ChengMing 3990

Setup and specifications guide

Notes, cautions, and warnings

(i) **NOTE:** A NOTE indicates important information that helps you make better use of your product.

⚠ **CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.**

⚠ **WARNING: A WARNING indicates a potential for property damage, personal injury, or death.**

Contents

Set up your computer

Steps

1. Connect the keyboard and mouse.
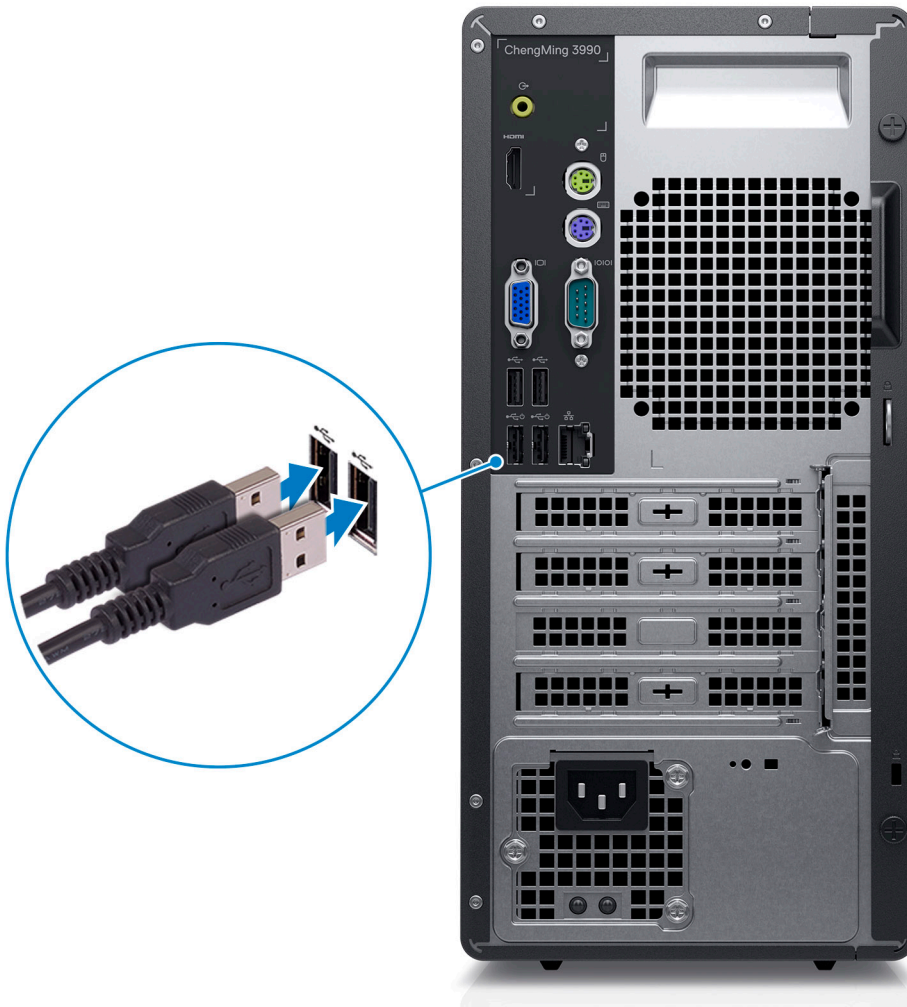
2. Connect to your network using a cable, or connect to a wireless network.
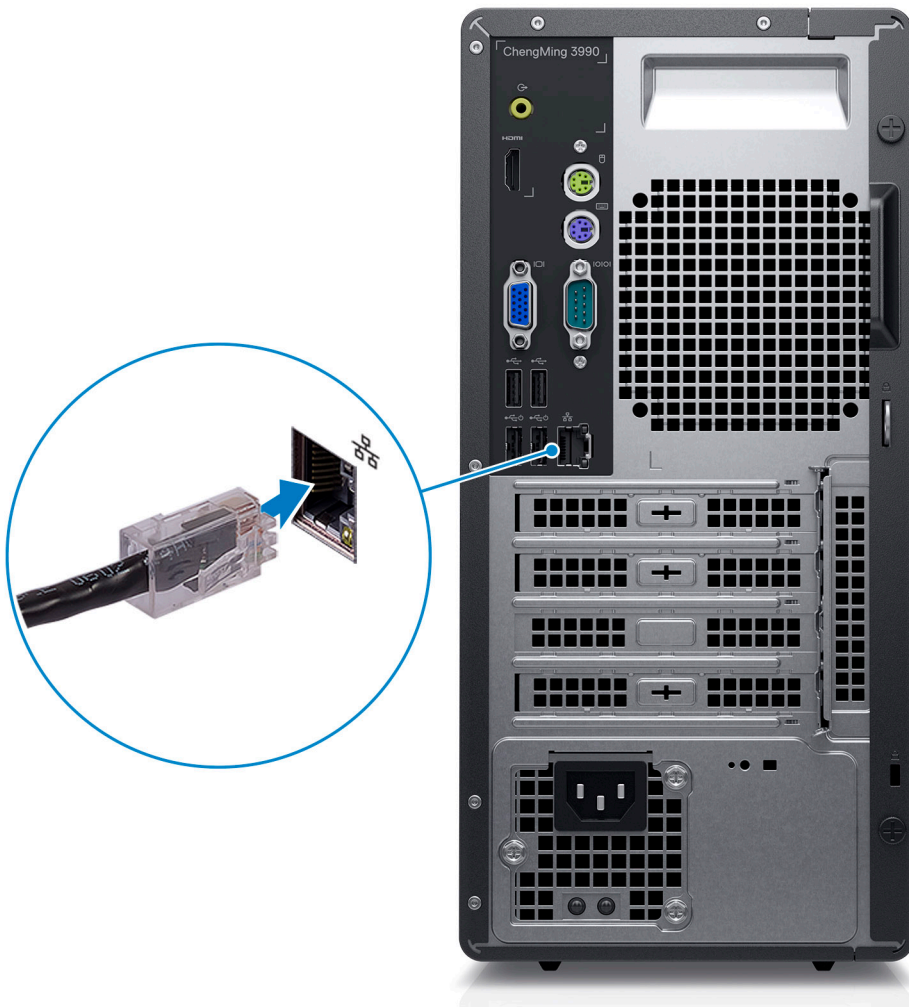
3. Connect the display.

