



Industrial Box PC Operations Manual

IPC2110A Series

Your Industrial Control Solutions Source

www.maplesystems.com



For use with the following:

- IPC2110A 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
IPC2110A Series Industrial Box PC unit
VESA Mounting Kit (VESA plate, 4x standoffs)
DC Power Cable
Warranty Statement Insert

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 (12 VDC ±10%).
	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 60°C (140°F). It may damage the equipment.

OVERVIEW OF IPC2110A SERIES

The IPC2110A Series Industrial Box PC is powerful yet fanless, powered by the Intel® Quad-Core Celeron® J4125 Gemini Lake processors running at 2.0GHz. Memory options include 4 GB to 16 GB of DDR4 SODIMM RAM. Solid State Drive options include sizes from 32 GB to 512 GB (Other options may be available; contact Maple Systems for details).

IPC2110A Series units feature I/O ports on both the front and rear panels. The front panel provides the power button, 4 DE-9P Serial ports (3x RS232, 1x RS232/485 configurable), 2 USB 2.0 ports, and 2 USB 3.0 ports.

Rear panels feature 3.5mm Headphone Out and Mic-in ports, 2 USB 3.0 ports, 2 Gigabit LAN ports, one HDMI 1.4b output port, one DisplayPort, and a DC Power input jack.

All IPC2110A Series units can be equipped with an optional Wi-Fi kit, enabling access to existing 802.11a/b/g/n/ac wireless networks. Wireless antennas are mounted to the rear panel when the Wi-Fi option is chosen.



Front Panel View of IPC2110A



Rear Panel View of IPC2110A

SPECIFICATIONS AND DIMENSIONS

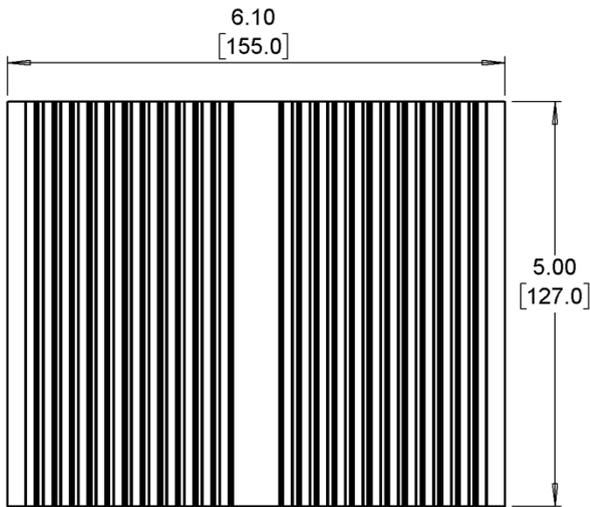
The following section contains the Specifications and Dimensions for the IPC2110A Series Box PCs.

