OVERVIEW

1.	SD card reader	5.	Power connector
2.	USB 3.2 Gen 1	6.	2x Thunderbolt 4
3.	USB 3.2 Gen 1 (Always On)	7.	HDMI 2.0 / 2.1
4.	Kensington Nano Security Slot	8.	Headphone / microphone combo jack (3.5mm)

Notes:
- Nano-SIM card slot on the right side (not shown on the sample product above)

PERFORMANCE

Processor

Processor Family

11th Generation Intel® Core™ i7 / i9 Processor

Processor

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Memory Support	Processor Graphics
Core i7-11800H	8	16	2.3GHz	4.6GHz	24MB	DDR4-3200	Intel UHD Graphics
Core i7-11850H	8	16	2.5GHz	4.8GHz	24MB	DDR4-3200	Intel UHD Graphics
Core i9-11950H	8	16	2.6GHz	5.0GHz	24MB	DDR4-3200	Intel UHD Graphics

Operating System

Operating System

- Windows® 10 Home 64
- Windows 10 Pro 64
- Linux
- Ubuntu Linux
- No operating system

Graphics

Graphics

Graphics	Type	Memory	Key Features
Intel UHD Graphics	Integrated	Shared	DirectX® 12
NVIDIA® GeForce® RTX™ 3050 Ti	Discrete	4GB GDDR6	DirectX 12
NVIDIA GeForce RTX 3060	Discrete	8GB GDDR6	DirectX 12
NVIDIA GeForce RTX 3070	Discrete	8GB GDDR6	DirectX 12
NVIDIA GeForce RTX 3080	Discrete	16GB GDDR6	DirectX 12

Monitor Support

Monitor Support

Supports up to 4 independent displays via native display and 3 external monitors; supports external monitors via HDMI® (up to 4K@60Hz) or Thunderbolt™ (up to 5K@60Hz)

Chipset

Chipset

Intel WM590 chipset

Memory

Max Memory[1]

Up to 64GB DDR4-3200

Memory Slots

Two DDR4 SO-DIMM slots, dual-channel capable

Memory Type

DDR4-3200

Notes:

1. The max memory is based on the test results with current Lenovo® memory offerings. The system may support more memory as the technology develops.

Storage

Storage Support

- Model with Intel UHD Graphics or RTX 3050 Ti Graphics:
  up to two drives, 2x M.2 2280 SSD

- M.2 2280 SSD up to 2TB
- RAID 0/1 support
- Model with RTX 3060/3070/3080 Graphics:
  one drive, up to 2TB M.2 2280 SSD

Storage Slot[1]

- Model with Intel UHD Graphics or RTX 3050 Ti Graphics: two M.2 slots
  - One M.2 2280 PCIe Gen 3x4 slot, supports M.2 2280 SSD
  - One M.2 2280 PCIe Gen 4x4 slot, supports M.2 2280 SSD
- Model with RTX 3060/3070/3080 Graphics: one M.2 slot
  - One M.2 2280 PCIe Gen 4x4 slot, supports M.2 2280 SSD

Storage Type

Disk Type	Interface	Offering	Security
M.2 2280 SSD	PCIe NVMe, PCIe x4	256GB / 512GB / 1TB	Opal2
M.2 2280 SSD	PCIe NVMe, PCIe 4.0 x4 Performance	512GB / 1TB / 2TB	Opal2

RAID[2]

RAID 0/1 support

Notes:

1. M.2 PCIe Gen 4 SSD in the M.2 PCIe Gen 3 slot is downgraded to PCIe Gen 3 performance
2. Both SSD drives work at PCIe Gen 3 performance in RAID mode

Removable Storage

Optical

None

Card Reader

SD card reader, supports UHS-II SD card

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC3306 codec

Speakers

Stereo speakers, 2W x2, Dolby® Atmos®

Microphone[1]

- Dual array microphone, far-field
- No microphone

Camera[2]

- 1080p, with privacy shutter, fixed focus
- IR & 1080p hybrid, with privacy shutter, fixed focus
- No camera

Notes:

1. No microphone is for speical bid only
2. No camera is for speical bid only

Battery

Battery

Integrated Li-Polymer 90Wh battery, supports Rapid Charge (charge up to 80% in 1hr)

Max Battery Life[1]

MobileMark® 2018: 10.7 hr
JEITA 2.0: 12.8 hr

Notes:

1. All battery life claims are approximate maximum and based on results using the MobileMark 2014, MobileMark 2018, and/or JEITA 2.0 battery-life benchmark tests. Actual battery life will vary and depends on many factors such as product configuration and usage, software use, wireless functionality, power management settings, and screen brightness. The maximum capacity of the battery will decrease with time and use.

Power Adapter

Power Adapter[1]

- 135W slim tip AC adapter
- 170W slim tip AC adapter
- 230W slim tip AC adapter

Notes:

1. 135W for Intel UHD Graphics, 170W for RTX 3050 Ti Graphics, and 230W for RTX 3060/3070/3080 Graphics

DESIGN

Display

Display[2]

Size	Resolution	Touch	Type	Brightness	Surface	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle	Key Features
16.0″	WQXGA (2560x1600)	None	IPS	400 nits	Anti-glare	16:10	1200:1	100% sRGB	170°	Low blue light
16.0″	WQUXGA (3840x2400)	Multi-touch	IPS	600 nits	Anti-reflection, Anti-smudge	16:10	1500:1	100% Adobe®	170°	Low blue light, Dolby Vision™, HDR 400
16.0″	WQUXGA (3840x2400)	None	IPS	600 nits	Anti-glare	16:10	1500:1	100% Adobe	170°	Low blue light, Dolby Vision, HDR 400

