Technology (Intel® PTT)
Operating System Features	NUC Software Studio, Windows Hello Support, Voice Assistant Support for Alexa, and Cortana	NUC Software Studio, Windows Hello Support, Voice Assistant Support for Alexa, and Cortana

Table 3 summarizes the major features of the LAPKC71F

**Table 3. LAPKC71F Feature Summary**

Feature	LAPKC71F
Color	Black
Materials	Magnesium Alloy
Processor	<b>Intel® Core™ i7-11800H</b>
Chipset	Intel® HM570
Memory	2 DDR4 SO-DIMM Slots, 3200Mhz
Graphics	<b>Nvidia® GeForce® RTX 3070</b> Performance: TGP up to 125W Balanced: TGP up to 80 + 20W Dynamic Boost Low Power: TGP up to 80W
VRAM	8GB GDDR6
Storage	1 M.2 22x80 PCIe x4 Gen4 NVMe 1 M.2 22x80 PCIe x4 Gen3 NVMe or SATA SSD
Card Reader	SDXC v3.01 2-in-1 SD/SDHC/SDXC
Display Panel	Narrow Bezel IPS 15.6" 1920x1080, 16:9 ratio, 240Hz, LED backlight, Response Time=5ms nominal, average brightness of 300 nits.
Display Outputs	1 Full Size HDMI Output 1 DisplayPort via USB Type C
Audio	Realtek® ALC269M with Intel® HD Audio 1 3.5mm Audio Out Jack 1 3.5mm Microphone In Jack
Speakers	2 Built In, 2W each
Microphones	2 Digital Microphones
Keyboard	Silent Mechanical with RGB backlight, 2.0mm travel
Pointing Device	Glass Click Pad with Microsoft Precision Touchpad Driver Support Enable/Disable option with LED indicator
Camera	HD IR with Windows Hello Support
Wired LAN	2.5 Gigabit Ethernet (RJ-45)
Wireless LAN	Intel® WiFi 6 AX 201, Bluetooth® 5.2

## Intel® X15 Laptop Kit Product Specification

Feature	LAPKC71F
Power Supply	19.5V, 230W 100/240V AC 50/60Hz 1 Power Input Jack
Battery	94Whr (8200mAh) with Fast Charge Support
Power LED	Power On: White, Power Off: Off Suspend: Blinking White
Charging and Battery LED	Charging (Power On): Blinking White Charging (Power Off): Blinking White Battery Low (<6%): Amber Charging Finish (w/AC): White, w/o AC: Off
Mode LED	Battery Saver: Both LEDs Off Balanced: Left LED on Performance: Both LEDs On
Front Light Bar	RGB
USB	3 USB 3.2 (Gen2) Type A 1 Type C Thunderbolt™ 4
Size	356.4mm x 233.8mm x 20.5mm (front) to 21.65mm (back)
Weight	1.93kg +/- 10g
Security	1 Kensington* Lock
Advanced Technologies Supported	Intel® Speed Shift Technology Intel® Turbo Boost Technology Intel® Virtualization Technology (VT-x) Intel® 64 Architecture Enhanced Intel® SpeedStep® Technology Intel® Flex Memory Access Intel® Hyper-Threading Technology Intel® Virtualization Technology for Directed I/O (VT-d) Intel (VT-x with Extended Page Tables (EPT) Intel® Identity Protection Technology
Security and Reliability	Intel® AES New Instructions Intel® OS Guard Intel® Memory Protection Extensions (Intel® MPX) Secure Key Execute Disable Bit Intel® Software Guard Extensions (Intel® SGX) Intel® Platform Trust Technology (Intel® PTT)
Operating System Features	NUC Software Studio, Windows Hello Support, Voice Assistant Support for Alexa, and Cortana

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<http://www.intel.com/wireless>

<http://www.intel.com/technology>

## 2 Technical Reference

### 2.1 Block Diagram

Figure 1 is a block diagram of the major functional areas of LAPKC51E, LAPKC71E and LAPKC71F.