SPECIFICATIONS

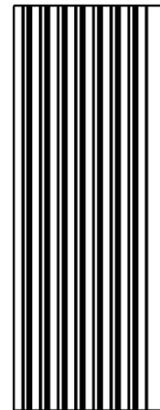
System	CPU	Intel® Quad Core™ Celeron® J4125 Gemini Lake Processor @2.0GHz
	System Chipset	SoC
	CPU Graphics	Intel® UHD Graphics 600
	System Memory Options	1 x DDR4 260-pin SO-DIMM RAM (4, 8, 16 GB)
	TPM Module	N/A
Front Panel I/O	USB	2 x USB 2.0 type A 2 x USB 3.0 Type A
	Serial	1 x RS-232/485-2W DE-9P, COM3 (default RS-232) 3 x RS-232 DE-9P (COM1/COM2/COM4)
	Power Switch	1 x Momentary Pushbutton
Rear Panel I/O	USB	2 x USB 3.0 type A
	Display Interface	1 x HDMI® 1.4b port (max. 4096 x 2160 pixels @30Hz) 1 x DisplayPort™ (max. 4096 x 2160 pixels @60Hz)
	LAN	2 x GbE RJ-45
	Audio	1 x 3.5 mm Headphone-out 1 x 3.5 mm Mic-in
	Power	1 x DC power input jack
	Wireless LAN	2x Wireless LAN Antenna ports (covered unless optional Wi-Fi Expansion kit purchased)
	Solid State Drive	1 x 2.5" SATA3 MLC (32, 64, 128, 256, 512 GB)
Storage	SD Card Slot	N/A
Expansion	Expansion Slot	Optional Wi-Fi kit (IEEE 802.11a/b/g/n/ac card and 2x antenna)
Electrical	Input Voltage	12 VDC ±10%
	Input Current	3A max.
	Input Power	36W max.
Mechanical	Construction	Black Aluminum Heatsink, SECC Steel Chassis
	Rating	N/A
	Mounting	VESA Mounting Bracket (included)
	Dimension (W x H x D)	6.10 x 5.00 x 1.85 inches [155 x 127 x 47 mm]
	Net Weight	Approx. 2.2 lbs. [1 kg]
Environmental	Operating Temperature	41~104°F [5~40°C]
	Storage Temperature	-4~140°F [-20~60°C]
	Storage Humidity	20 to 90%, non-condensing
	Certification	CE / FCC Class A
Operating System	Microsoft Windows® Options	Microsoft Windows® 10 IoT Enterprise Embedded LTSC 64-bit (EPKEA) Microsoft Windows® 10 IoT Enterprise LTSC 64-bit (PKEA)
	Linux® Options	Linux® Ubuntu Desktop 22.04 LTS Linux® Ubuntu Server 22.04 LTS
Notes	Specifications subject to change without notice	

DIMENSIONS

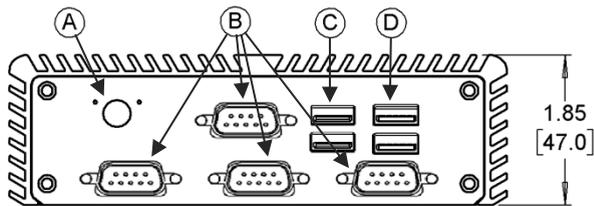
Dimensions are in inches [mm]



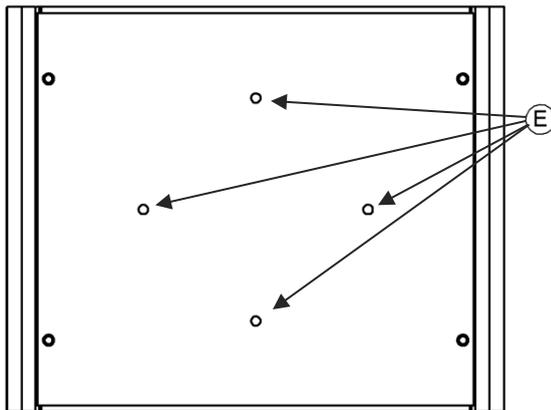
TOP VIEW



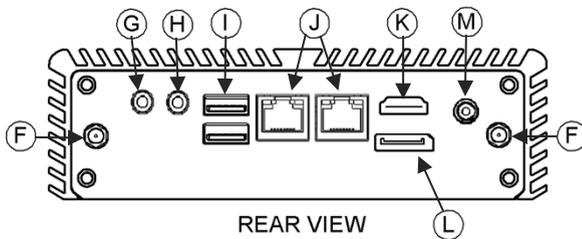
SIDE VIEW



FRONT VIEW



BOTTOM VIEW



REAR VIEW

- A Power Button
- B COM Port DE-9P x 4
- C USB 2.0 Host Port x 2
- D USB 3.0 Host Port x 2
- E VESA Bracket Standoff Mount x 4
- F Antenna Fixture (Optional)
- G 3.5mm Mic-In Port
- H 3.5mm Headphone Out Port
- I USB 3.0 Host Port x2
- J Gigabit Ethernet RJ45 x 2
- K HDMI Display Output
- L DisplayPort Output
- M 12 VDC Power Input

EXTERNAL MONITORS

IPC2110A Series units operate with an external display or touch-capable monitor via HDMI or DisplayPort 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.