4. Connect the power cable.

5. Press the power button.
6. Finish Windows system setup.

   Follow the on-screen instructions to complete the setup. When setting up, Dell recommends that you:

   - Connect to a network for Windows updates.
     (i) **NOTE:** If connecting to a secured wireless network, enter the password for the wireless network access when prompted.
   - If connected to the internet, sign-in with or create a Microsoft account. If not connected to the internet, create an offline account.
   - On the **Support and Protection** screen, enter your contact details.

7. Locate and use Dell apps from the Windows Start menu—Recommended.

Table 1. Locate Dell apps

Resources	Description
	Dell Product Registration Register your computer with Dell.
	Dell Help & Support Access help and support for your computer.

Table 1. Locate Dell apps (continued)

Resources	Description
	SupportAssist SupportAssist is the smart technology that keeps your computer running at its best by optimizing settings, detecting issues, removing viruses and notifies when you need to make system updates. SupportAssist proactively checks the health of your system's hardware and software. When an issue is detected, the necessary system state information is sent to Dell to begin troubleshooting. SupportAssist is preinstalled on most of the Dell devices running Windows operating system. For more information, see SupportAssist for Home PCs User's Guide on www.dell.com/serviceabilitytools. (i) **NOTE:** In SupportAssist, click the warranty expiry date to renew or upgrade your warranty.
	Dell Update Updates your computer with critical fixes and latest device drivers as they become available. For more information about using Dell Update, see the knowledge base article 000149088 at www.dell.com/support.
	Dell Digital Delivery Download software applications, which are purchased but not pre-installed on your computer. For more information about using Dell Digital Delivery, see the knowledge base article 000129837 at www.dell.com/support.

Chassis overview

Topics:

* Front view
* Back view

Front view
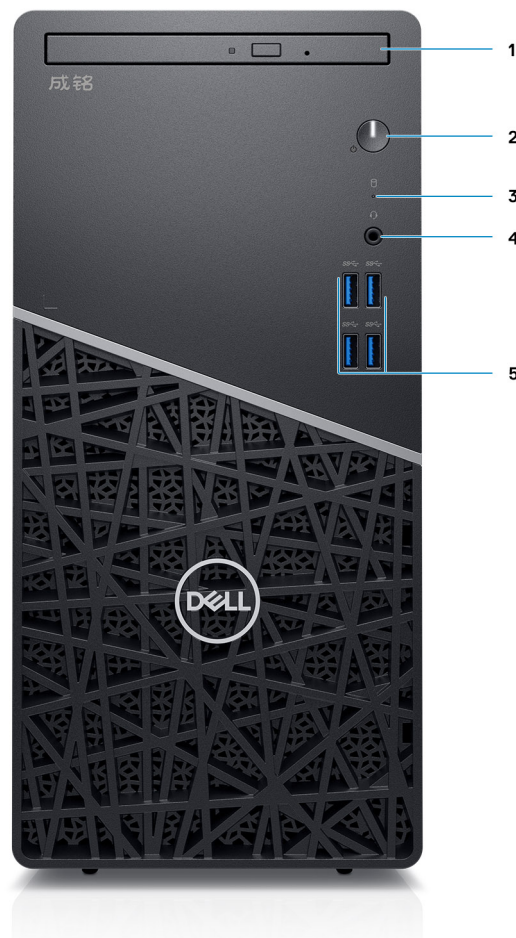
Figure 1. Front view

1. Optical Disk Drive
3. Hard drive activity light
5. Four USB 3.2 Gen1 Type-A

2. Power button
4. Headset/Universal audio jack port
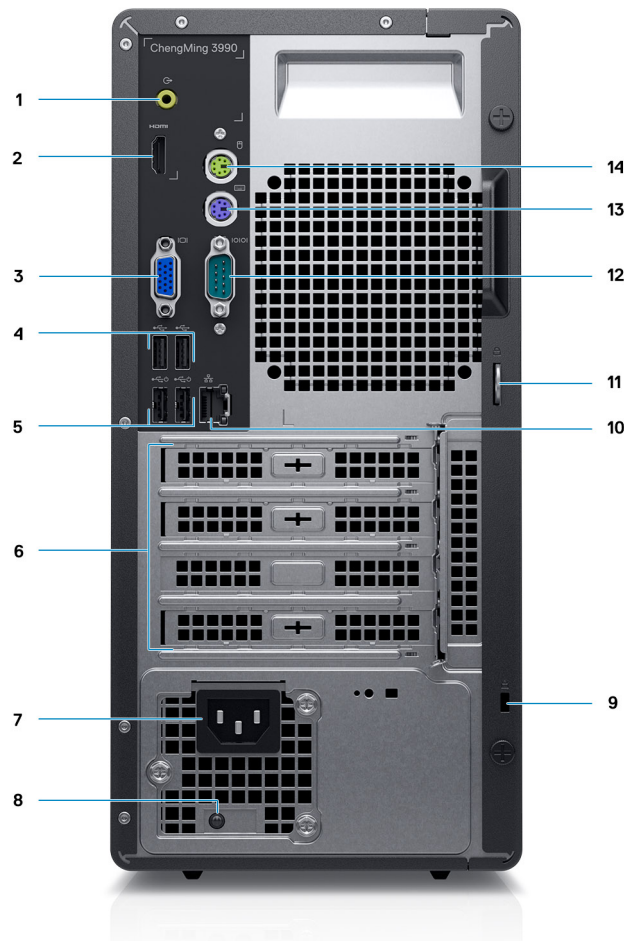
Back view

Figure 2. Back view

1. Line-out audio jack
2. HDMI port
3. VGA port
4. Two USB 2.0 port
5. Two USB 2.0 ports with Smart Power On
6. Expansion slot x 4 (1XPCI, 1XPCIex16, 2XPCIex1)
7. Power port
8. Power-supply diagnostics light
9. Kensington lock
10. Network port
11. Padlock loop
12. Serial port
13. PS2 Slots for Keyboard
14. PS2 Slots for Mouse