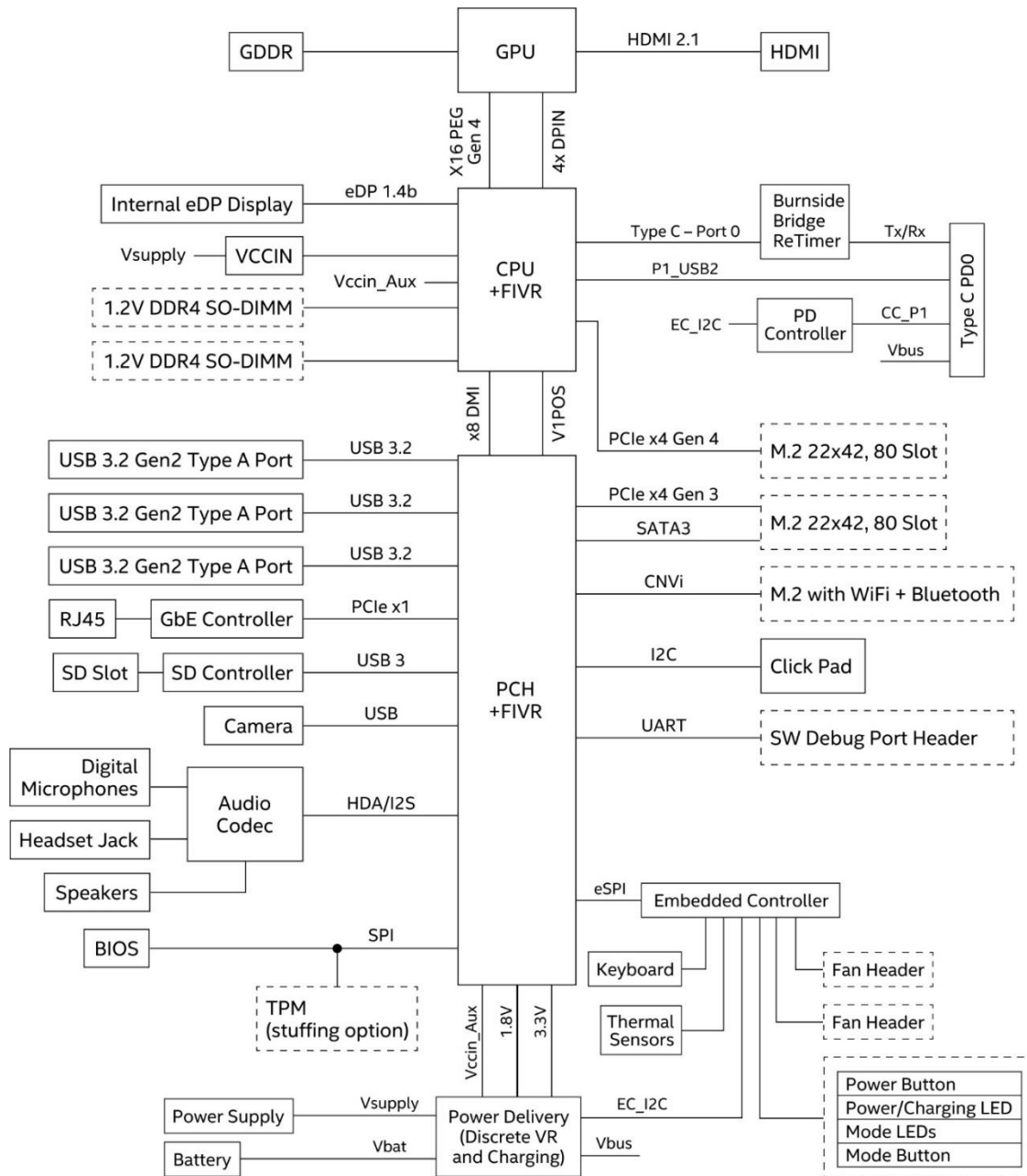


Figure 1. Block Diagram

## 2.2 Exterior Features

The following figures show