



Industrial Box PC Operations Manual

IPC2550B Series

Your Industrial Control Solutions Source

www.maplesystems.com



For use with the following:

- IPC2550B3 Industrial Box PC
- IPC2550B5 Industrial Box PC
- IPC2550B7 Industrial Box PC

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WARRANTY

Warranty Statements are included with each unit at the time of purchase and are available at www.maplesystems.com.

TECHNICAL SUPPORT

This manual is designed to provide the necessary information for trouble-free installation and operation of your Industrial Box PC. However, if you need assistance, please contact Maple Systems:

- Phone: 425-745-3229
- Email: support@maplesystems.com
- Web: www.maplesystems.com

UNPACKING THE UNIT

Carefully unpack the Industrial Box PC. Check all material in the container against the packing list. Maple Systems will not accept responsibility for shortages against the packing list unless notified within 30 days. The equipment and accessories were inspected and tested by Maple Systems before shipment.









Examine the equipment carefully; if any shipping damage is evident, notify the carrier immediately. Maple Systems is not responsible for claim negotiations with the carrier.

Save the shipping container and packing material in case the equipment needs to be stored, returned to Maple Systems, or transported for any reason.

Packing List
IPC2550B Series Industrial Box PC unit
DC Power Cable
Wall Mounting Kit
Warranty Statement Insert
2 x Dipole Antenna (If Wi-Fi option purchased)

SAFETY PRECAUTIONS

Please observe the following precautions when installing the Industrial Box PC Series. Failure to comply with these restrictions could result in loss of life, serious personal injury, or equipment damage.

	Warning: Disconnect this equipment from any power before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
	Warning: Keep this equipment away from humidity.
	Warning: Before applying power the unit make sure the voltage of the power source is within the input voltage rating of the unit (+9~36VDC).
	Warning: Never open the equipment and do not operate equipment with its heatsink cover removed- there are dangerous high voltages present inside. For safety reasons, the equipment should be opened only by a qualified service technician.
	Warning: This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.
	Warning: If any of the following situations arise, get the equipment checked by qualified service personnel. <ol style="list-style-type: none"> 1. The power cord or plug is damaged. 2. Liquid has penetrated into the equipment. 3. The equipment has been exposed to moisture. 4. The equipment does not work well, or you cannot get it to work according to this operations manual. 5. The equipment has been dropped and damaged. 6. The equipment has obvious signs of breakage.
	Warning: Risk of explosion if the battery is replaced with an incorrect type. Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.
	Warning: Do not leave this equipment in an uncontrolled environment where the storage temperature is below -20°C (-4°F) or above 80°C (176°F). It may damage the equipment.

OVERVIEW OF IPC2550B SERIES

The IPC2550B Series Industrial Box PC is powerful yet fanless, powered by the 12th Generation Intel® Alder Lake family of processors. Intel's Alder Lake CPUs combine high-performance (P-cores) and high-efficiency (E-cores) cores to optimize power and performance based on workload. P-cores handle demanding, single-threaded tasks, while E-cores manage background and multithreaded processes efficiently. This design improves responsiveness and energy efficiency across a wide range of applications.

i3-1215UE equipped units feature Hexa-Core architecture (2 P-cores, 4 E-cores), while the i5-1235U and i7-1255U equipped PCs feature Deca-Core architecture (2 P-cores and 8 E-cores).

Memory options include 8GB all the way up to 64 GB of DDR5 SODIMM RAM. Solid State Drive options include sizes from 128GB to 2TB.

IPC2550B Series units feature I/O ports on both the front and rear panels. The front panel provides 2 DE-9P Serial ports (RS232/485/422 configurable), 4 USB 2.0 ports, and an HDMI 2.0b output port.

Rear panels feature 3.5mm Line-Out and Mic-in ports, two 2.5 Gigabit LAN ports, 4 USB 3.2 ports, an HDMI 2.0b output port, one DE-9P Serial RS232 port, a DC Power input jack and momentary power pushbutton.

All IPC2550B Series units can be equipped with an optional Wi-Fi kit, enabling access to existing 802.11ax wireless networks as well as Bluetooth™ 5.2 Support. Wireless antennas are mounted to the rear panel when the Wi-Fi option is chosen.



