MPC-2121/2101 Series Panel Computer Windows 10 User's Manual

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www.moxa.com/product

MPC-2121/2101 Series Panel Computer Windows 10 User's Manual

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Introduction

Thank you for buying Moxa's MPC-2121/2101 Series panel computer. The panel computer models come preloaded with the Windows 10 LTSB or Windows 10 Professional software platform, providing a simple and familiar development environment for various industrial applications.

- **Software Components**

Software Components

Refer to the following content for the software components of the Windows 10 LTSB, Windows 10 Professional pre-installed on the MPC-2121/2101 computers.

Core OS:
- 64-bit support
- Remote Client
- Remote Procedure Call

Applications and Services Development:
- .Net Framework 3.5
- .Net Framework 4.6
- Remote Desktop
- COM+ Application Support
- MSMQ

Internet Services:
- Internet Explorer 11
- IIS 10.0

File Systems and Data Store:
- Windows Data Access Components
- Windows Backup and Restore

Diagnostics:
- Common Diagnostic Tools
- Problem Reports and Solutions
- Windows Memory Diagnostic

Graphics and Multimedia:
- DirectX and Windows Device Experience
- Photo Viewer
- Remote media streaming
- Windows Media Player

Management:
- Local Group Policy Editor
- Group Policy Management
- Windows Management Instrument (WMI)
- Windows Update.

Networking:
- Extensible Authentication Protocol (EAP)
- Internet Authentication Service
- Telnet Server
- Domain Services
- Network and Sharing Center
- Quality of Service
- Remote Access Service (RAS)
- Telephony API Client
- Windows Firewall
- iSCSI Initiator

Security:

- Credential Roaming Service
- Credentials and Certificate Management
- Windows Authorization Manager (AZMAN)
- Windows Security Center
- Active Directory Rights Management
- Security Base.
- Encrypted File System (EFS)
- Data Recovery Agent (DRA)
- Local Security Policy

Embedded Features:

- Message Box Default Reply
- Registry Filter
- WSDAPI for .NET

Embedded Self-Health Diagnostic Software:

- SNMP-based remote scripting layer for monitoring, reporting, and control

2

System Initialization

This chapter describes how to initialize the system settings on MPC-2121/2101 Series panel computer when you boot up the computer for the first time.

The following topics are covered in this chapter:

- **Overview**
- **Initializing User Settings**
  - Windows Embedded 10 LTSB
  - Windows 10 Professional

Overview

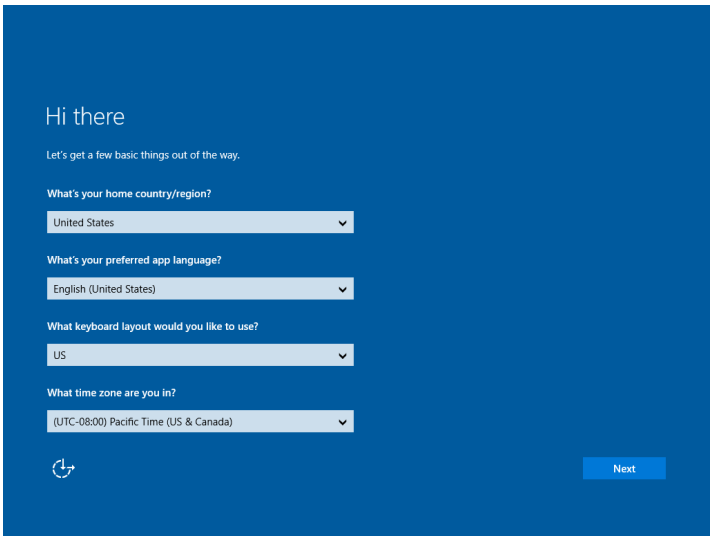
Like most laptop computer, you will need to first create a user account and initialize the user setting for the embedded computer to work.

Initializing User Settings

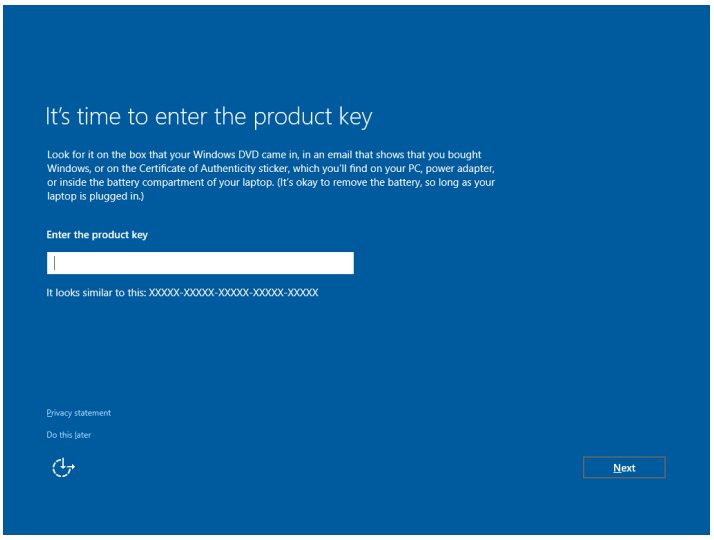
Windows Embedded 10 LTSB

Follow these instructions to create a new account.