the exterior features of the laptop

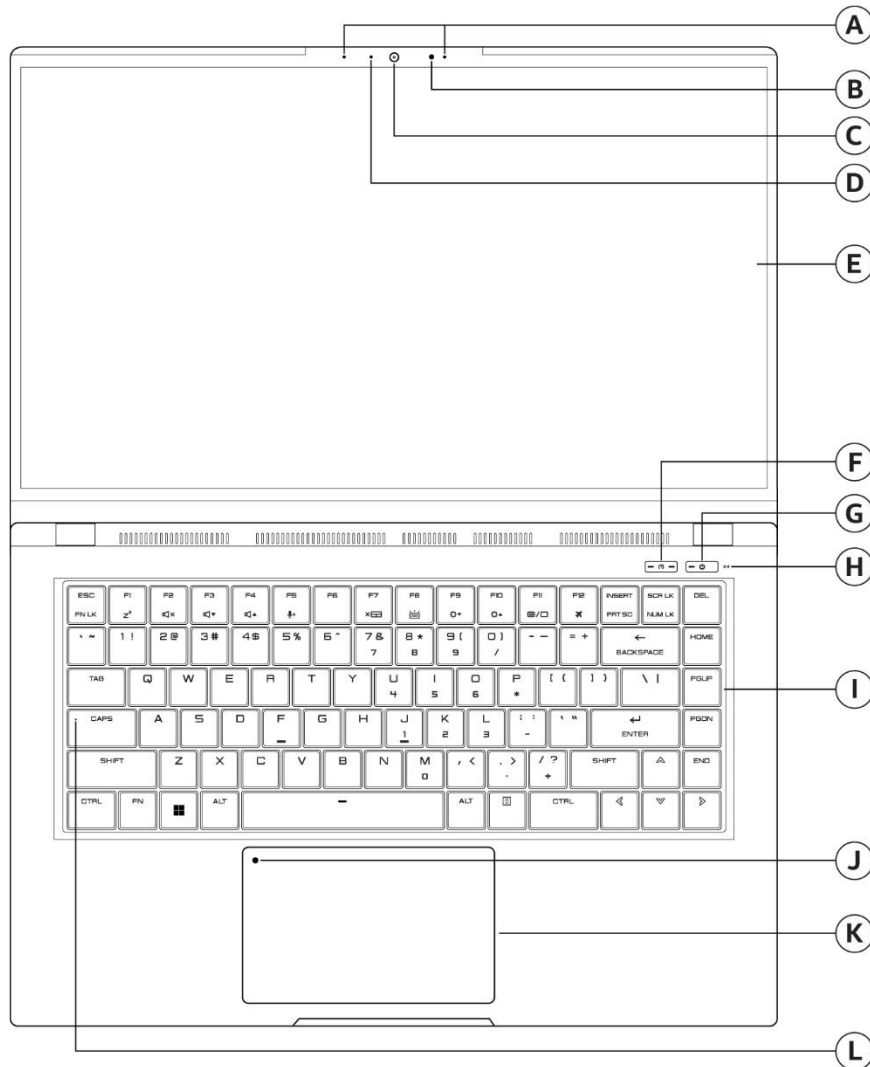
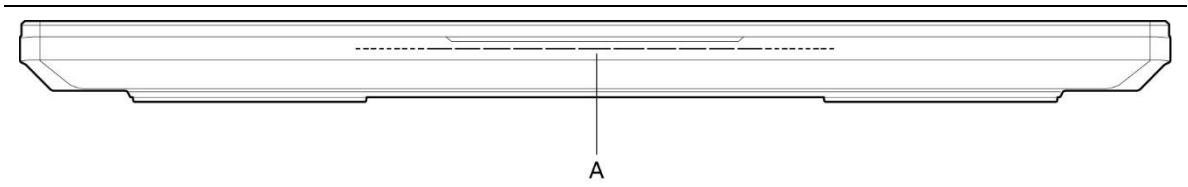