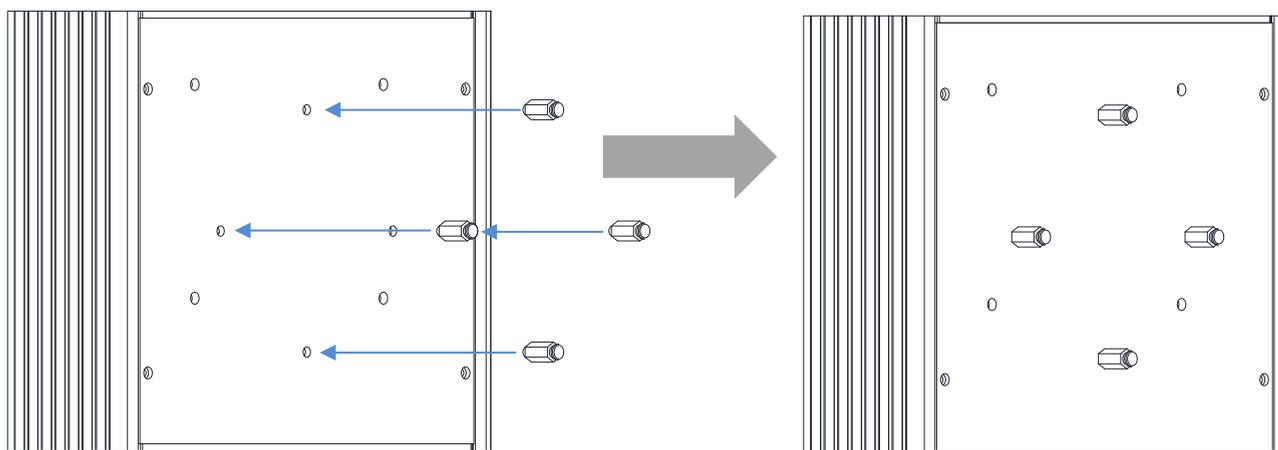
Maple Systems offers several monitor options that seamlessly integrate with your Box PC – visit our website at www.maplesystems.com or contact your Maple Systems Sales Engineer for additional information.

