

# Dell Embedded Box PC 5000

## Installation and Operation Manual

Computer Model: Dell Embedded Box PC 5000  
Regulatory Model: N01PC  
Regulatory Type: N01PC001



# Notes, cautions, and warnings

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**NOTE:** A NOTE indicates important information that helps you make better use of your computer.



**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.

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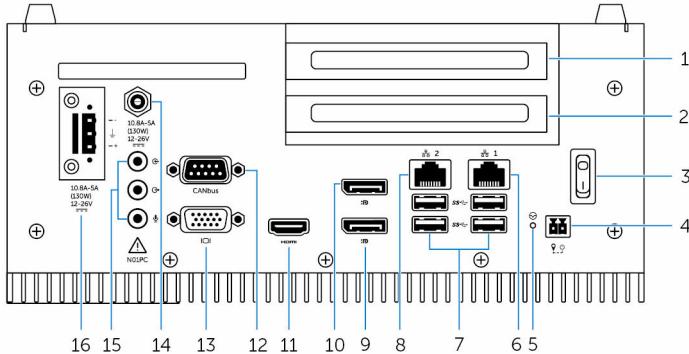
# Overview

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The Embedded Box PC 5000 enables you to connect your devices (wired or wireless) to network-enabled devices and manage them remotely in your existing network ecosystem. It enables you to connect with devices used in process and discrete manufacturing, fleet management, kiosks, digital signage, surveillance, and automated retail solutions. It can be either mounted on the wall using the Dell approved wall mount kits or placed on a flat surface. It supports Windows 7 Professional, Windows 7 Embedded, Windows 10 Professional, Windows 10 IoT Enterprise LTSB, and Ubuntu Desktop operating systems.

# Features

## Top view



### Features

1	PCI slot one <sup>1</sup>	Install a PCI card.
2	PCIe(x16) slot or PCI slot two <sup>1</sup>	Install a PCIe or PCI card.
3	Power switch	Turn on or off the Embedded Box PC.
4	Remote power switch <sup>2</sup>	Install a remote power switch.
5	Hard reset	Using a pin, press the button located in the pin hole to restart the Embedded Box PC.
6	Network port one	Connect an Ethernet (RJ45) cable for network access. Provides data transfer speeds up to 10/100/1000 Mbps.
7	USB 3.0 ports (4)	Connect USB enabled devices. Provides data transfer speeds up to 5 Gbps.
8	Network port two	Connect an Ethernet (RJ45) cable for network access. Provides data transfer speeds up to 10/100/1000 Mbps.

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## Features

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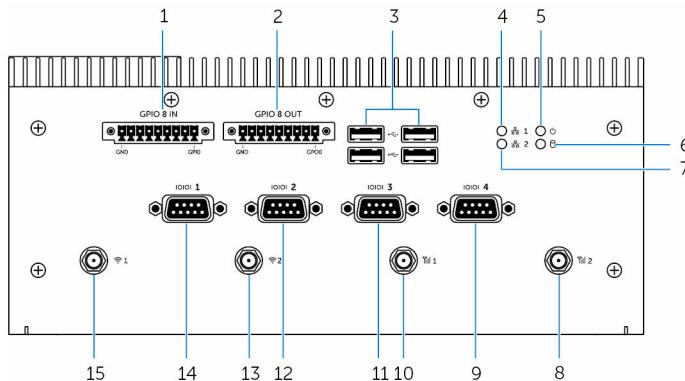
9	DisplayPort two	Connect a monitor or another DisplayPort enabled device. Provides video and audio output.
		 <b>NOTE:</b> For more information about the display options, see <a href="#">Display Options</a> .
10	DisplayPort one	Connect a monitor or another DisplayPort enabled device. Provides video and audio output.
		 <b>NOTE:</b> For more information about the display options, see <a href="#">Display Options</a> .
11	HDMI port	Connect a monitor or another HDMI-in enabled device. Provides video and audio output.
12	CANbus port (optional)	Connect to a CANbus port enabled device or dongles.
13	VGA port	Connect a monitor or another VGA enabled device. Provides video output.
14	12-26V DC power port (barrel connector)	Connect a 12-26V DC power cable for supplying power to your Embedded Box PC.
15	Audio ports (3)	Connect a speaker, a headphone, a microphone, or a headset (headphone and microphone combo).
		 <b>NOTE:</b> Connect the headset to the Line Out port.
16	+12-26V DC power connector	Connect a 12-26V DC power connector for supplying power to your Embedded Box PC.

1 Slot one and two supports 20 W to 25 W (12 V/2 A) cards and 10 W thermal capability.

2 Connections made to these ports must be an SELV circuit and the wire (26 AWG - 18 AWG) must have Double Insulation (DI) or Reinforced Insulation (RI) to protect it from all hazardous voltages.

Torque the screws at 2.88 kg-cm (2.5 lb-in) to secure the wire to the connector.

# Bottom view



## Features

1	GPIO-In 8-pin port <sup>1, 2, 4</sup>	Connect to a GPIO-out enabled device or dongles.
2	GPIO-Out 8-pin port <sup>2, 3, 4</sup>	Connect to a GPIO-in enabled device or dongles.
3	USB 2.0 ports (4)	Connect USB enabled devices. Provides data transfer speeds up to 480 Mbps.
4	Network status light one	Indicates the network activity of the network port one.
5	Power status light	Indicates the power-state of the Embedded Box PC.
6	Hard-drive activity light	Turns on when the Embedded Box PC reads from or writes to the internal storage device.
7	Network status light two	Indicates the network activity of the network port two.
8	Mobile broadband antenna port two	Connect a mobile broadband antenna to increase the range and strength of the mobile broadband signals.
9	RS232/RS422/RS485 port four (configurable in the BIOS)	Connect a RS232/RS422/RS485 cable to the Embedded Box PC.