Figure 2. Top-Open Features

Table 4. Top-Open Features

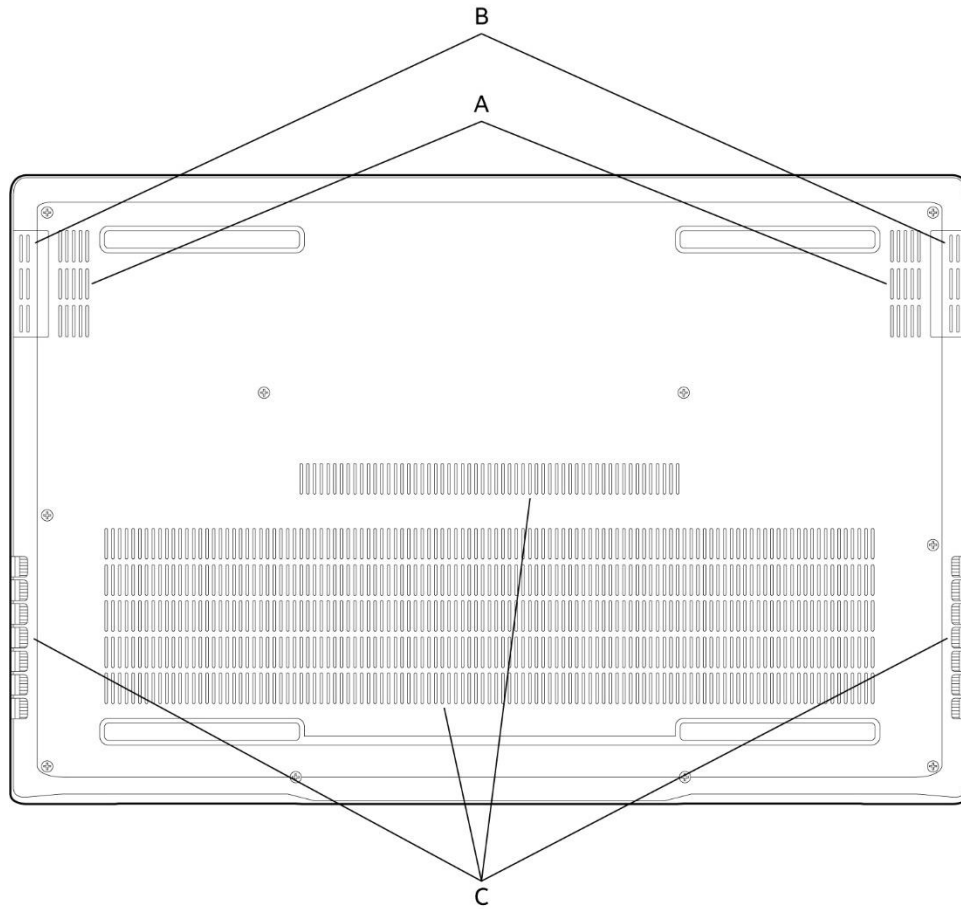
Feature	Description	Feature	Description
A	Digital Microphones	G	Power Button with LED
B	Infrared LED	H	Battery/Charge Status LED
C	HD Camera	I	Keyboard
D	Camera Status LED	J	Touchpad Switch with LED
E	LCD Screen	K	Touchpad/Clickpad
F	Mode Button with LEDs	L	Caps Lock Status LED



**Figure 3. Front Features**

**Table 5. Front Features**

Letter	Feature
A	RGB Light Bar



**Figure 4. Bottom Features**

**Table 6. Bottom Features**

Feature	Description
A	Speakers
B	Antennas
C	Air Vents

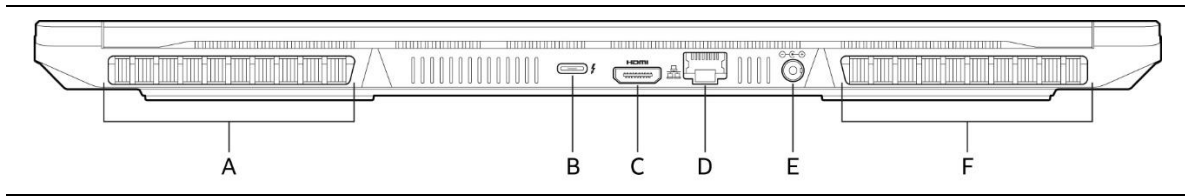


Figure 5. Back Features

Table 7. Back Features

Feature	Description
A	Air Vents
B	Thunderbolt™ 4 Port (USB Type C with support for DisplayPort*)
C	HDMI Port
D	RJ-45 Network Jack
E	Power Connector
F	Air Vents