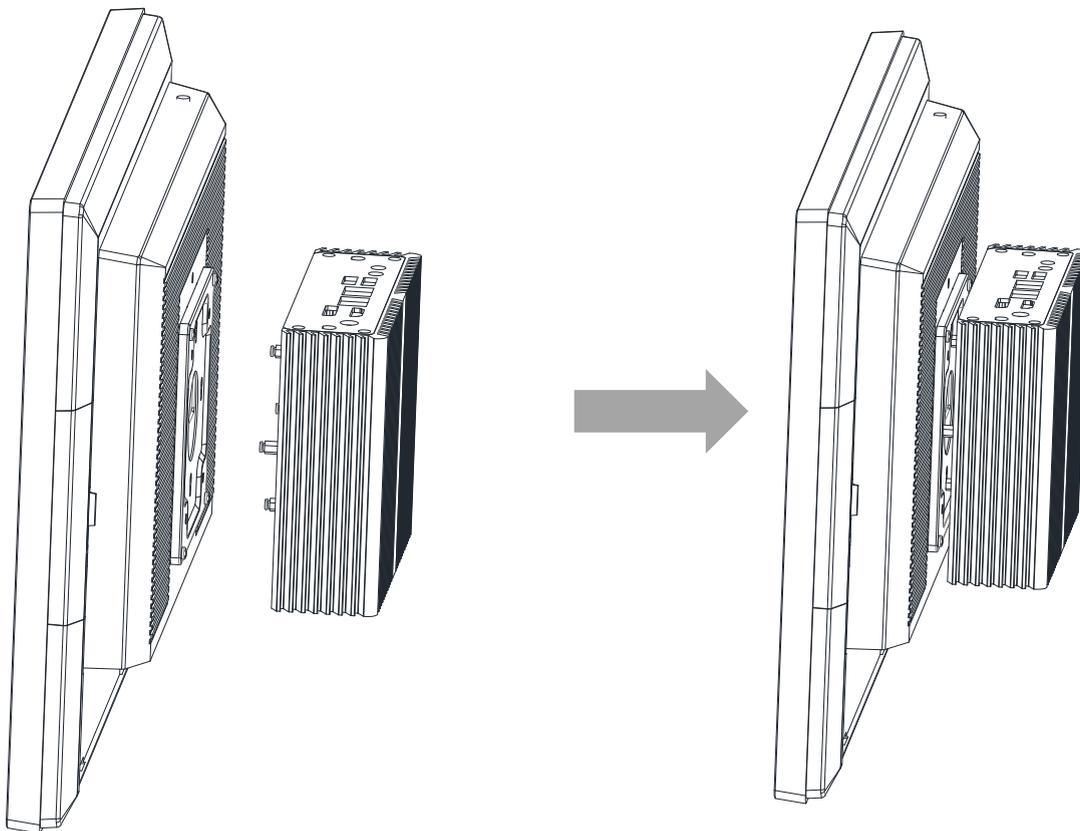
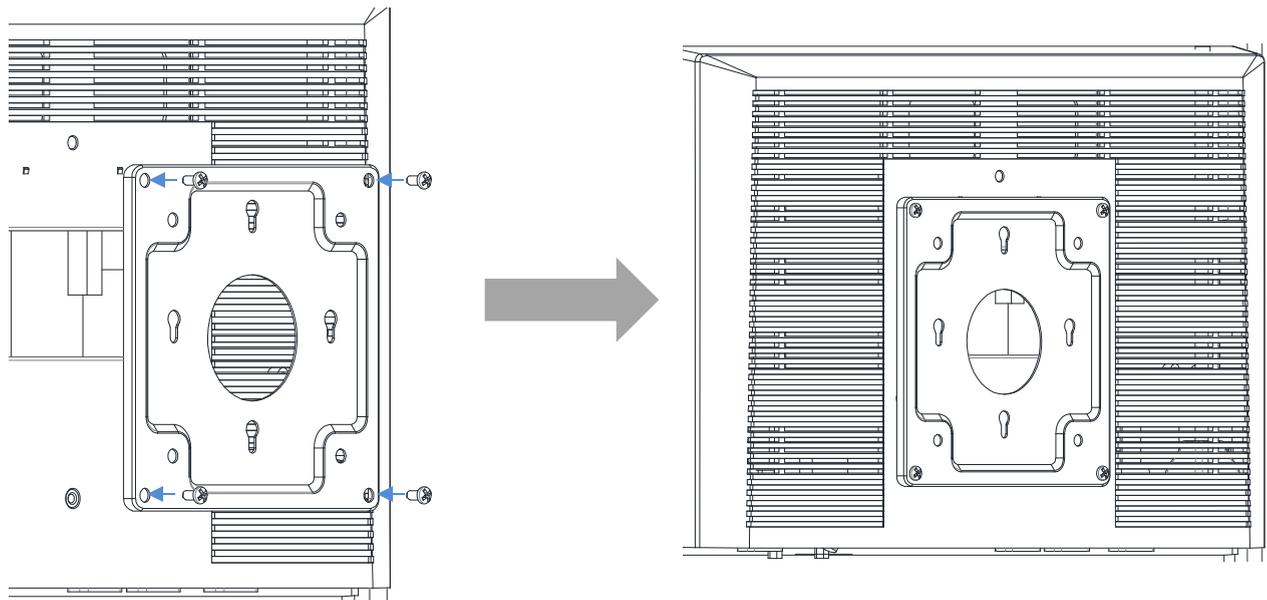
INDUSTRIAL BOX PC MOUNTING

The Box PC can be VESA mounted using the four (4) threaded holes located on the unit’s bottom plate. Maple Systems provides four (4) threaded standoffs for attachment of the IPC2110 to the VESA mounting plate. Simply attach the threaded standoffs to the bottom plate of your unit, secure the VESA plate to your selected VESA-75 or VESA-100 mounting fixture, and then align the standoffs to the VESA plate and slide down to secure.