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## Features

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10	Mobile broadband antenna port one	Connect a mobile broadband antenna to increase the range and strength of the mobile broadband signals.
11	RS232/RS422/RS485 port three (configurable in the BIOS)	Connect a RS232/RS422/RS485 cable to the Embedded Box PC.
12	RS232/RS422/RS485 port two (configurable in the BIOS)	Connect a RS232/RS422/RS485 cable to the Embedded Box PC.
13	Wireless antenna port two	Connect a wireless antenna to increase the range and strength of the wireless signals.
14	RS232/RS422/RS485 port one (configurable in the BIOS)	Connect a RS232/RS422/RS485 cable to the Embedded Box PC.
15	Wireless antenna port one	Connect a wireless antenna to increase the range and strength of the wireless signals.

1 GPIO-In port has a total of 9 pins, except GND pin, the other 8 pins are GPIO to GPI7.

2 Connections made to these ports must be an SELV circuit and the wire (26 AWG - 18 AWG) must have Double Insulation (DI) or Reinforced Insulation (RI) to protect it from all hazardous voltages.

Torque the screws at 2.88 kg-cm (2.5 lb-in) to secure the wire to the connector.

3 GPIO-Out port has a total of 9 pins, except GND pin, the other 8 pins are GPO0 to GPO7.

4 Connections made to GPIO IN/OUT must be SELV Circuits (30 Vmax) and must be Double/Reinforced Insulation (DI) (RI) from all hazardous voltages.

# Setting up the Embedded Box PC

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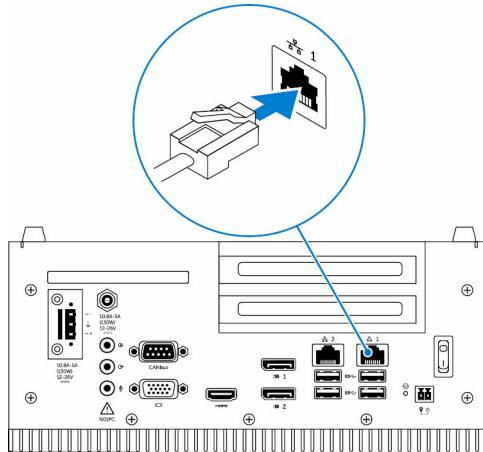
-  **WARNING:** During the installation of the Embedded Box PC, the responsible party or integrator must use the power adapter provided with the Embedded Box PC, or connect to a 12-26 VDC separate power source already present as part of the clients installation. Always ensure that the available power source matches the required input power of the Embedded Box PC. Check the input power markings next to power connector(s) before making connections.
-  **WARNING:** Before you begin any of the procedures in this section, read the safety information that shipped with your Embedded Box PC. For additional best practices information, go to [www.dell.com/regulatory\\_compliance](http://www.dell.com/regulatory_compliance).
-  **WARNING:** To ensure that the protection provided by the Embedded Box PC is not impaired, do not use or install the Embedded Box PC in any manner other than what is specified in this manual.
-  **WARNING:** To provide additional power connections to the main network, use cables appropriate for the load currents such as, 3-core cable rated 15 A at 90°C (194°F) minimum, which conform to either IEC 60227 or IEC 60245. The Embedded Box PC accepts cables from 0.8 mm to 2.5 mm (18 AWG to 14 AWG).
-  **WARNING:** The symbol  indicates hot surface or adjacent hot surface that can obtain temperature during normal use that can cause a burn. Allow equipment to cool off or use protective gloves when handling to reduce risk of a burn.
-  **WARNING:** This product is designed for specific applications and must be installed by qualified personnel with RF and regulatory related knowledge. The general user must not attempt to install or change the setting.
-  **WARNING:** Before installation, the two power inputs (Terminal Block or Power Jack) must be protected by 20 A fuses or circuit-breakers, which are over current protection devices in front of the Embedded Box PC.

-  **WARNING:** The product shall be installed at a location where the radiating antenna is kept 20 cm away from nearby persons in its normal operating condition to meet regulatory RF exposure requirements.
-  **WARNING:** Use only the antenna(s), which are approved by Dell.
-  **WARNING:** Connect a certified SELV power to either Phoenix connector or the Barrel connector only. The connection of two power sources may damage equipment and present risk of fire.
-  **WARNING:** If your equipment or accessories are provided with a detachable main supply cord set and has to be replaced, ensure that the replacement cord set has an adequate voltage, current, and temperature rating for the country where the equipment is installed. The cord set must comply to the local safety code, regulations, and law.

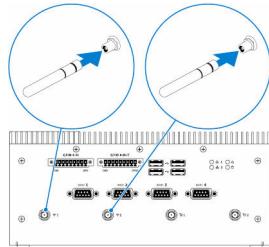
**1** Install the Embedded Box PC on a vertical surface like a wall using [wall-mount brackets](#) or in a panel box.

**2** Connect to your network in one of the following methods:

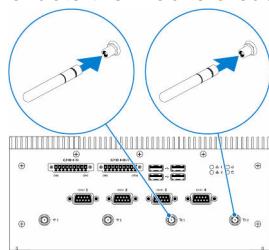
- Connect the network cable.



- Install the wireless antenna (WLAN 1 and WLAN 2) to enable the wireless connection.



- Install the mobile broadband antenna (WWAN 1 and WWAN 2) to enable the mobile broadband connection.