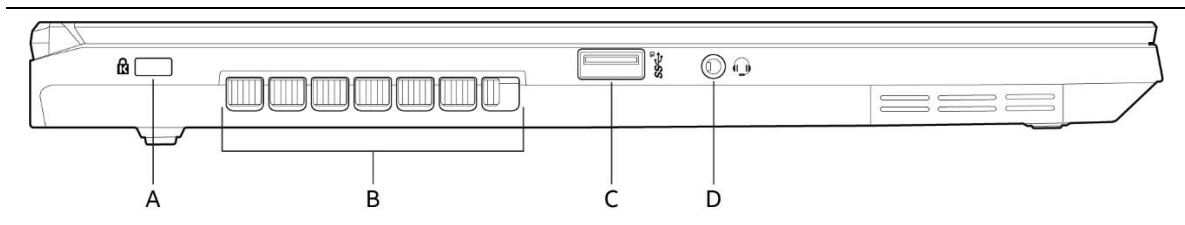


Figure 6. Left Features

Table 8. Left Features

Feature	Description
A	Kensington Security Lock
B	Air Vents
C	USB 3.2 (Gen 2) Type A
D	3.5mm Head Set Jack

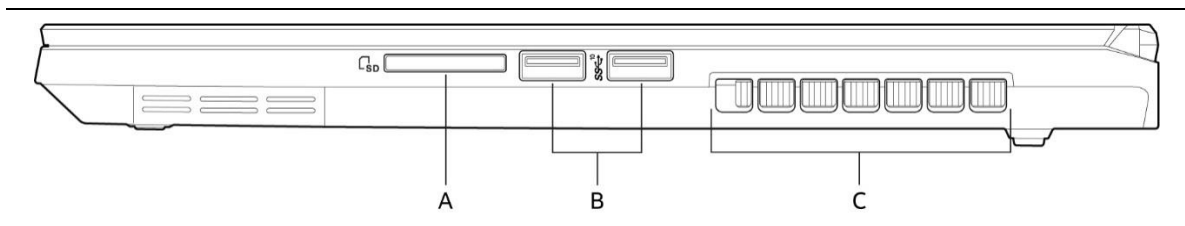


Figure 7. Right Features

Table 9. Right Features

Feature	Description
A	SD Card Slot (SD/SDHC/SDXC)
B	USB 3.2 (Gen 2) Type A
C	Air Vents



## 2.3 Memory

Two 260-pin SO-DIMM sockets support the following memory features:

- 1.2V DDR4 SDRAM SO-DIMMs with gold plated contacts
- Two independent memory channels with interleaved mode support
- Unbuffered, single-sided or double-sided SO-DIMMs
- 32 GB maximum total system memory
- Non-ECC SO-DIMMs
- Serial Presence Detect
- DDR4 3200 MHz SDRAM SO-DIMMs



### NOTE

To be fully compliant with all applicable DDR SDRAM memory specifications, the LAPKC71 should be populated with SO-DIMMs that support the Serial Presence Detect (SPD) data structure. This allows the BIOS to read the SPD data and program the chipset to accurately configure memory settings for optimum performance.

Table 10 lists the supported SO-DIMM configurations.