Technical specifications

> ⓘ **NOTE:** Offerings may vary by region. The following specifications are only those required by law to ship with your computer. For more information about the configuration of your computer, go to Help and Support in your Windows operating system and select the option to view information about your computer.

Topics:

• Technical specifications

Technical specifications

> ⓘ **NOTE:** Offerings may vary by region. The following specifications are only those required by law to ship with your computer. For more information about the configuration of your computer, go to **Help and Support** in your Windows operating system and select the option to view information about your computer.

Processors

> ⓘ **NOTE:** Global Standard Products (GSP) are a subset of Dell's relationship products that are managed for availability and synchronized transitions on a worldwide basis. They ensure the same platform is available for purchase globally. This allows customers to reduce the number of configurations managed on a worldwide basis, thereby reducing their costs. They also enable companies to implement global IT standards by locking in specific product configurations worldwide.

> ⓘ **NOTE:** VGA and HDMI ports are not available for computers shipped with 10**th Generation Intel Core i5-10400F and 10**th **Generation Intel Core i7-10700F processors**

Table 2. Processors

Processors	Wattage	Core count	Thread count	Speed	Cache	Integrated graphics
10th Generation Intel Celeron G5900	58 W	2	4	3.40 GHz	2 MB	Intel UHD Graphics GT2
10th Generation Intel Pentium G6400	58 W	2	4	4.0 GHz	4 MB	Intel UHD Graphics GT2
10th Generation Intel Core i3-10100	65 W	4	8	3.60 GHz to 4.30 GHz	6 MB	Intel UHD Graphics GT2
10th Generation Intel Core i3-10400	65 W	6	12	2.90 GHz to 4.30 GHz	12 MB	Intel UHD Graphics GT2
10th Generation Intel Core i5-10400F (must pair with discrete graphics)	65 W	6	12	2.90 GHz to 4.30 GHz	12 MB	Not available
10th Generation Intel Core i5-10500	65 W	6	12	3.10 GHz to 4.50 GHz	12 MB	Intel UHD Graphics GT2
10th Generation Intel Core i7-10700F (must pair with discrete graphics)	65 W	8	12	2.90 GHz to 4.80 GHz	16 MB	Not available
10th Intel Celeron G5905	58 W	2	2	Up to 3.5 GHz	4 MB	Intel UHD Graphics 610
10th Intel Pentium Gold 6405	58 W	2	4	Up to 4.1 GHz	4 MB	Intel UHD Graphics 610

Table 2. Processors (continued)

Processors	Wattage	Core count	Thread count	Speed	Cache	Integrated graphics
10th Intel Core i3-10105	65 W	4	8	3.7 GHz to 4.4 GHz	6 MB	Intel UHD Graphics 630
10th Intel Core i5-10505	65 W	6	12	3.2 GHz to 4.6 GHz	12 MB	Intel UHD Graphics 630

Chipset

Table 3. Chipset

Description	Values
Chipset	Intel B460
Processor	10th Generation Intel Core i3/i5/i7/ Pentium / Celeron
DRAM bus width	64-bit
PCIe bus	Up to Gen3

Operating system

Your ChengMing 3990/3991 supports the following operating systems:

● Windows 11 Pro, 64-bit
● Windows 11 Pro National Academic, 64-bit
● Windows 11 Home, 64-bit
● Windows 11 Home National Academic, 64-bit
● Windows 10 Home, 64-bit
● Windows 10 Pro, 64-bit
● Windows 10 Pro Education, 64-bit
● Windows 10 CMIT Government Edition, 64-bit (China only)
● Kylin Linux Desktop version 10.1 (China only)

Memory

ⓘ **NOTE:** Memory modules should be installed in pairs of matched memory size, speed, and technology. If the memory modules are not installed in matched pairs, the computer will continue to operate, but with a slight reduction in performance. The entire memory range is available to 64-bit operating systems.

ⓘ **NOTE:** A multiple-DIMM memory option is recommended to prevent any performance reduction. If the system configuration includes integrated graphics, consider selecting 2 or more DIMMs

Table 4. Memory specifications

Description	Values
Slots	2 UDIMM
Type	DDR4
Speed	● 2666 MHz for Intel Core i3/i5 processors ● 2933 MHz for Intel Core i7 processors
Maximum memory	64 GB

Table 4. Memory specifications (continued)

Description	Values
Minimum memory	4 GB
Memory size per slot	4 GB, 8 GB, 16 GB , 32 GB
Configurations supported	4 GB (1 x 4 GB) 8 GB (1 x 8 GB, 2 x 4 GB) 12 GB (1 x 4 GB + 1 x 8 GB) 16 GB (1 x 16 GB, 2 x 8 GB) 32GB (1 X 32 GB) 32 GB (2 x 16 GB) 64 GB (2 x 32 GB) **ⓘ NOTE:** The available physical memory is 3200 MHz, actual performance is CPU variant dependent. Core i7 CPU runs at 2933 MHz, for other CPUs, the actual speed is 2666 MHz.

Intel Optane memory

Intel Optane memory functions only as a storage accelerator. It neither replaces nor adds to the memory (RAM) installed on your computer .