Front Panel View of IPC2550B



Rear Panel View of IPC2550B

WIDE-RANGE OPERATING TEMPERATURE

IPC2550B Series units are certified for operation in wide-temperature applications (-20~60°C). This allows for usage in a wider variety of applications and environments than standard Industrial Box PC products.

WIDE-RANGE VOLTAGE SUPPORT 9-36VDC

IPC2550B Series units are configured to operate under a wide DC voltage range without the need for AC-DC Power conversion. +9~36VDC can be provided to the IPC2550B Series unit. Your IPC2550B comes with a DC power cable; simply connect the leads of the cable to the corresponding + and - DC output terminals of your power supply and insert the DC Jack into the IPC2550B.

EXTERNAL MONITORS

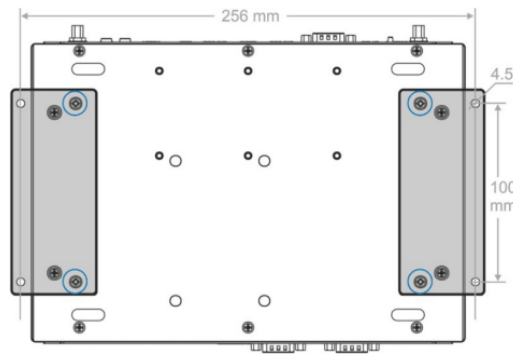
IPC2550B Series units operate with an external display or touch-capable monitor via HDMI interface, allowing for endless user-customization options. This flexibility greatly enhances the options for usage in the field; the monitor (or monitors) can be in a completely different room than the Industrial Box PC if needed. Touch screen monitor functionality may require installation of drivers – consult your monitor's documentation.

Since the Industrial Box PC units run the Microsoft Windows® family of Operating Systems (Linux® Ubuntu® OS options are also available – contact Maple Systems for more details), users will see a familiar operating environment and usage. Windows® allows for many customizable viewing options; multiple monitor functionality, duplicate desktop / desktop extension, desktop rotation and more.

Maple Systems offers several monitor options that seamlessly integrate with your Industrial Box PC – visit our website at www.maplesystems.com or contact your Maple Systems Sales Engineer for additional information.

INDUSTRIAL BOX PC MOUNTING OPTIONS

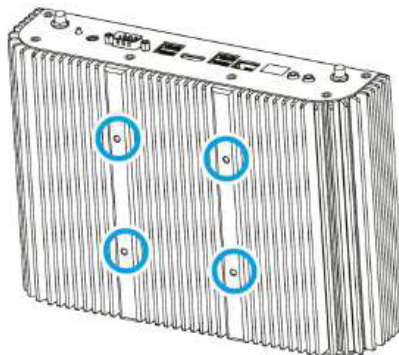
WALL MOUNTING



The Industrial Box PC can be wall mounted using the holes located on the sides of the unit's mounting kit (included with your Industrial Box PC but not installed by default).

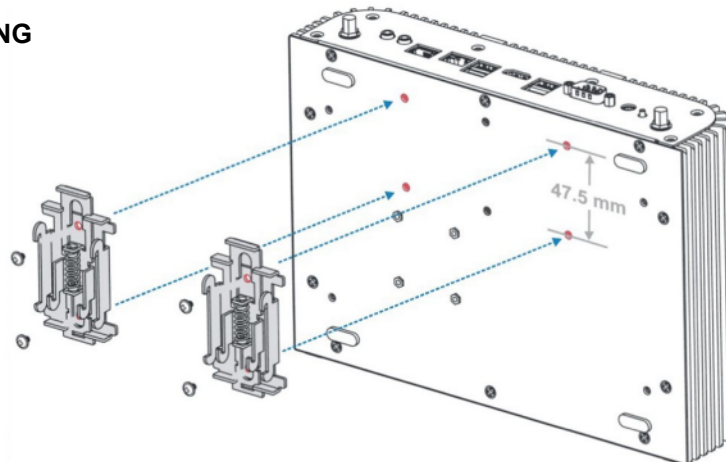
Maple Systems provides four (4) M3 threaded screws for installation of the mounting kit to the rear panel; **please note that wall mounting hardware is not included.** Use mounting hardware appropriate to and suitable for the application; Maple Systems is not responsible for damage to unit, mounting surface or any other components caused by improper mounting.