**Table 10. Supported DDR4/-RS Non-ECC SO-DIMM Module Configurations**

Raw Card Version	DIMM Capacity	DRAM Device Technology	DRAM Organization	# of DRAM Devices	# of Ranks	# of Row/Col Address Bits	# of Banks Inside DRAM	Page Size
A	8GB	8Gb	1024M x 8	8	1	16/10	16	8K
A	16GB	16Gb	2048M x 8	8	1	17/10	16	8K
C	4GB	8Gb	512M x 16	4	1	16/10	8	8K
C	8GB	16Gb	1024M x 16	4	1	17/10	8	8K
E	16GB	8Gb	1024M x 8	16	2	16/10	16	8K
E	32GB	16Gb	2048M x 8	16	2	17/10	16	8K



### CAUTION

Do not add or remove memory with the power on. Always turn off the power and unplug the power cord from the system before adding or removing memory. Otherwise, the system could be damaged.

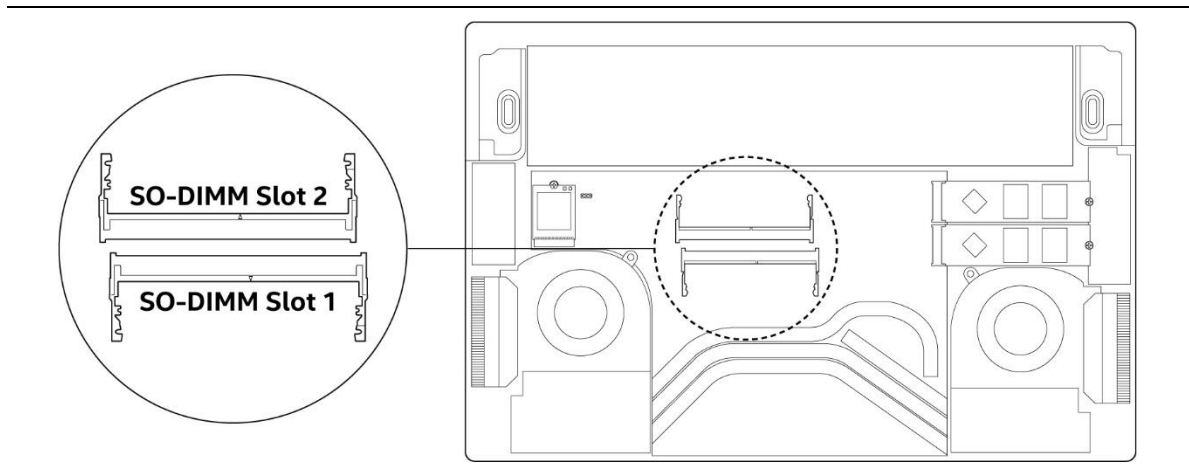


Figure 8. Location of the SO-DIMM Connectors

## 2.4 External Graphics

### Maximum Supported Resolutions

- HDMI\* 2.1 – 7680 x 4320 @ 30 Hz or 3840x2160 @ 120 Hz
- DisplayPort\* 1.4a via Thunderbolt™ 4 Port - 7680 x 4320 @ 60 Hz or 3840x2160 @ 120 Hz

## 2.5 Storage

The following storage interface options are supported via two M.2 2280 (key type M) connectors:

- SATA 6.0 Gb/s storage modules are only supported on M.2 slot B
- Gen 3 PCIe x4 AHCI, NVMe storage modules are supported on M.2 slots A and B
- Gen 4 PCIe x4 AHCI, NVMe storage modules are only supported on M.2 slot A



### NOTE

Intel® Optane™ Memory H10 with Solid State Storage is supported.

### 2.5.1 AHCI Mode

LAPKC51E, LAPKC71E and LAPKC71F support AHCI storage mode.



### NOTE

To use AHCI mode, AHCI must be enabled in the BIOS. Microsoft\* Windows\* 10 includes the necessary AHCI drivers without the need to install separate AHCI drivers during the operating system installation process; however, it is always good practice to update the AHCI drivers to the latest available by Intel.

## 2.5.2 Intel® Rapid Storage Technology / SATA RAID

LAPKC71 supports Intel® Rapid Storage Technology, providing both AHCI and integrated RAID functionality. The RAID capability provides high-performance RAID 0 and 1 functionality on all PCIe NVMe M.2 drives. Other RAID features include hot spare support and SMART alerting. Software components include an Option ROM for pre-boot configuration and boot functionality, a Microsoft Windows compatible driver, and a user interface for configuration and management of the RAID capability.