ⓘ **NOTE:** Intel Optane memory is supported on computers that meet the following requirements:

- 10th Generation or higher Intel Core i3/i5/i7 processor
- Windows 10 64-bit version or higher
- Latest version of Intel Rapid Storage Technology driver
- UEFI boot mode configuration

Table 5. Intel Optane memory

Description	Values
Type	M.2 SATA 2280
Interface	PCIe x4, NVMe
Connector	N/A
Configurations supported	16 GB, 32 GB
Capacity	Up to 32 GB

Storage

Your computer supports one of the following configurations:The primary drive of your computer varies with the storage configuration. For computers:

- the 2.5-inch hard drive is the primary drive
- 3.5 inch hard drive
- M.2 2230 drive
- M.2 2280 drive

ⓘ **NOTE:** For dual 2.5-inch hard drive and Intel Optane memory configuration, you must disconnect the 2nd hard drive from the controller to support Intel Optane memory in the Windows operating system.

Table 6. Storage specifications

Storage type	Interface type	Capacity
2.5 inch HDD, 5400 RPM	SATA 3.0	Up to 2 TB
2.5 inch HDD, 7200 RPM	SATA 3.0	Up to 1 TB
3.5 inch HDD 7200 RPM	SATA 3.0	Up to 2 TB
M.2 SATA 2230	PCIe NVMe 3x4	512 GB
M.2 SATA 2280	PCIe NVMe 3x4	512 GB

Audio

Table 7. Audio specifications

Description		Values
Controller		Realtek ALC3246
Stereo conversion		Supported
Internal interface		Intel HDA
External interface		● Universal audio jack ● Audio LO
Speakers (optional)		2 W per channel
Internal speaker amplifier		>20 mW
External volume controls		Supported
Speaker output:		
	Average	2 W
	Peak	2 W
Subwoofer output		Not supported
Microphone		4

Video

Table 8. Discrete graphics specifications

Discrete graphics			
Controller	External display support	Memory size	Memory Type
NVIDIA GeForce GTX 1660 Super (optional, must pair with 360W PSU)	DVI/HDMI/DP	6 GB	GDDR5
AMD Radeon RX640 (Optional)	DVI/HDMI/DP	4 GB	GDDR5

Table 8. Discrete graphics specifications (continued)

Discrete graphics			
Controller	**External display support**	**Memory size**	**Memory Type**
NVIDIA GeForce GT730 (Optional)	DP	2 GB	GDDR5
AMD Radeon R5430 (Optional)	DP	2 GB	GDDR5

Table 9. Integrated graphics specifications

Integrated graphics			
Controller	**External display support**	**Memory size**	**Processor**
Intel UHD Graphics GT2	HDMI 1.4b	Shared system memory	10th Generation Intel Core i3/i5/i7

Communications

Ethernet

Table 10. Ethernet specifications

Description	Values
Model number	Realtek 8111H
Transfer rate	10/100/1000 Mbps

Wireless module

Table 11. Wireless module specifications

Description	One	Two
Model number	Intel 3165	Intel 9260
Transfer rate	Up to 433 Mbps	Upto 1.73 Gbps
Frequency bands supported	2.4 GHz/5 GHz	2.4 GHz to 5 GHz
Wireless standards	● Wi-Fi 5 (WiFi 802.11ac) ● Wi-Fi 6 (Wi-Fi 802.11ax) ● WiFi 802.11a/b/g ● Wi-Fi 4 (WiFi 802.11n)	● Wi-Fi 802.11 a/b/g ● Wi-Fi 4 (WiFi 802.11n) ● Wi-Fi 5 (WiFi 802.11ac)
Encryption	● 64-bit/128-bit WEP ● AES-CCMP ● TKIP	● 64-bit/128-bit WEP ● AES-CCMP ● TKIP
Bluetooth	Bluetooth 5.0	Bluetooth 5.1

Ports and connectors

Table 12. External ports and connectors

Description	Values
External:	
USB	● 4 USB 3.2 Gen 1 Type-A ports (front) ● 4 USB 2.0 Type-A ports (Rear)

Table 13. Internal ports and connectors

Description	Values
Internal:	
Expansion	● 1 full-height Gen 3 PCIe x16 slot ● 2 full-height PCIe x 1 slot ● 1 full-height PCI slot
SATA slots	2 SATA slots for 3.5-inch HDD, 2.5-inch HDD/SSD 1 SATA slot for ODD
M.2	● 1 M.2 2230 slot for WiFi and Bluetooth card ● 1 M.2 slot for 2280 PCIe solid-state drive/Intel Optane (i) **NOTE:** To learn more about the features of different types of M.2 cards, see the knowledge base article SLN301626.

Power supply unit

Table 14. Power supply unit specifications

Description	Values		
Type	360 W Bronze	260 W Bronze	200 W Bronze
Diameter (connector)	NA	NA	NA
Input voltage	90 VAC to 264 VAC	90 VAC to 264 VAC	90 VAC to 264 VAC
Input frequency	47 Hz to 63 Hz	47 Hz to 63 Hz	47 Hz to 63 Hz
Input current (maximum)	5 A	4.2 A	3.2 A
Output current (continuous)	● 12VA - 18A ● 12VB – 18A ● 12VC - 12A Standby mode: ● 12VA - 1.5A ● 12VB – 2.5A ● 12VC - 0A	● 12VA - 16.5A ● 12VB – 18A Standby mode: ● 12VA - 0.5 or 1.5A ● 12VB – 2.5A	● 12VA - 16.5A ● 12VB – 14A Standby mode: ● 12VA - 0.5A ● 12VB – 2.5A
Rated output voltage	● 12VA ● 12VB ● 12VC	● 12VA ● 12VB	● 12VA ● 12VB
Temperature range:			5°C to 45°C (41°F to 113°F)
Operating	5°C to 45°C (41°F to 113°F)	5°C to 45°C (41°F to 113°F)	-40°C to 70°C (-40°F to 158°F)

Table 14. Power supply unit specifications (continued)

Description	Values	
Storage	-40°C to 70°C (-40°F to 158°F)	-40°C to 70°C (-40°F to 158°F)

Dimensions and weight

Table 15. Dimensions and weight

Description	Values
Height:	
Front	324.3mm (12.77 in.)
Rear	324.3mm (12.77 in.)
Width	154 mm (6.06 in.)
Depth	292.20 mm (11.50 in.)
Weight (maximum)	6.828 kg (15.89 lb) ⓘ **NOTE:** The weight of your computer depends on the configuration ordered and the manufacturing variability.