VESA MOUNTING



The Industrial Box PC can be VESA mounted using the four (4) M4 threaded holes located on the heatsink. **Please note that M4 mounting screws are not included.** Use mounting hardware appropriate to and suitable for the application; Maple Systems is not responsible for damage to unit, mounting surface or any other components caused by improper mounting.

DIN RAIL MOUNTING



The IPC2550B can be mounted to a typical 35mm DIN Rail with the optional DIN Rail Mounting Kit (sold separately). Four threaded M3 holes on the bottom allow for easy mounting to a standard 35mm DIN Rail (DIN Rail sold separately); proper orientation of DIN rail mounted unit is shown above.

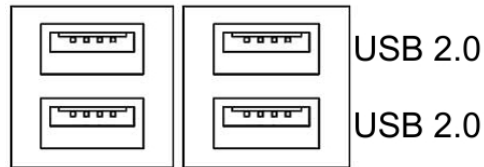
The DIN Rail kit is designed to only install with the correct orientation. If improperly mounted or installed, damage to the Industrial Box PC may result. Maple Systems is not responsible for damage to unit, mounting surface or any other components caused by improper mounting.

I/O PORTS

FRONT PANEL

USB 2.0 x4

USB 2.0 Type A Host Ports – Maximum transfer speed 480Mbps.



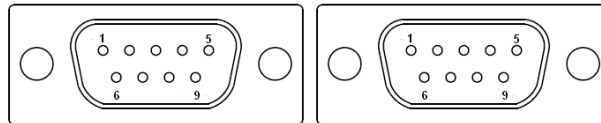
HDMI® 2.0b

High Definition 4K resolution output – Maximum resolution of 4096 x 2160 pixels @ 60Hz



SERIAL DE-9P COM2 / COM3

Pinout Configuration RS-232 by default, RS422/RS485 configurable in BIOS,

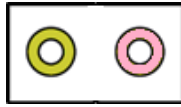


Pin #	COM2 / COM3*		
	RS232 (Default)	RS422* (Optional)	RS485* (Optional)
1	DCD	TX-	Data-
2	RXD	TX+	Data+
3	TXD	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC
* Refer to “Setting Serial COM Function” section to set the communication mode.			

REAR PANEL

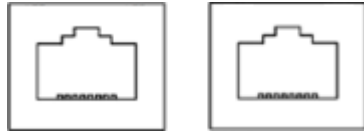
LINE-OUT / MIC IN

3.5mm Audio Jacks



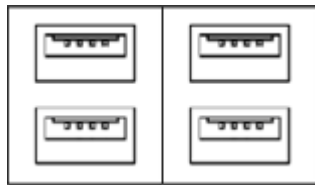
LAN1 AND LAN2:

Standard 2.5 Gigabit RJ-45 Ethernet ports – Intel® i226 Controllers



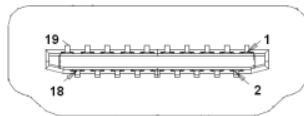
USB 3.2

USB 3.2 Gen 1 Type A Host Ports – Maximum transfer speed 5GB/s.



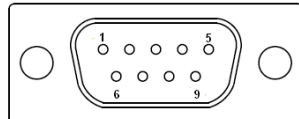
HDMI® 2.0b

High Definition 4K resolution output – Maximum resolution of 4096 x 2160 pixels @ 60Hz



SERIAL DE-9P COM1

RS-232 Pinout Configuration:



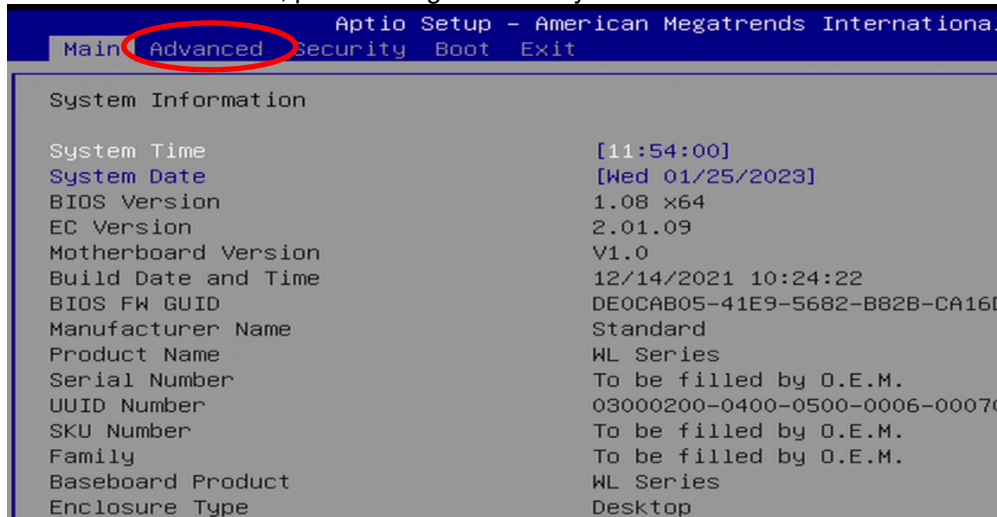
Pin #	COM1
	RS-232
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