Please note that Maple Systems only provides the mounting bracket; **hardware to mount the bracket to your selected VESA fixture 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

Mounting example shown below illustrates mounting your IPC2110A unit to the back side of a Monitor, but the same process applies to VESA stand mounts.





Please note that Maple Systems only provides the mounting bracket; **hardware to mount the bracket to your selected VESA fixture 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.

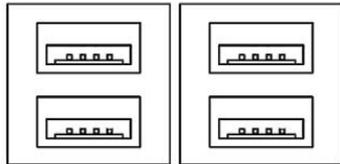
I/O PORTS

FRONT PANEL

USB 2.0 x2 (Left Stack) / USB 3.0 x2 (Right Stack)

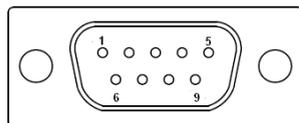
USB 2.0 Type A Host Ports – Maximum transfer speed 480Mbps

USB 3.0 Type A Host Ports – Maximum transfer speed 4.8GB/s



SERIAL DE-9P COM1 / COM2 / COM3 / COM4

Pinout Configuration RS-232 by default, **COM3** is RS485 configurable in BIOS

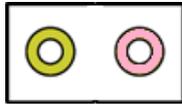


Pin #	COM1 / COM2 / COM4	COM3*	
	RS232	RS232 (Default)	RS485* (Optional)
1	DCD	DCD	Data-
2	RXD	RXD	Data+
3	TXD	TXD	NC
4	DTR	DTR	NC
5	GND	GND	GND
6	DSR	DSR	NC
7	RTS	RTS	NC
8	CTS	CTS	NC
9	RI	RI	NC
		* Refer to “Setting Serial COM Function” section to set the communication mode.	

REAR PANEL

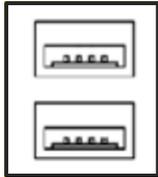
HEADPHONE OUT / MIC IN

3.5mm Audio Jacks



USB 3.0

USB 3.0 Type A Host Ports – Maximum transfer speed 4.8GB/s.



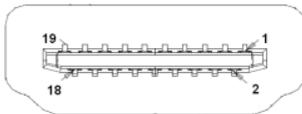
LAN1 AND LAN2:

Standard Gigabit RJ-45 Ethernet ports



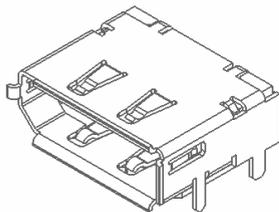
HDMI® 1.4b

High Definition 4K resolution output – Maximum resolution of 4096 x 2160 pixels @30Hz



DISPLAYPORT

High Definition 4K resolution Output - Maximum resolution of 4096 x 2160 pixels @60Hz