Add-in cards

Table 16. Add-in cards

Add-in cards (Optional)
Serial/Parallel Port Card FH
2nd Intel Gb NIC PCIe Card FH (I210 1G NIC add-in card)
USB Type - A 3.1 Gen 2
USB-C 3.1 PCIe add-in card

Security

Table 17. Security

Security options	ChengMing 3990/3991
1 Kensington security-cable slot	Supported
Trusted Platform Module TPM 2.0 (firmware TPM only)	Supported
Local hard drive data wipe through BIOS (Secure Erase)	Supported
Microsoft Windows Bitlocker	Supported
Secure Boot	Standard

Data security

Table 18. Data security

Data security options	Values
SafeGuard and Response, powered by VMware Carbon Black and Secureworks	Supported
Next Generation Antivirus (NGAV)	Supported
Endpoint Detection and Response (EDR)	Supported
Threat Detection and Response (TDR)	Supported
Managed Endpoint Detection and Response	Supported
Incident Management Retainer	Supported
Emergency Incident Response	Supported
SafeData	Supported

Environmental

Table 19. Environmental specifications

Feature	ChengMing 3990/3991
Recyclable packaging	Yes
BFR/PVC—free chassis	No
Vertical orientation packaging support	Yes
MultiPack packaging	Yes (DAO only)
Energy-Efficient Power Supply	Standard
ENV0424 compliant	Yes

(i) **NOTE:** Wood-based fiber packaging contains a minimum of 35% recycled content by total weight of wood-based fiber. Packaging that contains without wood-based fiber can be claimed as Not Applicable. Anticipated Required Criteria for EPEAT Revision Effective 1H 2018.

Energy Star and Trusted Platform Module (TPM)

Table 20. Energy Star and TPM

Features	Specifications
ENERGY STAR 8.0 qualified	Available in selected configurations only
EPEAT Bronze Registered	Available in selected configurations only
China CECP	Compliant

Accessories

Table 21. Accessories

Accessories	
Audio	Dell Pro Stereo Headset—UC150

Table 21. Accessories (continued)

Accessories	
	Dell Professional Sound Bar—AC511M
Keyboard and mouse	● Black, Dell Wireless Keyboard and Mouse, Persian - KM636
Monitor	Dell 22 Monitor - P2219H
	Dell 22 Monitor E2220H

Service and support

ⓘ **NOTE:** For more details on Dell Service Plans, see https://www.dell.com/learn/us/en/19/services/warranty-support-services.

Table 22. Service and support

Support	Values
1 Year Warranty Mail In Service[1]	Standard in all regions
5 Year Warranty Next Business Day On-site[2] 5-5-5)	Optional
ProSupport	Optional

[1] For a copy of guarantees or limited warranties, write to Dell USA L.P., Attn: Warranties, One Dell Way, Round Rock, TX 78682. For more information, go to www.dell.com/warranty.

[2] Service may be provided by third party. Technician is dispatched if necessary following phone-based troubleshooting. Subject to parts availability, geographical restrictions, and terms of service contract. Service timing dependent upon time of day call placed to Dell. U.S. only.

Computer environment

Airborne contaminant level: G1 as defined by ISA-S71.04-1985

Table 23. Computer environment

Description	Operating	Storage
Temperature range	0°C to 35°C (32°F to 95°F)	-40°C to 65°C (-40°F to 149°F)
Relative humidity (maximum)	10% to 90% (non-condensing)	0% to 95% (non-condensing)
Vibration (maximum)*	0.66 GRMS	1.30 GRMS
Shock (maximum)	110 G†	160 G†
Altitude (maximum)	-15.2 m to 3048 m (4.64 ft to 10,000 ft)	-15.2 m to 10668 m (4.64 ft to 35,000 ft)

* Measured using a random vibration spectrum that simulates user environment.

† Measured using a 2 ms half-sine pulse when the hard drive is in use.

Computer environment

Airborne contaminant level: G1 as defined by ISA-S71.04-1985

Table 24. Computer environment

Description	Operating	Storage
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† Measured using a 2 ms half-sine pulse when the hard drive is in use.

Software

This chapter details the supported operating systems along with instructions on how to install the drivers.

Topics:

*   Drivers and downloads

Drivers and downloads

When troubleshooting, downloading or installing drivers it is recommended that you read the Dell Knowledge Based article, Drivers and Downloads FAQ 000123347.

5

System setup

System setup enables you to manage your hardware and specify BIOS level options. From the System setup, you can:
- Change the NVRAM settings after you add or remove hardware
- View the system hardware configuration
- Enable or disable integrated devices
- Set performance and power management thresholds
- Manage your computer security

Topics:

BIOS overview

The BIOS manages data flow between the computer's operating system and attached devices such as hard disk, video adapter, keyboard, mouse, and printer.

Entering BIOS setup program

Steps

1. Turn on your computer.
2. Press F2 immediately to enter the BIOS setup program.

   (i) **NOTE:** If you wait too long and the operating system logo appears, continue to wait until you see the desktop. Then, turn off your computer and try again.

Navigation keys

(i) **NOTE:** For most of the System Setup options, changes that you make are recorded but do not take effect until you restart the system.

Table 25. Navigation keys

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
Enter	Selects a value in the selected field (if applicable) or follow the link in the field.