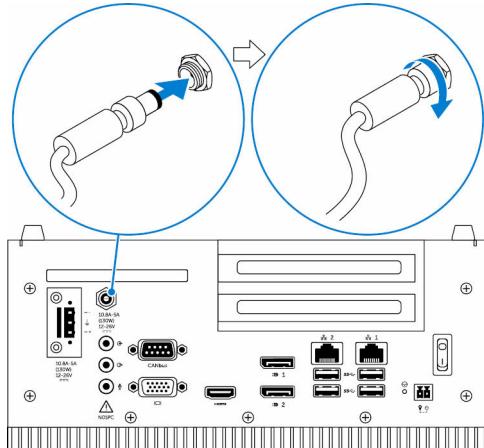


 **NOTE:** For more information on connecting the wireless antenna to Dell Embedded Box PC, see the documentation that is shipped with the wireless antenna.

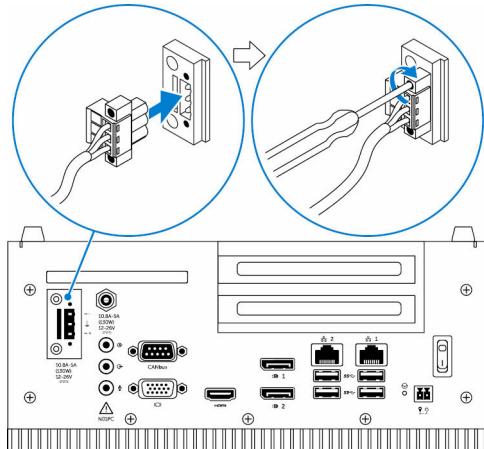
 **NOTE:** For more information about installing the WWAN card in the Embedded Box PC, see the *Embedded Box PC Service Manual* at [www.dell.com/support](http://www.dell.com/support).

 **NOTE:** The peripherals such as wireless antenna, keyboard, and mouse are sold separately.

- 3** Connect devices using the I/O ports on your Embedded Box PC.
- 4** Connect the Embedded Box PC to the power source in one of the following methods:
  - Connect the power adapter and tighten the sleeves on the adapter pin to secure it to the Embedded Box PC.



- Connect the power terminal block to the adapter port and torque the screws at 5.07 kilograms-centimeter (4.4 pounds-inch) to secure it to the Embedded Box PC.



- 5** Turn on the Embedded Box PC and complete the operating system setup.

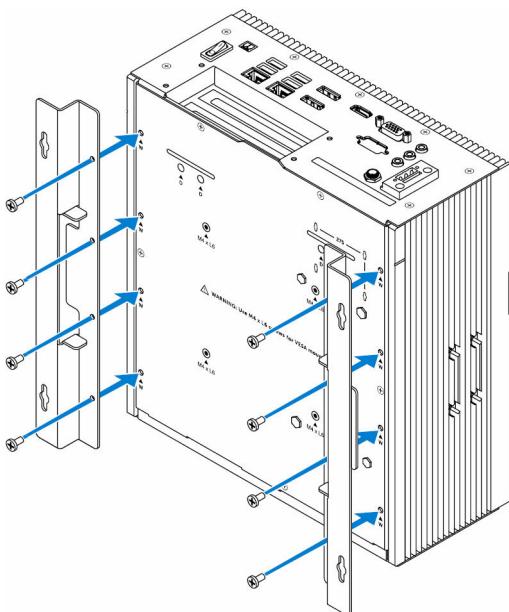
# Mounting the Embedded Box PC on the wall

Mount the Embedded Box PC on a wall by using the mounting brackets. The brackets secure the Embedded Box PC to the wall.

 **NOTE:** The Embedded Box PC is shipped with only those screws that are required for securing the two mounting brackets to the back of the Embedded Box PC.

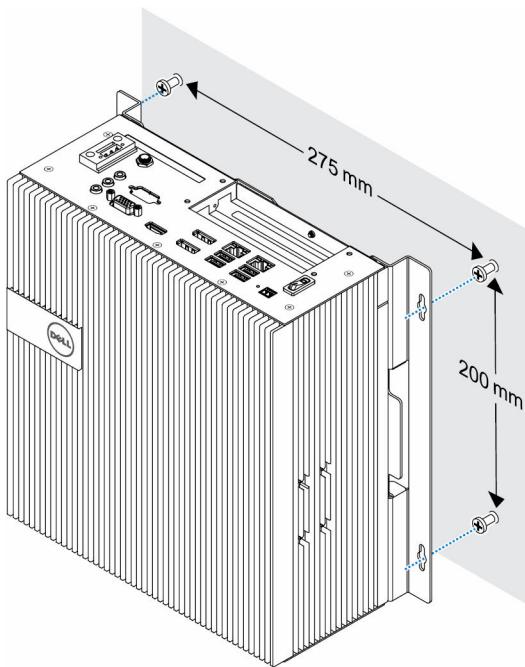
**1** Secure the two mounting brackets to the back of the Embedded Box PC by using eight M3x8 screws.

 **NOTE:** Torque the screws at 3 to 3.4 kilograms-centimeter (2.6 to 3.0 pounds-inch).



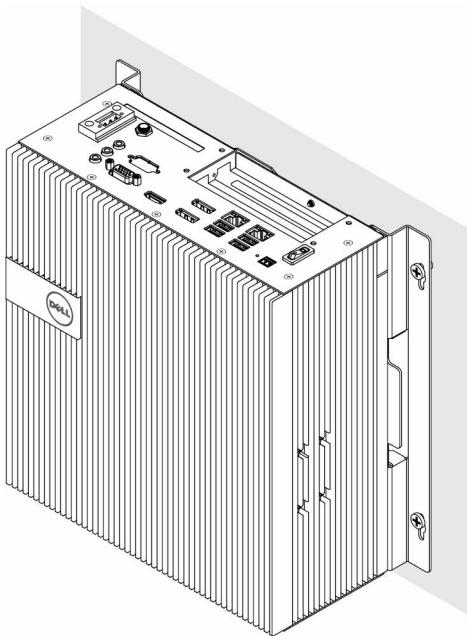
**2** Drill four holes in the wall that correspond to the holes on the mounting bracket.