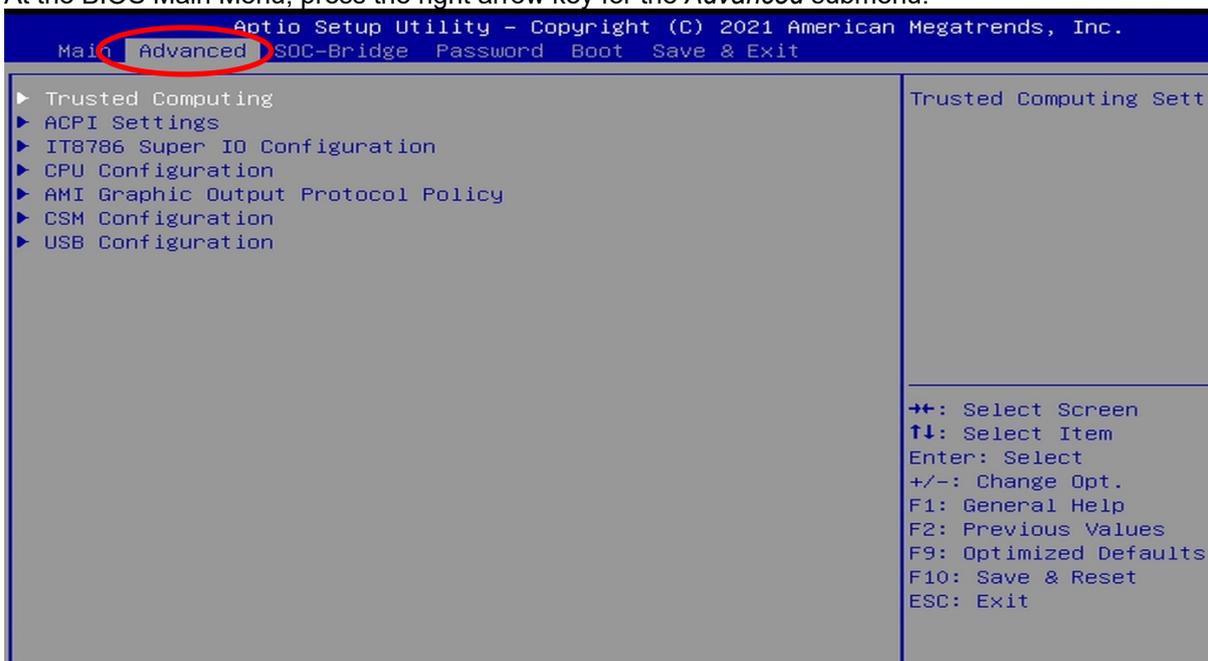


SETTING SERIAL COM FUNCTION

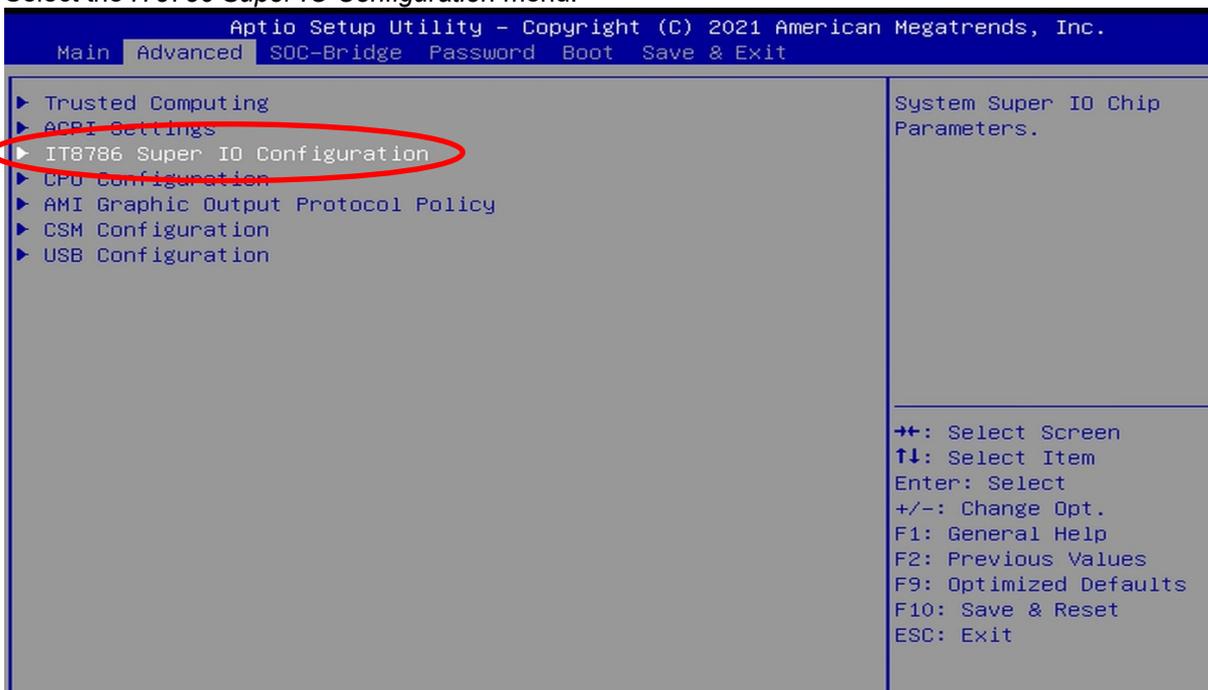
The IPC2110A Series' COM3 Serial Port is configured by default for RS232 operation, but can be configured for RS485 (2-wire) operation if so desired. COM port configuration is managed through the BIOS; see the below table for instructions on changing COM port mode.