Table 25. Navigation keys (continued)

Keys	Navigation
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area. ⓘ **NOTE:** For the standard graphics browser only.
Esc	Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.

One time boot menu

To enter **one time boot menu**, turn on your computer, and then press F12 immediately.

ⓘ **NOTE:** It is recommended to shutdown the computer if it is on.

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot menu options are:

- Removable Drive (if available)
- STXXXX Drive (if available)
  ⓘ **NOTE:** XXX denotes the SATA drive number.
- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

The boot sequence screen also displays the option to access the System Setup screen.

Boot Sequence

Boot sequence enables you to bypass the System Setup–defined boot device order and boot directly to a specific device (for example: optical drive or hard drive). During the Power-on Self-Test (POST), when the Dell logo appears, you can:

- Access System Setup by pressing F2 key
- Bring up the one-time boot menu by pressing F12 key.

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot menu options are:

- Removable Drive (if available)
- STXXXX Drive
  ⓘ **NOTE:** XXXX denotes the SATA drive number.
- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics
  ⓘ **NOTE:** Choosing **Diagnostics**, displays the **SupportAssist** screen.

The boot sequence screen also displays the option to access the System Setup screen.

System Setup options

ⓘ **NOTE:** Depending on the computer and its installed devices, the items listed in this section may or may not appear.

Table 26. General

Option	Description
System Information	Displays the following information: ● System Information: Displays **BIOS Version, Service Tag, Asset Tag, Ownership Date, Manufacture Date,** and the **Express Service Code**. ● Memory Information: Displays **Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM 1 Size,** and **DIMM 2 Size**. ● PCI Information: Displays **SLOT1, SLOT2, SLOT3, SLOT4, SLOT5_M.2** ● Processor Information: Displays **Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable,** and **64-Bit Technology.** ● Device Information: Displays **SATA-0, SATA-1, SATA-2, SATA-3, LOM MAC Address, Video Controller**
Boot Sequence	Allows you to specify the order in which the computer attempts to find an operating system from the devices specified in this list. ● **UEFI** (default)
UEFI Boot Path Security	Options: ● **Always, Except Internal HDD** (default) ● Always ● Never
Date/Time	Allows you to set the date and time settings. Changes to the system date and time take effect immediately.

Table 27. System Configuration

Option	Description
Integrated NIC	Allows you to control the on-board LAN controller. The options are: ● Enable UEFI Network stack ● Disabled ● Enabled ● Enabled w/PXE (default) ⓘ **NOTE:** Depending on the computer and its installed devices, the items listed in this section may or may not appear.
Serial Port	Identifies and defines the serial port settings. You can set the serial port to: ● Disabled ● COM1 (default) ● COM2 ● COM3 ● COM4
SATA Operation	Allows you to configure the operating mode of the integrated hard drive controller. ● Disabled = The SATA controllers are hidden ● AHCI ● **RAID On** (default)
Drives	Allows you to enable or disable the various drives on-board: ● SATA-0 ● SATA-1 ● SATA-3 ● M.2 PCIe SSD-2 Default Setting: All drives are enabled.
Smart Reporting	This field controls whether hard drive errors for integrated drives are reported during system startup. This option is disabled by default.
USB Configuration	Allows you to enable or disable the integrated USB controller for:

Table 27. System Configuration (continued)

Option	Description
	- Enable Boot Support - Enable Front USB Ports - Enable Rear USB Ports All the options are enabled by default.
Front USB Configuration	Allows you to enable or disable the Front USB configuration. The options are: - Front Port 1 (Left)* - Front Port 2(Right)* - Front Port 3 (Left)* - Front Port 4 (Right)* All the options are enabled by default. * denotes a USB 3.0-capable port
Rear USB Configuration	Allows you to enable or disable the rear USB configuration. The options are: - Rear Port 1 (Left) - Rear Port 2 (Right) - Rear Port 3 (Left) - Rear Port 4 (Right) All the options are enabled by default. * denotes a USB 3.0-capable port
Audio	Allows you to enable or disable the integrated audio controller. - Enable Microphone - Enable Internal Speaker Both the options are enabled by default.
Miscellaneous Devices	Allows you to enable or disable the various on-board devices. Enable PCI Slot (default option) .

Table 28. Video

Option	Description
Primary Display	Allows you to select the primary display when multiple controllers are available in the system. **Auto (default)** - Intel HD Graphics - NVIDI HD Graphics NOTE: If you do not select Auto, the on-board graphics device will be present and enabled.
Multi-Display	The option is enabled by default

Table 29. Security

Option	Description
Admin Password	This option lets you enable or disable Admin passwords for the system. NOTE: You must set the admin password before you set the system or hard drive password. Deleting the admin password automatically deletes the system password and the hard drive password. NOTE: Successful password changes take effect immediately. Default Setting: Not set

Table 29. Security (continued)

Option	Description
System Password	Allows you to set, change or delete the system password. ⓘ **NOTE:** Successful password changes take effect immediately. Default Setting: Not set
Internal HDD-0 Password	Allows you to set, change or delete the password on the system's internal hard-disk drive. ⓘ **NOTE:** Successful password changes take effect immediately. Default Setting: Not set
Internal HDD-1 Password	Allows you to set, change or delete the password on the system's internal hard-disk drive. ⓘ **NOTE:** Successful password changes take effect immediately. Default Setting: Not set
Internal HDD-3 Password	Allows you to set, change or delete the password on the system's internal hard-disk drive. ⓘ **NOTE:** Successful password changes take effect immediately. Default Setting: Not set
Password Change	Allows you to enable the disable permission to the System and Hard Drive passwords when the admin password is set. Default Setting: Allow Non-Admin Password Changes is selected.
UEFI Capsule Firmware Updates	Allows you to controls whether the system allows BIOS update via UEFI capsule update packages. Default setting: Enable
PTT Security	Allows you to control the Platform Trust Technology feature (PTT) is visible to the operating system. The options are: ● PTT On ⓘ **NOTE:** Disabling this option dose not change any setting you have made to the PTT nor dose it delete or change any information or keys you may have stored in the PTT. Changes to this settings take effect immediately
Absolute(R)	This field lets you Enable, Disable or Permanently Disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software. Enabled (default) Disabled Permanently Disabled
Master Password Lockout	The option is disabled by default
HDD Protection Support	The option is disabled by default
SMM Security Mitigation	The option is disabled by default