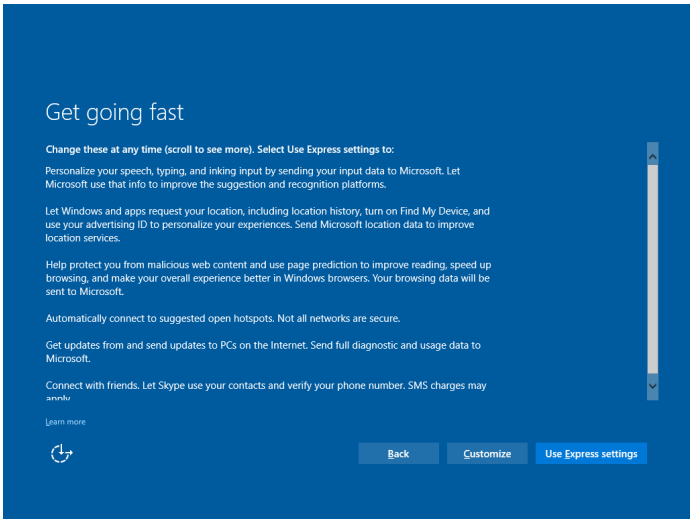
1. When you boot the embedded computer for the first time, select your home region, preferred language, keyboard layout, and time zone.



2. Click **Next.**
3. Select **Do this later.**

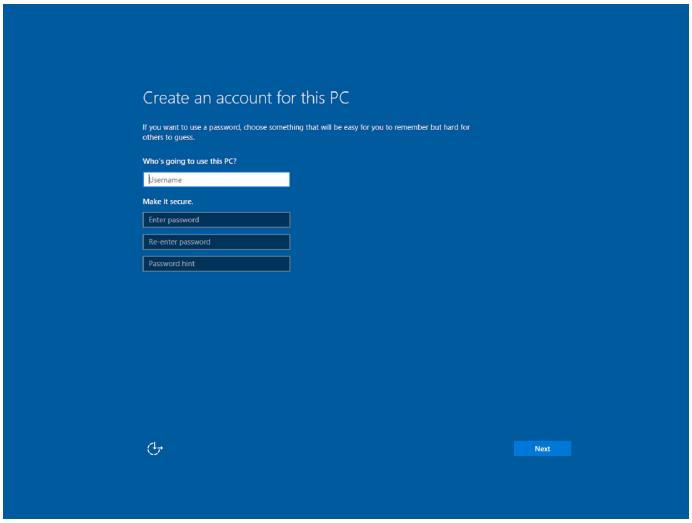


4. Select **Use Express settings**.



5. Enter a username for this computer. Type the password, retype the password. In addition, you may also type a password hint that can be used when you forget your password.

   If you do not want to set the password, leave the field blank and click **Next**.



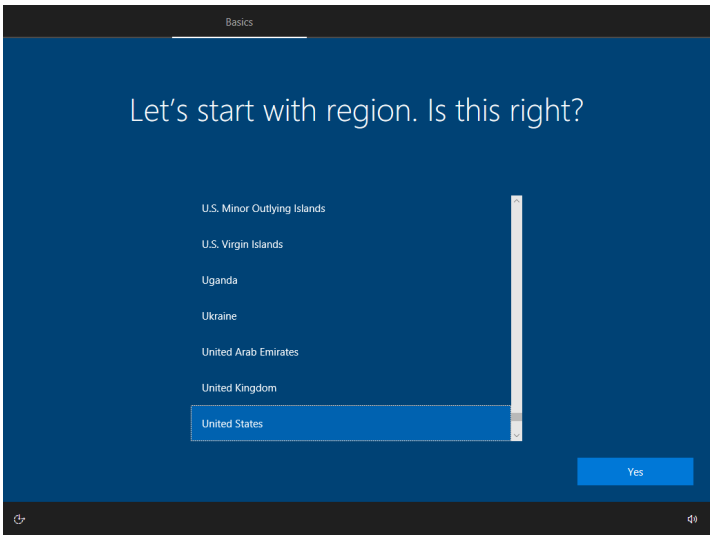
6. Wait for the computer to process the new user account information and then restart the computer.

   Now you can start to use the MPC-2121/2101 computer.