**3** Place the Embedded Box PC against the wall and align the holes on the mounting brackets with the holes on the wall.



**4** Secure the Embedded Box PC to the wall.

 **NOTE:** Torque the screws (M4x6) at 5 to 5.4 kilograms-centimeter (4.3 to 4.7 pounds-inch).



# Setting up your operating system

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The Embedded Box PC is shipped with one of the following operating systems:

- Windows 7 Professional
- Windows 7 Embedded
- Windows 10 Professional
- Windows 10 IoT Enterprise LTSB
- Ubuntu Desktop

 **NOTE:** For more information about Windows operating systems, see [msdn.microsoft.com](https://msdn.microsoft.com).

 **NOTE:** For more information about Ubuntu Desktop operating system, see [www.ubuntu.com/desktop](https://www.ubuntu.com/desktop).

## Ubuntu Desktop

### Reinstalling Ubuntu Desktop

Before reinstalling Ubuntu Desktop, ensure the following:

- Connect a keyboard, mouse, and monitor to the Embedded Box PC, or connect to the Embedded Box PC through a KVM session, Dell Wyse Cloud Client Manager (CCM), or Dell Command | Monitor (DCM).
- Create a [bootable USB flash drive](#).

 **NOTE:** For more information about using the CCM, see the CCM documentation available at [www.cloudclientmanager.com](https://www.cloudclientmanager.com).

 **NOTE:** For more information about using the DCM, see the DCM documentation available at [www.dell.com/clientsystemsmanagement](https://www.dell.com/clientsystemsmanagement).

 **NOTE:** It is recommended to create a [recovery USB flash drive](#) when installing Ubuntu Desktop for the first time.

Follow these steps to reinstall Ubuntu Desktop:

- 1 Insert the bootable Ubuntu Desktop USB flash drive.
- 2 Turn on the Embedded Box PC.
- 3 Press F12 to access the boot menu.
- 4 Enable **UEFI boot mode** in the System Setup and boot from the Ubuntu Desktop USB flash drive.
- 5 Select **Dell recovery** to start the Ubuntu Desktop installation.
- 6 Select the drive to install the Ubuntu Desktop operating system.
- 7 After the installation is complete, restart the Embedded Box PC.
- 8 Follow the instructions on the screen to configure the **Language, License Agreement, Location, Keyboard Layout**, and **User name/password** settings.

The Embedded Box PC restarts to boot Ubuntu Desktop successfully.

## Restoring Ubuntu Desktop

You can restore Ubuntu Desktop on the Embedded Box PC to a new condition if you encounter any of the following situations:

- When you are unable to start Ubuntu Desktop
- When Ubuntu Desktop operating system is damaged

Before restoring, a recovery USB flash drive with the backup image must be created.

## Restoring Ubuntu Desktop on Embedded Box PC from the recovery USB flash drive

- 1 Insert the recovery USB flash drive to the Embedded Box PC.
- 2 Turn on the Embedded Box PC.
- 3 Press F12 to access the boot menu.
- 4 Enable **UEFI boot mode** in the System Setup and boot from the Ubuntu Desktop USB flash drive.
- 5 Select **Dell recovery** to start Ubuntu Desktop recovery.
- 6 Select the disk to install the Ubuntu Desktop operating system.
- 7 After the installation is complete, restart the Embedded Box PC.
- 8 Follow the instructions on the screen to complete the **Language, License Agreement, Location, Keyboard Layout**, and **User name/Password** settings.

The Embedded Box PC restarts to boot Ubuntu Desktop successfully.

## Creating the bootable USB flash drive

- 1 Download the Ubuntu Desktop ISO image from [www.ubuntu.com/download/desktop](http://www.ubuntu.com/download/desktop).
- 2 Follow the instructions provided at [www.ubuntu.com/download/desktop/create-a-usb-stick-on-windows](http://www.ubuntu.com/download/desktop/create-a-usb-stick-on-windows).
- 3 Reinstall the Ubuntu Desktop operating system from the bootable USB flash drive.

## Creating the recovery USB flash drive

Create a recovery disk when installing Ubuntu Desktop for the first time.

- 1 Turn on the Embedded Box PC.
- 2 Follow the instructions on the screen when you start the Embedded Box PC for the first time.
- 3 Select **Language** and click **Continue**.
- 4 Agree the license agreement and click **Continue**.
- 5 Select a location and click **Continue**.
- 6 Select the keyboard layout and click **Continue**.
- 7 Enter the user name and password, and then click **Continue**.
- 8 Insert a USB flash drive with 2 GB or more space to create the recovery USB flash drive, and then click **Continue**.
- 9 To create a startup disk, select **USB stick user plugged**, and then click **Make Startup Disk**.

The recovery USB flash drive is created.

## Reinstalling Ubuntu Desktop

Before reinstalling Ubuntu Desktop, ensure the following:

- Connect a keyboard, mouse, and monitor to the Embedded Box PC, or connect to the Embedded Box PC through a KVM session, Dell Wyse Cloud Client Manager (CCM), or Dell Command | Monitor (DCM).
- Create a [bootable USB flash drive](#).



**NOTE:** For more information about using the CCM, see the CCM documentation available at [www.cloudclientmanager.com](http://www.cloudclientmanager.com).



**NOTE:** For more information about using the DCM, see the DCM documentation available at [www.dell.com/clientsystemsmanagement](http://www.dell.com/clientsystemsmanagement).