SETTING SERIAL COM FUNCTION

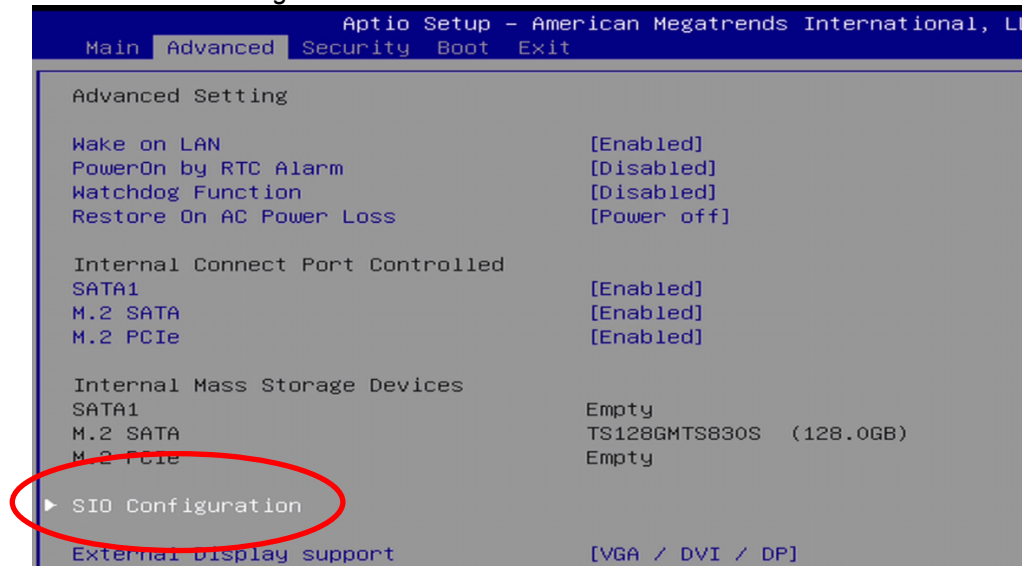
The IPC2550B Series' COM2 and COM3 Serial Ports are configured by default for RS232 operation, but can be configured for RS422 (4-wire) and RS485 (2-wire) operation if so desired. COM port configuration is managed through the BIOS; see the below table for instructions on changing COM port mode.

Note: COM1 is exclusively configured for RS232 operation, COM2 and COM3 are the only ports that can be configured for RS422 or RS485 operation.

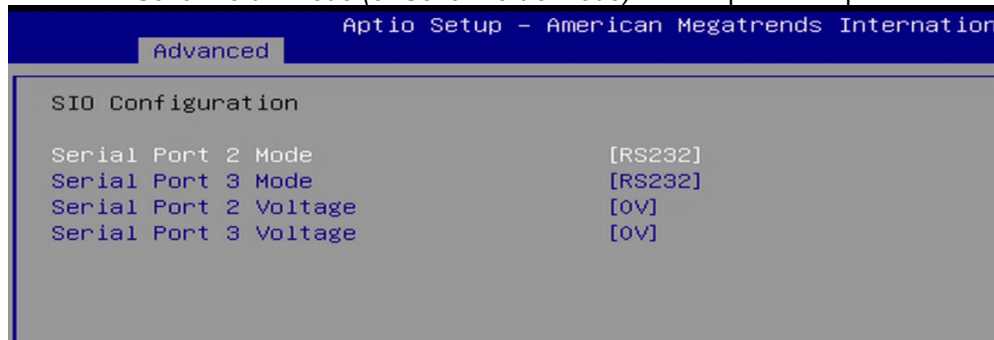
1. Boot the PC up and press the [DEL] or [F2] key to enter the BIOS Main Menu.
2. At the BIOS Main Menu, press the right arrow key for the *Advanced* submenu.