Table 30. Secure Boot

Option	Description
Secure Boot Enable	Allows you to enable or disable Secure Boot feature. The option is disabled by default.
Secure Boot Mode	● **Deployed Mode** (default) ● Audit Mode
Expert key Management	Allows you to manipulate the security key databases only if the system is in Custom Mode. The **Enable Custom Mode** option is disabled by default. The options are: ● **PK** (default) ● KEK

Table 30. Secure Boot (continued)

Option	Description
	• db • dbx If you enable the **Custom Mode**, the relevant options for **PK, KEK, db, and dbx** appear. The options are: • **Save to File**- Saves the key to a user-selected file • **Replace from File**- Replaces the current key with a key from a user-selected file • **Append from File**- Adds a key to the current database from a user-selected file • **Delete**- Deletes the selected key • **Reset All Keys**- Resets to default setting • **Delete All Key**s- Deletes all the keys ⓘ **NOTE:** If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.

Table 31. Intel Software Guard Extensions

Option	Description
Intel SGX Enable	Allows you to enable or disable the Intel Software Guard Extensions to provide a secured environment for running code/storing sensitive information in the context of the main operating system. • Disabled • Enabled • **Software Controlled** (default)
Enclave Memory Size	Allows you to set the Intel SGX Enclave Reserve Memory Size. • 32 MB • 64 MB • 128 MB

Table 32. Performance

Option	Description
Multi Core Support	This field specifies whether the process will have one or all cores enabled. This option is enabled by default.
Enable Intel SpeedStep	Allows you to enable or disable the Intel SpeedStep mode of the processor. This option is enabled by default.
C States Control	Allows you to enable or disable additional processor sleep states. This option is enabled by default.
Intel TurboBoost	Allows you to enable or disable the Intel TurboBoost mode of the processor. This option is enabled by default.
Hyper-Thread Control	Allows you to enable or disable the HyperThreading in the processor. • Disabled • **Enabled** (default)

Table 33. Power Management

Option	Description
AC Recovery	Determines how the system responds when AC power is re-applied after a power loss. You can set the AC Recovery to: • Power Off • Power On • Last Power State This option is **Power Off** by default.

Table 33. Power Management (continued)

Option	Description
Enable Intel Speed Shift Technology	The option is enabled by default
Auto On Time	Sets time to automatically turn on the computer. Time is kept in standard 12-hour format (hour:minutes:seconds). Change the startup time by typing the values in the time and AM/PM fields. ⓘ **NOTE:** This feature does not work if you turn off your computer using the switch on a power strip or surge protector or if **Auto Power is set to disabled**.
Deep Sleep Control	Allows you to define the controls when Deep Sleep is enabled. ● **Disabled (default)** ● Enabled in S5 only ● Enabled in S4 and S5 This option is Disabled by default.
USB Wake Support	Allows you to enable the USB devices to wake the computer from standby mode. This option is enabled by default.
Block Sleep	Allows you to block entering to sleep (S3 state) in OS environment. This option is disabled by default.

Table 34. POST Behavior

Option	Description
Numlock LED	Allows you to enable or disable the Numlock feature when your computer starts. This option is enabled by default.
Keyboard Errors	Allows you to enable or disable the keyboard error reporting when the computer starts. This option is enabled by default.
Fast Boot	This option can speed up the boot process by bypassing some compatibility steps: ● Minimal — The system boots quickly, unless the BIOS has been updated, memory changed, or the previous POST did not complete. ● Thorough — The system does not skip any steps in the boot process. ● Auto — This allows the operating system to control this setting (this works only when the operating system supports Simple Boot Flag). This option is set to **Thorough** by default.
Extended BIOS Post Time	● **0 seconds** (default) ● 5 seconds ● 10 seconds
Full Screen Logo	The option is disabled by default
Warnings and Errors	● **Prompt on Warnings and Errors** (default) ● Continue on Warnings and Errors ● Continue on Warnings

Table 35. Virtualization Support

Option	Description
Virtualization	This option specifies whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by Intel® Virtualization Technology. **Enable Intel Virtualization Technology** - This option is enabled by default.
VT for Direct I/O	This option is enabled by default.

Table 36. Maintenance

Option	Description
Service Tag	Displays the Service Tag of your computer.

Table 36. Maintenance (continued)

Option	Description
Asset Tag	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
SERR Messages	The option is enabled by default
BIOS Downgrade	Allows you to control flashing of the system firmware to the previous versions. This option is enabled by default. ⓘ **NOTE:** If this option is not selected, the flashing of the system firmware to the previous versions is blocked.
Data Wipe	The option is disabled by default
BIOS recovery	Allows you to recover the corrupted BIOS conditions from the recovery files on the primary hard drive or an external USB key.
First Power On Date	This option lets you set ownership date. The option is disabled by default

Table 37. System Logs

Option	Description
BIOS Events	Displays the system event log and allows you to: ● Clear Log ● Mark all Entries

Table 38. Advanced configurations

Option	Description
ASPM	● **Auto** (default) ● Disabled ● L1 only

Table 39. SupportAssist System Resolution

Option	Description
Auto OS Recovery Threshold	Allows you to control the automatic boot flow for SupportAssist System. Options are: ● Off ● 1 ● 2 (default) ● 3
SupportAssist OS Recovery	Allows you to recover the SupportAssist OS Recovery (Enabled by default)

Updating the BIOS

Updating the BIOS in Windows

About this task

⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: https://www.dell.com/support/article/sln153694**

Steps

1. Go to www.dell.com/support.
2. Click **Product support**. In the **Search support** box, enter the Service Tag of your computer, and then click **Search**.