**NOTE:** It is recommended to create a [recovery USB flash drive](#) when installing Ubuntu Desktop for the first time.

Follow these steps to reinstall Ubuntu Desktop:

- 1 Insert the bootable Ubuntu Desktop USB flash drive.
- 2 Turn on the Embedded Box PC.
- 3 Press F12 to access the boot menu.
- 4 Enable **UEFI boot mode** in the System Setup and boot from the Ubuntu Desktop USB flash drive.
- 5 Select **Dell recovery** to start the Ubuntu Desktop installation.
- 6 Select the drive to install the Ubuntu Desktop operating system.
- 7 After the installation is complete, restart the Embedded Box PC.
- 8 Follow the instructions on the screen to configure the **Language, License Agreement, Location, Keyboard Layout**, and **User name/password** settings.

The Embedded Box PC restarts to boot Ubuntu Desktop successfully.

## Windows OS

### Recommended drivers and applications for Embedded Box PC

Dell recommends installing the drivers and applications required for the Embedded Box PC from [www.dell.com/support](http://www.dell.com/support) in the following sequence:

- 1 Intel Mobile Chipset Software Installation Utility
- 2 Critical Microsoft Quick Fix Engineering (QFE)
- 3 Intel Rapid Storage Technology
- 4 Graphics
- 5 Intel Management Technology
- 6 Audio
- 7 Integrated wired Network Adapter
- 8 Wireless Local Network Adapters and Bluetooth
- 9 USB 3.0
- 10 ZigBee
- 11 CANbus

## Intel Mobile Chipset Software Installation Utility

- 1 Go to [www.dell.com/support](http://www.dell.com/support).
- 2 Click **Product support**, enter the Service Tag of the Embedded Box PC, and then click **Submit**.



**NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for the Embedded Box PC model.

- 3 Click **Drivers & downloads** → **Find it myself**.
- 4 Scroll down the page and expand **Chipset**.
- 5 Click **Download** to download the Intel Mobile Chipset Software Installation Utility.
- 6 After the download is complete, navigate to the folder where you saved the chipset driver file.
- 7 Double-click the chipset driver file icon and follow the instructions on the screen.

## Critical Microsoft QFEs

Dell recommends installing all the latest available fixes specific to Embedded Box PC through **Windows Update** or from [www.microsoft.com](http://www.microsoft.com).

## Intel Rapid Storage Technology

The Intel Rapid Storage Technology (IRST) driver must be installed in AHCI or RAID mode. The Intel IRST application must also be installed.

The SATA operation modes are configured in the BIOS. If the SATA mode is configured in AHCI or RAID mode, the IRST driver must be installed during the initial operating system installation stages. The IRST driver is only available from Dell.

- 1 Go to [www.dell.com/support](http://www.dell.com/support).
- 2 Click **Product support**, enter the Service Tag of the Embedded Box PC, and then click **Submit**.

**NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for the Embedded Box PC model.

- 3 Click **Drivers & downloads** → **Find it myself**.
- 4 Scroll down the page and expand **Serial ATA**.
- 5 Click **Download** to download the Dell IRST driver file.
- 6 After the download is complete, navigate to the folder where you saved the Dell IRST driver file.
- 7 Double-click the Dell IRST driver file icon and follow the instructions on the screen.

## Graphics

- 1 Go to [www.dell.com/support](http://www.dell.com/support).
- 2 Click **Product support**, enter the Service Tag of the Embedded Box PC, and then click **Submit**.  
 **NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for the Embedded Box PC model.
- 3 Click **Drivers & downloads** → **Find it myself**.
- 4 Scroll down the page and expand **Video**.
- 5 Click **Download** to download the graphics driver file.
- 6 After the download is complete, navigate to the folder where you saved the graphics driver file.
- 7 Double-click the graphics driver file icon and follow the instructions on the screen.

## Intel Management Technology

- 1 Go to [www.dell.com/support](http://www.dell.com/support).
- 2 Click **Product support**, enter the Service Tag of the Embedded Box PC, and then click **Submit**.  
 **NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for the Embedded Box PC model.
- 3 Click **Drivers & downloads** → **Find it myself**.
- 4 Scroll down the page and expand **Chipset**.
- 5 Click **Download** to download the Intel Management Engine Component Installer and Intel Serial I/O driver.
- 6 After the download is complete, navigate to the folder where you saved the driver files.
- 7 Double-click the driver file icons and follow the instructions on the screen.

## Audio

- 1 Go to [www.dell.com/support](http://www.dell.com/support).
- 2 Click **Product support**, enter the Service Tag of the Embedded Box PC, and then click **Submit**.  
 **NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for the Embedded Box PC model.
- 3 Click **Drivers & downloads** → **Find it myself**.
- 4 Scroll down the page and expand **Audio**.
- 5 Click **Download** to download the HD Audio driver.

- 6 After the download is complete, navigate to the folder where you saved the HD Audio driver file.
- 7 Double-click the HD Audio driver file icon and follow the instructions on the screen.

## Integrated wired Network Adapter

- 1 Go to [www.dell.com/support](http://www.dell.com/support).
- 2 Click **Product support**, enter the Service Tag of the Embedded Box PC, and then click **Submit**.

 **NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for the Embedded Box PC model.

- 3 Click **Drivers & downloads** → **Find it myself**.
- 4 Scroll down the page and expand **Network**.
- 5 Click **Download** to download the LAN driver.
- 6 After the download is complete, navigate to the folder where you saved the LAN driver file.
- 7 Double-click the LAN driver file icon and follow the instructions on the screen.

 **NOTE:** Enable the **Windows Update** and connect to Internet after installing the Integrated Wired Network Controller driver.

## Wireless Local Network Adapters and Bluetooth

- 1 Go to [www.dell.com/support](http://www.dell.com/support).
- 2 Click **Product support**, enter the Service Tag of the Embedded Box PC, and then click **Submit**.