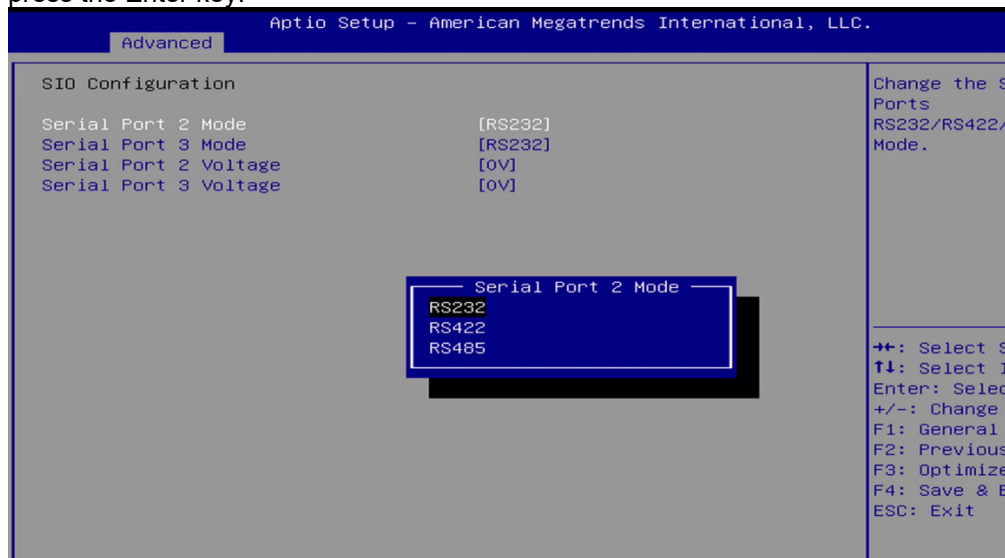
3. Select the *SIO Configuration* menu.



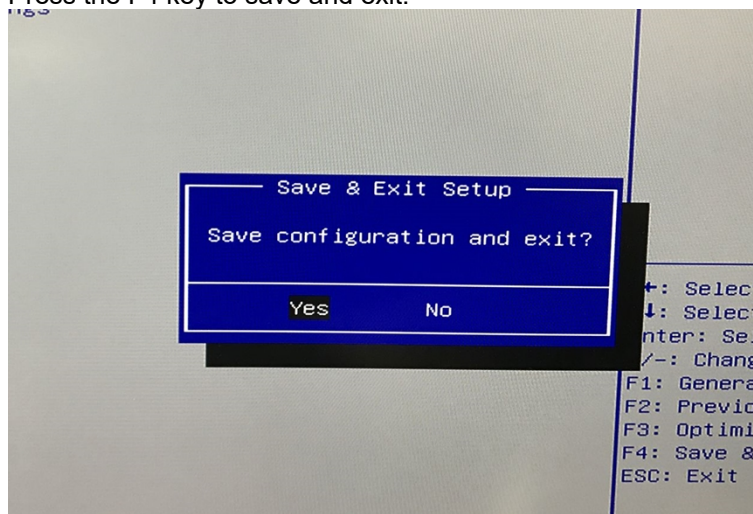
4. Select the *Serial Port 2 Mode (or Serial Port 3 mode)* menu option and press the Enter key.



5. Select the *[RS232], [RS485], or [RS422]* option, depending on your desired port configuration and press the Enter key.



6. Press the F4 key to save and exit.



Note: Make sure to **SAVE** changes before exiting the BIOS. The F4 key brings up the save option.

OPERATING SYSTEM OPTIONS

The IPC2550B series Industrial Box PC can be purchased with the following operating systems pre-installed:

- Windows IoT Enterprise (Windows 10 LTSC or Windows 11 GAC)
- Windows IoT Enterprise Embedded (Windows 10 LTSC or Windows 11 GAC)
- Windows 11 Professional
- Linux® Ubuntu® Desktop LTS
- Linux® Ubuntu® Server LTS

WINDOWS 10 IoT ENTERPRISE LTSC / WINDOWS 11 IoT ENTERPRISE GAC

Windows IoT Enterprise LTSC is a full Professional version of Windows 10 / Windows 11 available on all Industrial Box PC models. This powerful operating system delivers enterprise manageability and security to IoT solutions. Additionally, all of the features and functionality that customers expect to find on their desktop PC are available in this version. The Long Term Servicing Channel (LTSC – Windows 10) or General Availability Channel (GAC – Windows 11) version ensures long term stability that critical production systems require by updating only necessary operating system components, with significantly fewer update interruptions.