### NOTE

To use supported RAID features, you must first enable RAID in the BIOS.



### CAUTION

Do not add or remove storage with the power on. Always turn off the power and unplug the power cord from the system before adding or removing storage. Otherwise, the system could be damaged.

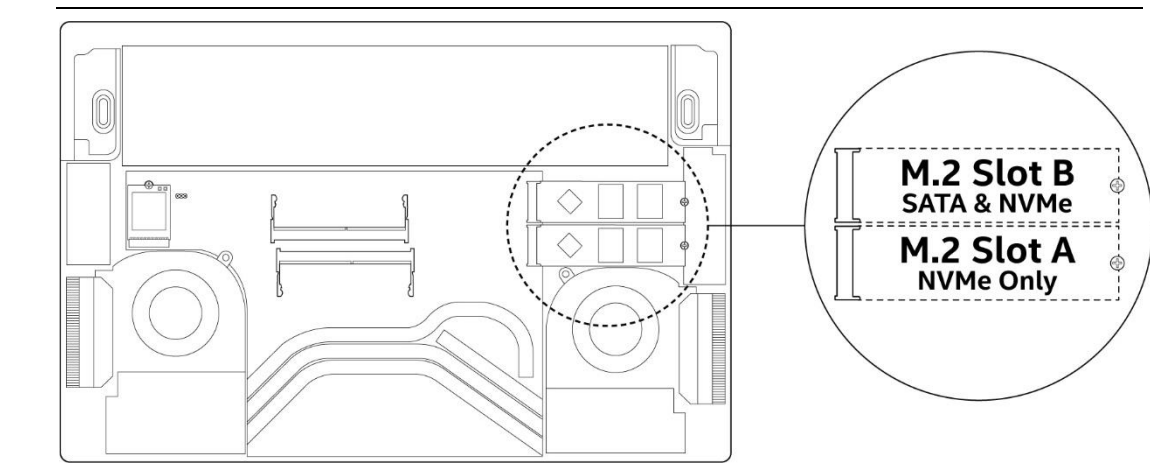


Figure 9. Location of the M.2 Connectors

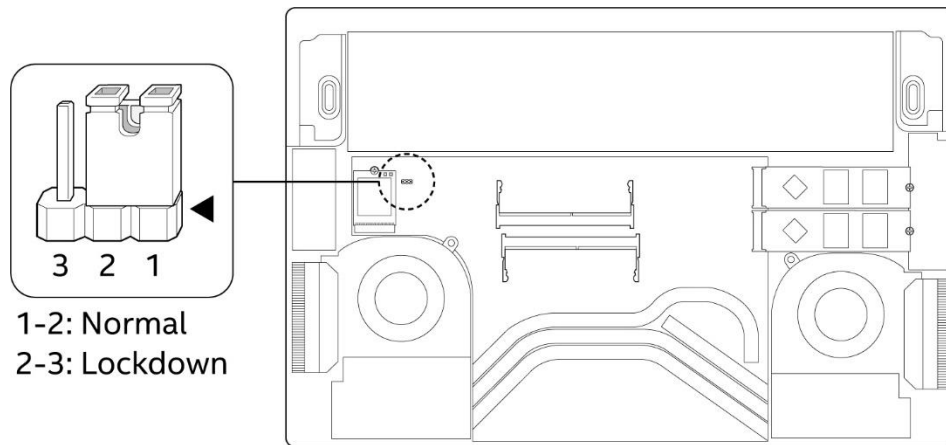
## 2.6 BIOS Security Jumper



### CAUTION

Do not change the jumper with the power on. Always turn off the power and unplug the power cord from the system before changing a jumper setting. Otherwise, the system could be damaged.

Figure 10 shows the location of the BIOS Security Jumper. The 3-position jumper determines the BIOS Security program's mode.



**Figure 10. Location of the BIOS Security Jumper**

Table 11 describes the jumper settings for the three modes: normal, lockdown, and configuration.