Note: COM1, COM2, and COM4 are exclusively configured for RS232 operation, COM3 is the only port that can be configured for RS485 operation.

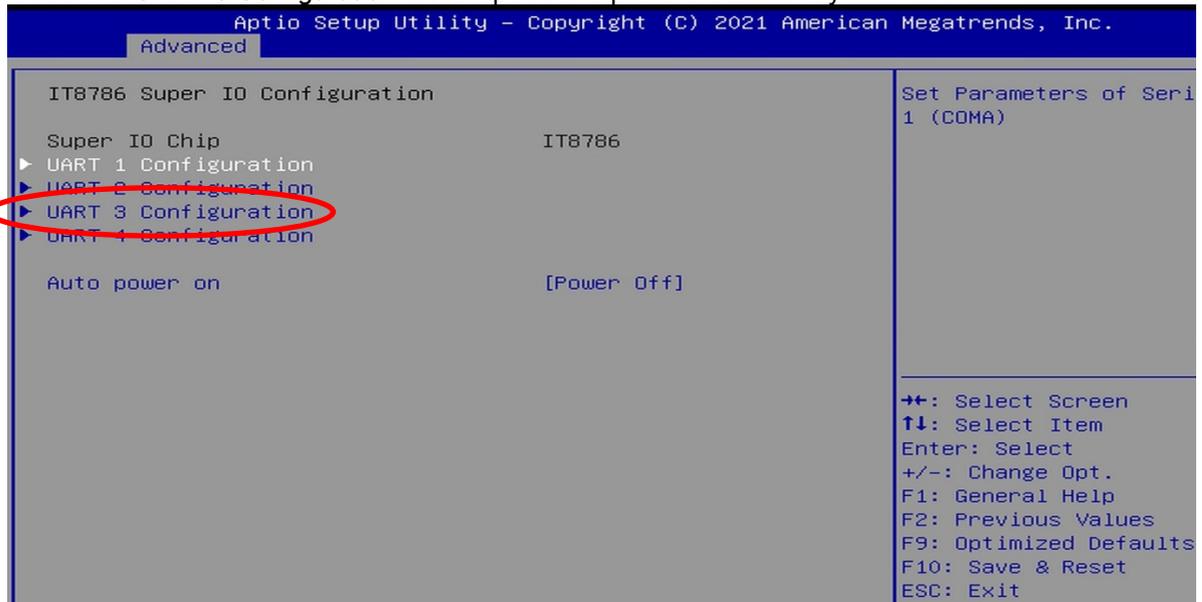
1. Boot the PC up and press the [DEL] or [F2] key to enter the BIOS Main Menu.
2. At the BIOS Main Menu, press the right arrow key for the *Advanced* submenu.