Included Apps with all Windows OS options:

- Microsoft Edge Web Browser
- LibreOffice Suite (Compatible with the following document types:)
 - MS Word
 - MS Excel
 - MS PowerPoint
 - Adobe PDF
- Media Player

WINDOWS 11 PROFESSIONAL

Windows 11 Professional is a full professional versions of Windows. All the features and functionality that customers expect to find on their desktop PC are available in this version. This powerful operating system has lifetime security updates for the duration of Microsoft's support timeline of the OS. These versions are operationally identical to the Consumer operating System versions of Windows, and as such they feature regular feature and functionality updates on a more frequent schedule than Enterprise editions of the same OS.

LINUX® UBUNTU® SERVER / DESKTOP

Linux® Ubuntu® Server is perfect for web interface and other server type applications; this option saves hard drive space by skipping the desktop.

Linux® Ubuntu® Desktop includes the intuitive Gnome desktop environment and is great for display panels, kiosk applications, or for those that prefer the ease of use of a desktop interface.

For a Quick Setup Guide outlining the initial setup process of the Ubuntu® OS equipped Industrial Box PCs, see the **Linux® / Ubuntu® Quick Start** section below.

LINUX® / UBUNTU® QUICK START

This section is not meant as a detailed guide to the intricacies of the Linux® Operating System. The scope of this section is for initial setup purposes of your new Maple Systems Industrial Box PC unit.

INITIAL SETUP

To complete the setup requires the following:

1. Monitor (HDMI connection)
2. USB Keyboard
3. (Server OS Only: TCP/IP network with a DHCP server)
4. (Server OS Only: An external computer on the same subnet of the Industrial Box PC with **SSH** enabled terminal emulator)

SERVER OS

It is recommended to create a regular user account with access to the `sudo` command to perform administrative tasks. Maple Systems **STRONGLY RECOMMENDS** at minimum changing the password from the default.

Power up and log in:

Connect the monitor, USB Keyboard, Ethernet Cable and power supply to the Industrial Box PC. Once the login prompt is displayed enter the following credentials:

Username: root Password: 111111

This will log you in as the root user. The root user has complete access to the system. To change the root user's password, enter:

```
# passwd
```

Follow the prompts to complete the password change process.

Add New User:

Use the `adduser` command:

```
# adduser <username>
```

Follow the prompts to give the new user a password and other information. To grant the new user `sudo` privileges enter:

```
# usermod -aG sudo <username>
```

Now logout (`# logout`) and enter the credentials for the new user. Make sure that the new user can execute commands with `sudo`. Try:

```
$ sudo ls -la
```

This should prompt for the password and then print the contents of the new user's home directory.

Access and Password Management for Root User:

For security and better tracking, disabling direct login for the root user is recommended. To do this enter:

```
$ sudo passwd -l root
```

To retain (or re-enable) access to the root login, run:

```
$ sudo passwd
```

Follow the prompts to set a new password for root. You can then logout and login as root using the new password.

LOCALIZATION

By default, the system is set to Pacific Time (America/Los_Angeles). To change to a different time zone, enter:

```
$ sudo timedatectl set-timezone <time zone>
```

Where `<time zone>` is the zone to use. To get a list of available zones use:

```
$ timedatectl list-timezones
```

After updating, the current settings can be printed with:

```
$ timedatectl
```


SETTING THE PC HOSTNAME

The hostname is set to *bpc*, to update this run:

```
$ sudo hostnamectl set-hostname <new
hostname>
```

To print the updated hostname run:

```
$ hostnamectl
```

You will need to logout and back in to see the new name on the terminal.

SOFTWARE UPDATES

To install any software updates, enter:

```
$ sudo apt update && sudo apt upgrade
```

Use: `$ sudo apt install <package name>` to install new software.