   ⓘ **NOTE:** If you do not have the Service Tag, use the SupportAssist feature to automatically identify your computer. You can also use the product ID or manually browse for your computer model.

3. Click **Drivers & Downloads**. Expand **Find drivers**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, browse the folder where you saved the BIOS update file.
8. Double-click the BIOS update file icon and follow the on-screen instructions.

   For more information, see knowledge base article 000124211 at www.dell.com/support.

Updating the BIOS in Linux and Ubuntu

To update the system BIOS on a computer that is installed with Linux or Ubuntu, see the knowledge base article 000131486 at www.dell.com/support.

Updating the BIOS using the USB drive in Windows

About this task

⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: https://www.dell.com/support/article/sln153694**

Steps

1. Follow the procedure from step 1 to step 6 in Updating the BIOS in Windows to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information, see the knowledge base article 000145519 at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12** .
6. Select the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
   The **BIOS Update Utility** appears.
8. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS from the F12 One-Time boot menu

Update your computer BIOS using the BIOS update.exe file that is copied to a FAT32 USB drive and booting from the F12 One-Time boot menu.

About this task

⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: https://www.dell.com/support/article/sln153694**

BIOS Update

You can run the BIOS update file from Windows using a bootable USB drive or you can also update the BIOS from the F12 One-Time boot menu on the computer.

Most of the Dell computers built after 2012 have this capability, and you can confirm by booting your computer to the F12 One-Time Boot Menu to see if BIOS FLASH UPDATE is listed as a boot option for your computer. If the option is listed, then the BIOS supports this BIOS update option.

ⓘ **NOTE:** Only computers with BIOS Flash Update option in the F12 One-Time boot menu can use this function.

Updating from the One-Time boot menu

To update your BIOS from the F12 One-Time boot menu, you need the following:

● USB drive formatted to the FAT32 file system (key does not have to be bootable)
● BIOS executable file that you downloaded from the Dell Support website and copied to the root of the USB drive
● AC power adapter that is connected to the computer
● Functional computer battery to flash the BIOS

Perform the following steps to perform the BIOS update flash process from the F12 menu:

⚠ **CAUTION: Do not turn off the computer during the BIOS update process. The computer may not boot if you turn off your computer.**

Steps

1. From a turn off state, insert the USB drive where you copied the flash into a USB port of the computer.
2. Turn on the computer and press F12 to access the One-Time Boot Menu, select BIOS Update using the mouse or arrow keys then press Enter.
   The flash BIOS menu is displayed.
3. Click **Flash from file**.
4. Select external USB device.
5. Select the file and double-click the flash target file, and then click **Submit**.
6. Click **Update BIOS**. The computer restarts to flash the BIOS.
7. The computer will restart after the BIOS update is completed.

System and setup password

Table 40. System and setup password

Password type	Description
System password	Password that you must enter to log in to your system.
Setup password	Password that you must enter to access and make changes to the BIOS settings of your computer.

You can create a system password and a setup password to secure your computer.

⚠ **CAUTION: The password features provide a basic level of security for the data on your computer.**

⚠ **CAUTION: Anyone can access the data that is stored on your computer if it is not locked and left unattended.**

ⓘ **NOTE:** System and setup password feature is disabled.

Assigning a system setup password

Prerequisites

You can assign a new **System or Admin Password** only when the status is in **Not Set**.

About this task

To enter the system setup, press F12 immediately after a power-on or reboot.

Steps

1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
   The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to assign the system password:
   - A password can have up to 32 characters.
   - At least one special character: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | }
   - Numbers 0 through 9.
   - Upper case letters from A to Z.
   - Lower case letters from a to z.
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and save the changes as prompted by the pop-up message.
5. Press Y to save the changes.
   The computer restarts.

Deleting or changing an existing system setup password

Prerequisites

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.

About this task

To enter the System Setup, press F12 immediately after a power-on or reboot.

Steps

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
   The **System Security** screen is displayed.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password**, update, or delete the existing system password, and press Enter or Tab.
4. Select **Setup Password**, update, or delete the existing setup password, and press Enter or Tab.
   (i) **NOTE:** If you change the System and/or Setup password, reenter the new password when prompted. If you delete the System and/or Setup password, confirm the deletion when prompted.
5. Press Esc and a message prompts you to save the changes.
6. Press Y to save the changes and exit from System Setup.
   The computer restarts.

Clearing BIOS (System Setup) and System passwords

About this task

To clear the system or BIOS passwords, contact Dell technical support as described at www.dell.com/contactdell.
(i) **NOTE:** For information on how to reset Windows or application passwords, refer to the documentation accompanying Windows or your application.

Getting help and contacting Dell

Self-help resources

You can get information and help on Dell products and services using these self-help resources:

Table 41. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
My Dell app	
Tips	
Contact Support	In Windows search, type `Contact Support`, and press Enter.
Online help for operating system	www.dell.com/support/windows
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals and documents.	Your Dell computer is uniquely identified by a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, enter the Service Tag or Express Service Code at www.dell.com/support. For more information on how to find the Service Tag for your computer, see Locate the Service Tag on your computer.
Dell knowledge base articles for a variety of computer concerns	1. Go to www.dell.com/support. 2. On the menu bar at the top of the Support page, select **Support** > **Knowledge Base**. 3. In the Search field on the Knowledge Base page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles.

Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see www.dell.com/contactdell.

(i) **NOTE:** Availability varies by country/region and product, and some services may not be available in your country/region.

(i) **NOTE:** If you do not have an active Internet connection, you can find contact information about your purchase invoice, packing slip, bill, or Dell product catalog.