3. Select the *IT8786 Super IO Configuration* menu.



4. Select the *UART 3 Configuration* menu option and press the Enter key.



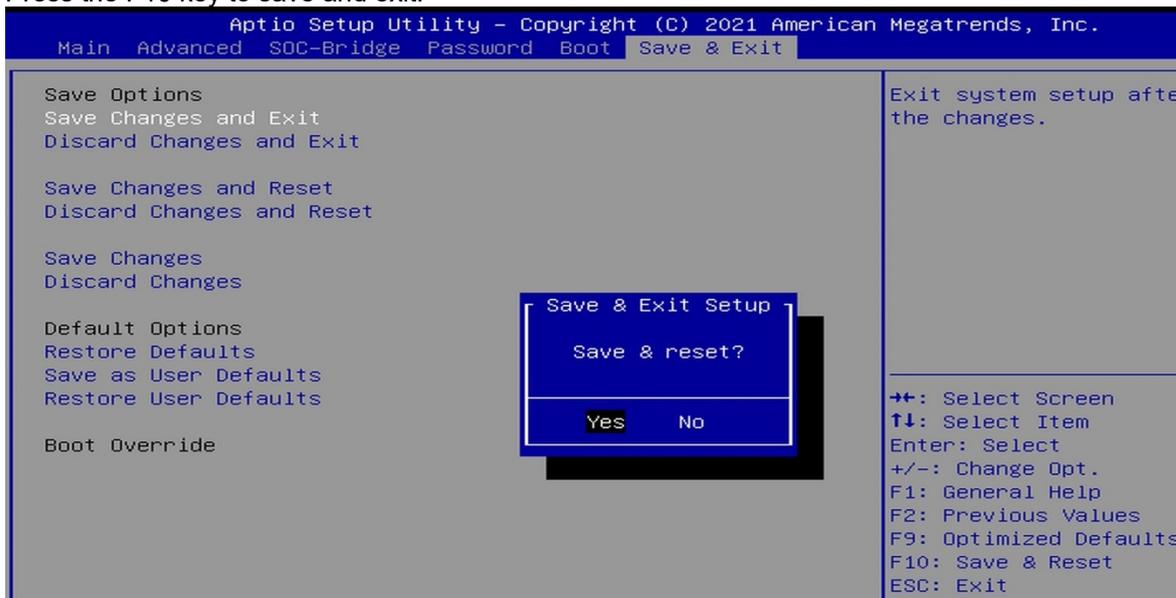
5. Select the *COM3 Control Option*



- 6. Select the [RS232] or [RS485] option, depending on your desired port configuration and press the Enter key. Note that COM3 is RS232 by default.



- 7. Press the F10 key to save and exit.



Note: Make sure to SAVE changes before exiting the BIOS. The F10 key brings up the save option.

OPERATING SYSTEM OPTIONS

The IPC2110A series Box PCs can be purchased with the following operating systems pre-installed:

- Windows 10 IoT Enterprise LTSC
- Windows 10 IoT Enterprise Embedded LTSC
- Linux® Ubuntu® Desktop 22.04 LTS
- Linux® Ubuntu® Server 22.04 LTS

WINDOWS 10 IoT ENTERPRISE LTSC

Windows IoT Enterprise LTSC is a full Professional version of Windows 10 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) 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

LINUX® UBUNTU® SERVER 22.04 / DESKTOP 22.04

Linux® Ubuntu® Server 22.04 is perfect for web interface and other server type applications; this option saves hard drive space by skipping the desktop.

Linux® Ubuntu® Desktop 22.04 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 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 or DisplayPort 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 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 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	IPC2110A
COM1:	<i>Ttys0</i>
COM2:	<i>Ttys1</i>
COM3:	<i>Ttys2</i>
COM4:	<i>Ttys3</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.

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 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 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 Enterprise	...for Embedded view..for Windows Embedded	Windows
Ubuntu® Desktop 22.04	... IoTView...	Linux®
Ubuntu® Server 22.04	... 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 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

www.maplesystems.com



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