SSH ACCESS

Accessing the server can be done over the network using the preinstalled Open SSH Daemon. You will need to know what IP address has been assigned to the PC to access it. Print the network settings with:

```
$ ip a
```

Note the ipv4 address (*inet*) for the interface you are going to use. You can then log in via *SSH* from any networked computer that has a terminal emulator and *SSH* client. Simply enter:

```
$ ssh <username>@<ip address>
```

Where <username> is for the user created above. The system will ask for the password, display a login message and provide another prompt. Commands can be entered on the networked device as if being run locally on the server.

DESKTOP OS

INITIAL SETUP

Connect the monitor, USB Keyboard, and power supply to the Industrial Box PC. The Ubuntu® Automatic Setup Wizard will begin. Follow the on-screen prompts to complete the setup process.

DISPLAY CONFIGURATION

If you are connecting a digital display and the taskbar or favorites bar does not display on the desktop after initial setup, you may need to adjust your display settings. To adjust your display settings:

- Right-click on the desktop and select *Display Settings*.
- Select *Display Mode* in this new window, and select the *Single Display* tab.
- There are two display options on this tab; select the display the PC is physically connected to and ensure the resolution settings match the monitor's optimal settings.
- Click *Apply*, the screen will flicker and adjust to the new settings.

SERIAL PORT NAMES

See the below table to cross reference the names of the DE-9 Serial Ports on your PC:

PC Chassis Label	IPC2550B
COM1:	<i>Ttys1</i>
COM2:	<i>Ttys4</i>
COM3:	<i>Ttys5</i>

TOUCHSCREEN

To ensure the monitor and touchscreen driver link properly to the PC, plug in the monitor and USB cable to the PC prior to application of power.

- Capacitive touchscreen monitors are supported by Ubuntu® in single-touch configuration.
- Resistive touchscreen monitors may require touch calibration to be performed on system startup.

TECHNICAL RESOURCES AND TROUBLESHOOTING

TECHNICAL SUPPORT

Maple Systems provides free technical support for its products. Many technical resources (Datasheets, Certifications, Installation Guides, Drivers, Technical Notes and Operation Manuals) are available on the Maple Systems website (<http://www.maplesystems.com>).

Technical Support Representatives are also available by phone at (425) 745-3229, or by e-mailing support@maplesystems.com.

DRIVER INSTALLATION (WINDOWS® OS ONLY)

Your Industrial Box PC comes with all necessary drivers pre-installed. As such, driver installation is not normally needed. However, there may be times when a driver requires re-installation. If a driver re-installation is required, please visit the Support Center of the Maple Systems website for driver download instructions.

WINDOWS® OPERATING SYSTEM UPDATES OR REINSTALLATION

In the event that you wish to update your Windows Operating System (Non-Embedded Operating Systems only), simply connect the Industrial Box PC to the Internet and run the Windows Update utility.

In the unlikely event of a system failure requiring reinstallation of the Windows Operating System, you can reinstall Windows as it arrived to you from Maple Systems. For OS recovery installation media, please contact your Maple Systems Sales Engineer.

After OS reinstallation, you will need to re-activate Windows using the Product Key located on the bottom panel of your PC, adjacent to the product label.

Embedded Operating Systems do not allow for OS reinstallation; in the extremely unlikely event the Windows OS needs to be reinstalled, contact your Maple Systems Sales Engineer for instructions on obtaining an Return Material Authorization (RMA) form.

WONDERWARE / AVEVA™ EDGE

All of the Industrial Box PCs are compatible with Wonderware / AVEVA™ Edge SCADA software package. The choice of operating system will determine the target platform and runtime license required as shown in the chart below:

Operating System	Runtime License*	Target Platform
Windows 10/11 IoT Enterprise	...for Embedded view..for Windows Embedded	Windows
Ubuntu® Desktop	... IoTView...	Linux®
Ubuntu® Server	... IoTView...	Linux®

* There are multiple options for each operating system indicated by “...” in the chart above. Refer to the AVEVA™ Edge price list for details.

For Windows 10 IoT Enterprise LTSC, install the Embedded View runtime by copying CEServer.exe from your C:\Program Files (x86)\InduSoft Web Studio v8.1\Redist\WinEmbedded\Bin to the PC system files.

For Windows 10/11 Professional, simply install the desired AVEVA™ Edge software package onto your Industrial Box PC. Contact AVEVA™ Support for installation assistance.

For Linux® Ubuntu®, see the AVEVA™ Edge Documentation.

Your Industrial Control Solutions Source

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