 **NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for the Embedded Box PC model.

- 3 Click **Drivers & downloads** → **Find it myself**.
- 4 Scroll down the page and expand **Network**.
- 5 Click **Download** to download the Wireless LAN and Bluetooth device drivers.
- 6 After the download is complete, navigate to the folder where you saved the driver files.
- 7 Double-click the driver file icons and follow the instructions on the screen.

## USB 3.0

- 1 Go to [www.dell.com/support](http://www.dell.com/support).
- 2 Click **Product support**, enter the Service Tag of the Embedded Box PC, and then click **Submit**.



**NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for the Embedded Box PC model.

- 3 Click **Drivers & downloads** → **Find it myself**.
- 4 Scroll down the page and expand **Chipset**.
- 5 Click **Download** to download the USB 3.0 driver.
- 6 After the download is complete, navigate to the folder where you saved the USB 3.0 driver file.
- 7 Double-click the USB 3.0 driver file icon and follow the instructions on the screen.

## ZigBee

- 1 Go to [www.dell.com/support](http://www.dell.com/support).
- 2 Click **Product support**, enter the Service Tag of the Embedded Box PC, and then click **Submit**.



**NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for the Embedded Box PC model.

- 3 Click **Drivers & downloads** → **Find it myself**.
- 4 Scroll down the page and expand **Network**.
- 5 Click **Download** to download the ZigBee 3.0 driver.
- 6 After the download is complete, navigate to the folder where you saved the ZigBee 3.0 driver file.
- 7 Double-click the ZigBee 3.0 driver file icon and follow the instructions on the screen.

## CANbus

- 1 Go to [www.dell.com/support](http://www.dell.com/support).
- 2 Click **Product support**, enter the Service Tag of the Embedded Box PC, and then click **Submit**.



**NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for the Embedded Box PC model.

- 3 Click **Drivers & downloads** → **Find it myself**.
- 4 Scroll down the page and expand **Chipset**.
- 5 Click **Download** to download the CANbus driver.
- 6 After the download is complete, navigate to the folder where you saved the CANbus driver file.
- 7 Double-click the CANbus driver file icon and follow the instructions on the screen.

# Specifications

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## Dimension and weight

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Width	246 mm (9.69 in)
Depth	270 mm (10.63 in)
Height	107.20 mm (4.22 in)
Weight	5.80 kg (12.80 lb)

## System information

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Model number	Dell Embedded Box PC 5000
Processor	<ul style="list-style-type: none"><li>Intel Celeron G3900E</li><li>Intel Core i3-6100E</li><li>Intel Core i5-6440EQ</li><li>Intel Core i7-6820EQ</li></ul>
Operating systems supported	<ul style="list-style-type: none"><li>Windows 10 Professional</li><li>Windows 10 IoT Enterprise LTSB</li><li>Windows 7 Professional</li><li>Windows 7 Embedded</li><li>Ubuntu Desktop</li></ul>
Storage devices supported	<ul style="list-style-type: none"><li>Two 2.5-inch SATA hard drive</li><li>Two M.2 solid-state drive with interposer</li><li>One 2.5-inch SATA hard drive + one M.2 solid-state drive with interposer</li></ul>



**NOTE:** Depending on workload, Intel 4th generation Core i7 configurations could throttle in operating environments above 35°C (95°F).

## Storage

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### Storage devices supported

- Two 2.5-inch SATA hard drive
- Two M.2 solid-state drive with interposer
- One 2.5-inch SATA hard drive + one M.2 solid-state drive with interposer

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## Memory

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Slots	2 DIMM slots (maximum 8 GB per slot)
Type	DDR4
Speed	2133 MHz
Configurations supported	<ul style="list-style-type: none"><li>• 4 GB</li><li>• 8 GB</li><li>• 16 GB</li></ul>

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## Ports and connectors

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Audio/video	<ul style="list-style-type: none"><li>• One HDMI port</li><li>• One VGA port</li><li>• Two DisplayPort</li><li>• One line-in port</li><li>• One line-out port</li><li>• One microphone port</li></ul>
	 <b>NOTE:</b> For more information about the display options, see <a href="#">Display Options</a> .
Network	<ul style="list-style-type: none"><li>• Two RJ45 ports</li><li>• Two wireless ports</li><li>• Two mobile broadband antenna ports</li></ul>
I/O port	<ul style="list-style-type: none"><li>• One CANbus port (optional)</li><li>• Four RS232/RS422/RS485 ports</li><li>• GPIO 16-bit</li></ul>
USB	<ul style="list-style-type: none"><li>• Four USB 3.0 ports</li><li>• Four USB 2.0 ports</li></ul>

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## Communications

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WiFi	Dual-band 802.11b/g/n/ac
Bluetooth	Bluetooth 4.1 LE

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## Power requirements

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Phoenix connector input voltage/current	12 VDC/10.80 A-26 VDC/5 A
Power input voltage/current	12 VDC/10.80 A-26 VDC/5 A

 **WARNING: Connect a certified SELV power to either Phoenix connector or the Barrel connector only. The connection of two power sources may damage equipment and present risk of fire.**

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## RTC coin-cell battery (lithium ion)

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Type	CR-2032H	BR-2032	Others
Manufacturer	<ul style="list-style-type: none"><li>Hitachi Ltd.</li><li>Maxell Ltd.</li></ul>	Panasonic Corp.	Varies depending on the battery type

Maximum abnormal charging rate:

Voltage	3 V	3 V	3 V
Current	10 mA	10 mA	10 mA
Standard	UL1642	UL1642	UL1642
Approval	UL (MH12568)	UL (MH12210)	UL (MHxxxxx)

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## Environmental requirements

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Temperature range:

Operating: Hard drive	0°C to 40°C (32°F to 104°F)
Operating: Solid-state drive	0°C to 50°C (32°F to 122°F)
Non-operating	-40°C to 65°C (-40°F to 149°F)

Relative humidity (maximum):

Operating	10% to 90% (non-condensing)
Non-operating	5% to 95% (non-condensing)

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## **Environmental requirements**

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Altitude (maximum, unpressurized):

Operating	–15.20 m to 5000 m (–50 ft to 16,404 ft)
Storage	–15.20 m to 10,668 m (Sea level to 35,000 ft)
IP level	IP 30

# Activating your mobile broadband

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 **NOTE:** For more information about installing the SIM card, see the Embedded Box PC Service Manual at [www.dell.com/support](http://www.dell.com/support).