Color Calibration

- X-Rite Pantone factory color calibration (WQUXGA display)
- No color calibration

Touchscreen

- Capacitive-type multi-touch, supports 10-point touch
- Non-touch

Notes:

1. California Electronic Waste Recycling Fee
   In California, per state law, Lenovo charges an electronic waste recycling fee on this covered device at the time of sale of the product. For more information, go to https://www.calrecycle.ca.gov/Electronics/Consumer
2. In marketing terms, WQXGA is QHD+ and WQUXGA is UHD+
   WQXGA display comes with black paint top cover only
   WQUXGA display comes with black weave top cover only

Input Device

Pen

- Lenovo Precision Pen 2
- No pen (pen needs to be purchased separately)
- No support (non-touch display doesn't support pen input)

Keyboard

6-row, spill-resistant, multimedia Fn keys with Unified Communications controls

Keyboard Backlight

LED backlight

UltraNav™

TrackPoint® pointing device and glass surface multi-touch touchpad

Mechanical

Dimensions (WxDxH)

Models	Dimensions
Touch models	359.5 x 253.8 x 18.2 mm (14.15 x 9.99 x 0.72 inches)

Non-touch models	359.5 x 253.8 x 17.7 mm (14.15 x 9.99 x 0.7 inches)

Weight[1]

Models	Weight
Touch models	1.86 kg (4.1 lbs)
Non-touch models	1.81 kg (3.99 lbs)

Case Color

- Black, paint
- Black, weave

Case Material

Carbon fiber hybrid (top), aluminium alloy (bottom)

Notes:

1. The system weight varies depending on configurations

CONNECTIVITY

Network

Onboard Ethernet

Ethernet support via optional Lenovo USB-C to Ethernet Adapter

WLAN + Bluetooth®[1]

Intel Wi-Fi 6E AX210, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2

WWAN[2]

- Qualcomm® Snapdragon™ X55 5G Modem M.2 card - RF System with embedded eSIM functionality
- No support

SIM Card

No SIM card inbox

NFC

No support

Notes:

1. 6GHz Wi-Fi 6E operation is dependent on the support of the operating system, routers/APs/Gateways that support Wi-Fi 6E, and the regional regulatory certifications & spectrum allocation
Bluetooth 5.2 is supported with driver version 22.30 and later
2. WWAN is not available for the models with RTX 3060/3070/3080 graphics

Ports[1]

Standard Ports[2]

- 1x USB 3.2 Gen 1
- 1x USB 3.2 Gen 1 (Always On)
- 2x Thunderbolt 4 / USB4™ 40Gbps (support data transfer, Power Delivery 3.0 and DisplayPort™ 1.4)
- 1x SD card reader
- 1x headphone / microphone combo jack (3.5mm)
- 1x power connector

Optional Ports

- 1x Nano-SIM card slot (WWAN model)
- 1x HDMI 2.0 (model with integrated graphics)
- 1x HDMI 2.1 (model with discrete graphics)

Notes:

1. The transfer speed of following ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes and other factors related to system configuration and your operating environment, will be slower than theoretical speed.
USB 2.0: 480 Mbit/s;
USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formely USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formely USB 3.1 Gen 2): 10 Gbit/s;
USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
Thunderbolt 3: 40 Gbit/s;

FireWire 400: 400 Mbit/s;
FireWire 800: 800 Mbit/s
2. Depending on many factors, actual data transfer speed may be lower than theoretical speed

Monitor Cable

Monitor Cable

- Lenovo HDMI to VGA Monitor Adapter
- Lenovo USB-C to DisplayPort Adapter
- Lenovo USB-C to VGA Adapter
- No monitor cable

SECURITY & PRIVACY

Security

Security Chip

- Discrete TPM 2.0, TCG certified
- Firmware TPM 2.0 integrated in chipset
- Disabled (in some regions)

Physical Locks

Kensington® Nano Security Slot

Smart Card Reader

No smart card reader

Fingerprint Reader

Touch style fingerprint reader on power button, match-on-chip

BIOS Security

- Supervisor password
- Power-on password
- NVMe password
- Self-healing BIOS

Other Security

- (Optional) Camera privacy shutter
- (Optional) IR camera for Windows Hello

MANAGEABILITY

System Management

System Management

- Intel vPro Technology, DASH
- None

SERVICE

Warranty

Base Warranty[1]

- 1-year depot service
- 1-year depot with 2-year system board service
- 1-year limited onsite service
- 1-year + 2-year depot service
- 1-year + 2-year limited onsite service
- 3-year (1-yr battery) depot service
- 3-year (1-yr battery) limited onsite service
- No base warranty

Notes:

1. No base warranty is for speical bid only

ENVIRONMENTAL

Operating Environment

Temperature[1]

- Storage and transportation in original shipping package: -20°C (-4°F) to 60°C (140°F)
- Storage without package: 5°C (41°F) to 43°C (109°F)
- Operating: 5°C (41°F) to 35°C (95°F)

Humidity

- Operating: 8% to 95% at wet-bulb temperature 23°C (73°F)
- Storage and transportation: 5% to 95% at wet-bulb temperature 27°C (81°F)

Altitude

Maximum altitude (without pressurization): 3048 m (10,000 ft)

Notes:

1. When you charge the battery, its temperature must be no lower than 10°C (50°F)

ACCESSORIES

Bundled Accessories

Bundled Accessories

- Lenovo USB-C to Ethernet Adapter
- None

CERTIFICATIONS

Green Certifications

Green Certifications

- EPEAT™ Gold
- ENERGY STAR® 8.0
- TCO
- RoHS compliant

Other Certifications

Mil-Spec Test

Work in progress

intel

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