**Table 11. BIOS Security Jumper Settings**

Function/Mode	Switch Setting	Configuration
Normal	1-2	The BIOS uses current configuration information and passwords for booting.
Lockdown	2-3	The BIOS uses current configuration information and passwords for booting, except: <ul style="list-style-type: none"> <li>All POST Hotkeys are suppressed (prompts are not displayed, and keys are not accepted. For example, F2 for Setup, F10 for the Boot Menu).</li> </ul> BIOS updates are not available except for automatic Recovery due to flash corruption.
Configuration	None	BIOS Recovery Update process if KCTGL357.CAP file is found. Recovery Update can be cancelled by pressing the Esc key.  If the Recovery Update was cancelled or KCTGL357.CAP file was not found, a Config Menu will be displayed. The Config Menu consists of the following options: <ul style="list-style-type: none"> <li>[1] Suppress this menu until the BIOS Security Jumper is replaced.</li> <li>[2] Clear BIOS User and Supervisor Passwords.</li> <li>[3] Clear Trusted Platform Module Warning: Data encrypted with the TPM will no longer be accessible if the TPM is cleared</li> <li>[F2] BIOS Setup</li> <li>[F4] BIOS Recovery</li> </ul>

## 2.7 Thunderbolt™ 4

Thunderbolt™ 4 is supported with up to 40 Gbps of data throughput, USB 4 connection, charging output capabilities up to 5V at 3A via the USB Type C connector. Maximum graphics output supported is 5K@60Hz or 8K@30/60Hz (HBR3).

## 2.8 Environmental

Table 12 lists the environmental specifications for the LAPKC51E, LAPKC71E and LAPKC71F.

**Table 12. Environmental Specifications**

Parameter	Specification		
<b>Temperature</b>			
Non-Operating	-40 °C to +60 °C		
Operating	0 °C to +30 °C		
<b>Shock</b>			
Unpackaged	50 g trapezoidal waveform		
	Velocity change of 170 inches/s <sup>2</sup>		
Packaged	Half sine 2 millisecond		
	Product Weight (pounds)	Free Fall (inches)	Velocity Change (inches/s <sup>2</sup> )
	<20	36	167
	21-40	30	152
	41-80	24	136
	81-100	18	118
<b>Vibration</b>			
Unpackaged	5 Hz to 20 Hz: 0.01 g <sup>2</sup> Hz sloping up to 0.02 g <sup>2</sup> Hz		
	20 Hz to 500 Hz: 0.02 g <sup>2</sup> Hz (flat)		
Packaged	5 Hz to 40 Hz: 0.015 g <sup>2</sup> Hz (flat)		
	40 Hz to 500 Hz: 0.015 g <sup>2</sup> Hz sloping down to 0.00015 g <sup>2</sup> Hz		

**Note:** Before attempting to operate this product, the overall temperature of the product must be above the minimum operating temperature specified. It is recommended that the product temperature be at least room temperature before attempting to power on the product. The operating and non-operating environment must avoid condensing humidity.

**Warning!** To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to come into contact with the skin or a soft surface, such as pillows or rugs or clothing, during operation. The computer and the AC adapter comply with the user -accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950-1 and IEC 62368-1).

## 3 Characterized Errata

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This section of the document communicates product Errata for the Intel® NUC X15 Laptop Kits.

Errata are design defects or deviations from current published specifications for a given product. Published errata may or may not be corrected. Hardware and software designed to be used with any given processor stepping must assume that all errata documented for that process stepping are present on all devices.

### 3.1 64GB Unsupported Memory Configuration

**PROBLEM:** Due to the memory design layout the total memory capacity on the Intel® NUC Laptop Kits - LAPKC51E, LAPKC71E, and LAPKC71F is limited to 2x16GB or 32GB.

**IMPLICATION:** A total maximum memory configuration of 64GB memory may cause performance instability.

**Workaround:** None.

**STATUS:** This issue will not be fixed in a subsequent release of the Intel® NUC Laptop Kits - LAPKC51E, LAPKC71E, and LAPKC71F.