- 1 Turn on the Embedded Box PC.
- 2 Follow these steps to connect to the mobile broadband network:

 **NOTE:** To activate your mobile broadband service, please contact the service provider with the following information:

## Windows OS

- a From the task bar select the Network icon and then select **Cellular**.  
The **Cellular** page is displayed.
- b Select your **Mobile Broadband Carrier** to expand the options.
- c Select **Advanced Options**.  
The options are displayed.
- d Make a note of the **International Mobile Equipment Identity (IMEI)** and the **Integrated Circuit Card Identifier (ICCID)**.

## Ubuntu OS

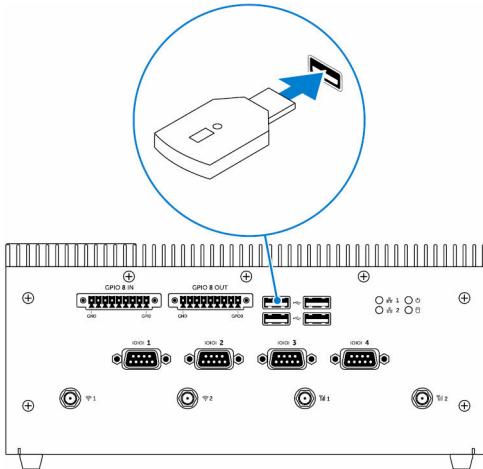
Open the **Terminal** window.

- a Go to super user mode by entering:`$sudo su -`
- b Configure the Mobile Broadband connection profile:  
`#nmcli con add type gsm ifname ttyACM3 con-name <connection name> apn <apn> user <user name> password <password>`
- c Connect to the mobile network: `#nmcli con up <connection name>`

To disconnect from the mobile network: `#nmcli con down <connection name>`.

# Setting up the ZigBee Dongle

- 1 Shut down the Embedded Box PC.
- 2 Connect the ZigBee dongle to any external USB port on the Embedded Box PC.



- 3 Turn on the Embedded Box PC and complete the setup.

 **NOTE:** For ZigBee development information, see the SiLabs developer website at [www.silabs.com](http://www.silabs.com) or contact the network system's application provider.

# Display options

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Embedded Box PC consists of the following video connectors:

- VGA
- HDMI
- DisplayPort 1 (DP1)
- DisplayPort 2 (DP2)

The Embedded Box PC supports up to three simultaneous connections. The enabled ports are:

- HDMI, DP1, and VGA (default)
- HDMI, DP1, and DP2

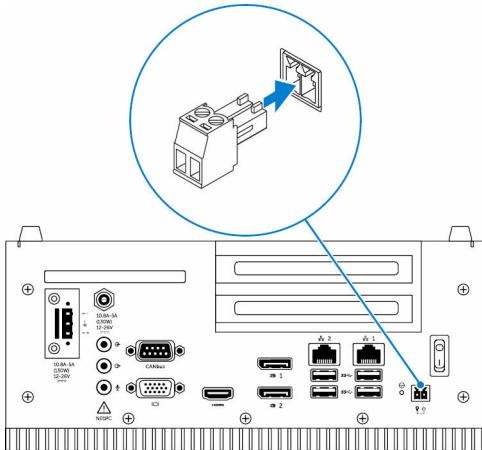
The video output is always supported on HDMI and DP1. You can switch the display output between VGA port and DP2 port in the BIOS.

 **NOTE:** The video output availability depends on the operating system support and configuration.

# Connector Kits

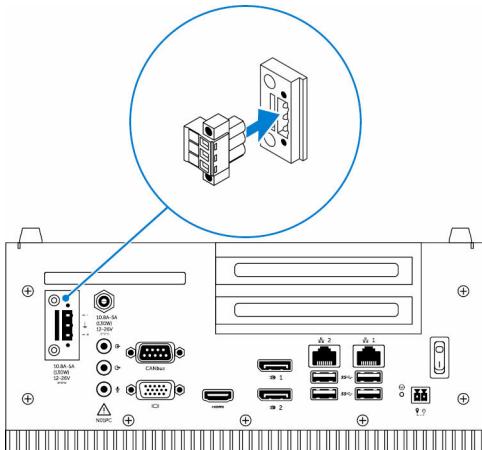
## Remote power connector

Use the remote power connector to install the remote power switch.



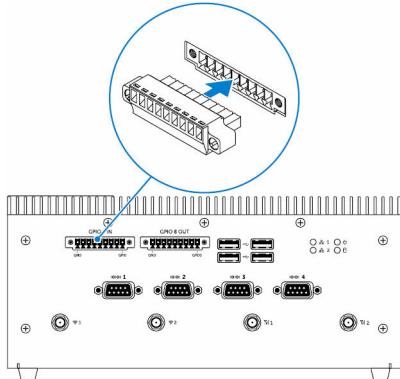
## 12–26V DC power connector

Use a 12–26V DC power connector for supplying power to your Embedded Box PC.



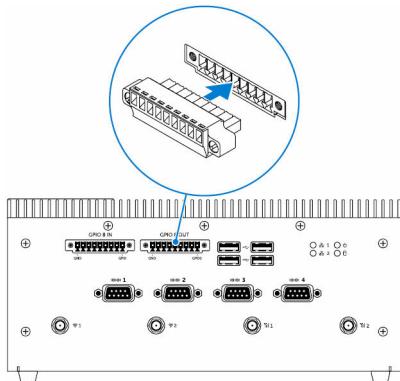
## GPIO-In connector

Use the GPIO-In connector for connecting the GPIO-out enabled device or dongles.



## GPIO-Out connector

Use the GPIO-Out connector for connecting the GPIO-in enabled device or dongles.



# Contacting Dell

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To contact Dell for sales, technical assistance, or customer service issues:

- 1 Go to [www.dell.com/contactdell](http://www.dell.com/contactdell).
- 2 Verify your country or region in the drop-down list at the bottom of the page.
- 3 Select the appropriate service or support link based on your requirement or choose the method of contacting Dell that is convenient for you.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area.



**NOTE:** If you do not have an active internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

## **FCC Radio Frequency (RF) Exposure Information**

This device has been evaluated to, and shown to be compliant with, the FCC Radio Frequency (RF) exposure limits.

Devices such as Desktop computers and Access Points (AP) that contain wireless functions (such as 802.11, Bluetooth, 3G or 4G) must be installed to provide a separation distance of at least 20cm from people to ensure compliance with the RF exposure requirements.

Certain laptop/notebook computers, with antennas located toward the top of the screen, may require a separation distance of at least 20cm between the antennas and persons when they are operating to ensure compliance with the RF exposure requirements. These laptop/notebook computers are designed such that, during normal use with the screen open, the antenna-to-user distance is greater than 20cm.

Some devices may have additional requirements for operating conditions to ensure compliance with RF exposure requirements. Specific instructions, where required, will be contained in the manual for that device. Please read your operating manual carefully.

## **Interference Statement**

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference.
- 2) This device must accept any interference received, including interference that may cause undesired operation.

**Notice:** The FCC regulations provide that changes or modifications not expressly approved by Dell Inc. could void your authority to operate this equipment.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the system with respect to the receiver.

- Move the system away from the receiver.
- Plug the system into a different outlet so that the system and the receiver are on different branch circuits.

If necessary, consult a representative of Dell Inc. or an experienced radio/television technician for additional suggestions.

NOTE: Any additional Wireless module must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Any other unauthorized installation or use will violate FCC Part 15 regulations. Modifications not expressly approved by Dell could void your authority to operate the equipment.

## **Canada, Industry Canada (IC) Notices**

Class B digital circuitry of this device complies with Canadian ICES-003.

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.

Under Industry Canada regulations, the radio transmitter(s) in this device may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

### **Warning:**

- (i) the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;
- (ii) the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall comply with the e.i.r.p. limit; and
- (iii) the maximum antenna gain permitted for devices in the band 5725-5825 MHz shall comply with the e.i.r.p. limits specified for point-to-point and non point-to-point operation as appropriate.
- (iv) Users should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

## **Radio Frequency (RF) Exposure Information**

The radiated output power of this device is below the Industry Canada (IC) radio frequency exposure limits. This device has been evaluated for and shown compliant with the IC Radio Frequency (RF) Exposure limits. The device should be used in such a manner such that the potential for human contact during normal operation is minimized.

This device has been certified for use in Canada. Status of the listing in the Industry Canada's REL (Radio Equipment List) can be found at the following web address: <http://www.ic.gc.ca/app/sitt/reltel/srch/nwRdSrch.do?lang=eng>

Additional Canadian information on RF exposure also can be found at the following web address: <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08792.html>

## **Canada, avis d'Industry Canada (IC)**

La circuiterie numérique de Classe B de cet appareil est conforme à la norme canadienne ICES-003.

Cet appareil est conforme aux normes d'exemption de licence RSS d'Industry Canada. Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférence et (2) cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

Conformément aux réglementations d'Industry Canada, les émetteurs radio de cet appareil ne peuvent fonctionner qu'à l'aide d'une antenne dont le type et le gain maximal (ou minimal) pour ces émetteurs - transmetteurs sont approuvés par Industry Canada. Pour réduire le risque d'interférence éventuelle pour les autres utilisateurs, le type et le gain de l'antenne doivent être choisis de manière à ce que la puissance isotrope rayonnée équivalente (p.i.r.e.) minimale nécessaire à une bonne communication soit fournie.

### **Avertissement:**

- (i) les dispositifs fonctionnant dans la bande 5 150-5 250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
- (ii) le gain maximal d'antenne permis pour les dispositifs utilisant les bandes 5 250-5 350 MHz et 5 470-5 725 MHz doit se conformer à la limite de p.i.r.e.;
- (iii) le gain maximal d'antenne permis (pour les dispositifs utilisant la bande 5 725-5 825 MHz) doit se conformer à la limite de p.i.r.e. spécifiée pour l'exploitation point à point et non point à point, selon le cas.
- (iv) De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5 250-5 350 MHz et 5 650-5 850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

### **Informations sur l'exposition à la fréquence radio (FR)**

La puissance rayonnée de sortie de cet appareil est inférieure aux limites d'exposition à la fréquence radio d'Industry Canada (IC). Cet appareil a été évalué et jugé conforme aux limites d'exposition à la fréquence radio (FR) d'IC. Cet appareil devrait être utilisé de manière à ce que le risque de contact humain au cours d'un fonctionnement normal soit réduit.

Cet appareil est homologué pour l'utilisation au Canada. Pour consulter l'entrée correspondant à l'appareil dans la liste d'équipement radio (REL - Radio Equipment List) d'Industry Canada, rendez-vous sur :  
<http://www.ic.gc.ca/app/sitt/reltel/srch/nwRdSrch.do?lang=eng>

Pour des informations canadiennes supplémentaires sur l'exposition FR, rendez-vous sur :  
<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08792.html>