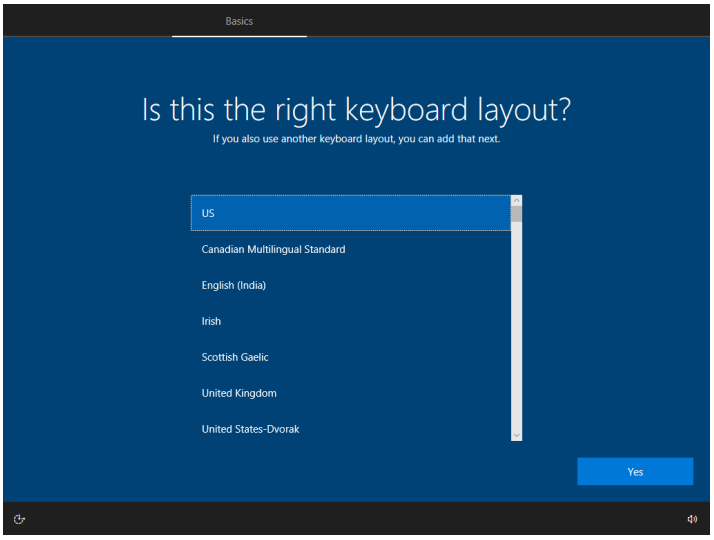
Windows 10 Professional

Follow these instructions to create a new account.

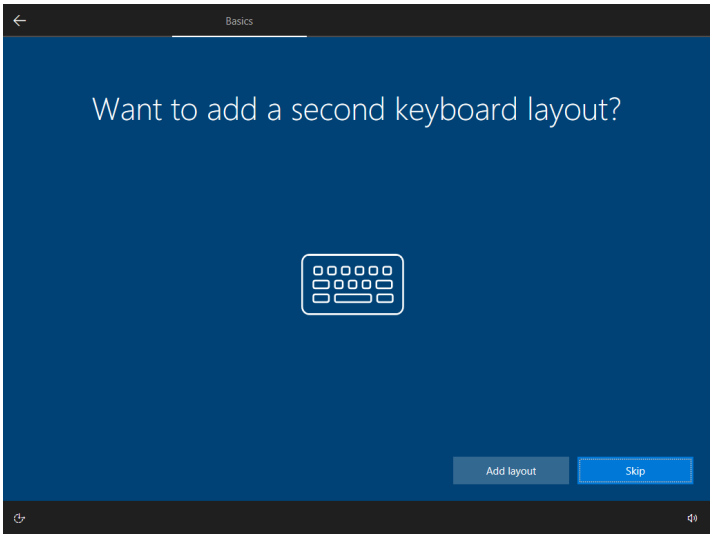
1. When you boot the embedded computer for the first time, select your home region.



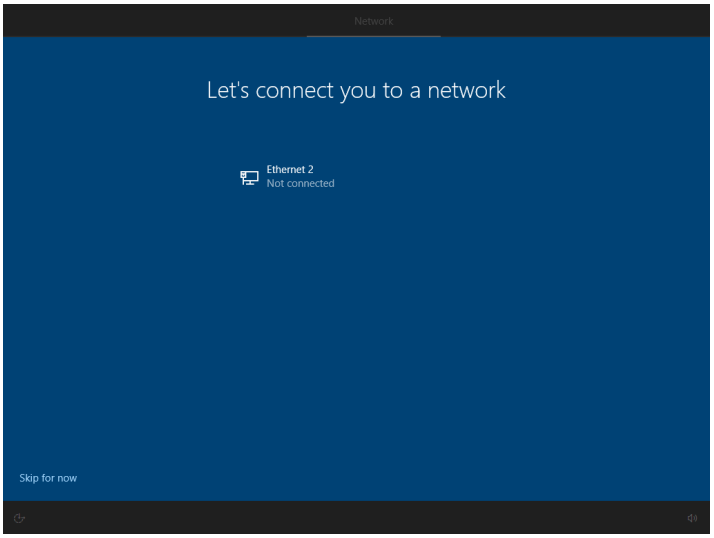
2. Select the keyboard layout.



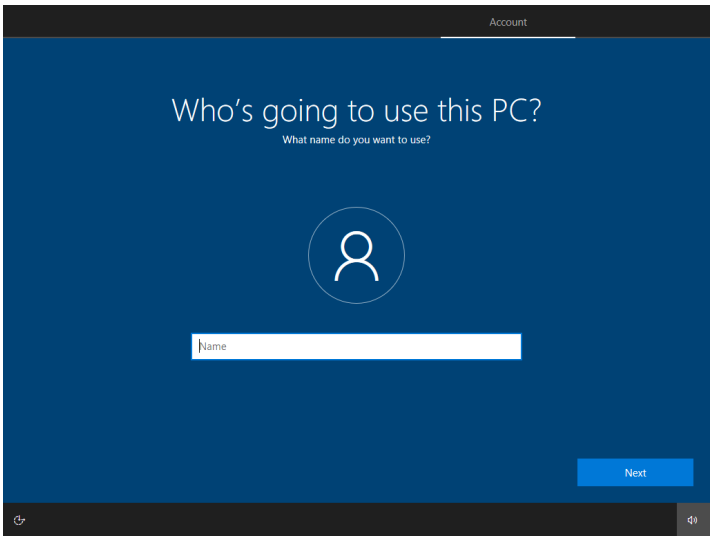
3. If required, select a second keyboard layout or click **Skip.**



4. Click **Skip for now.**

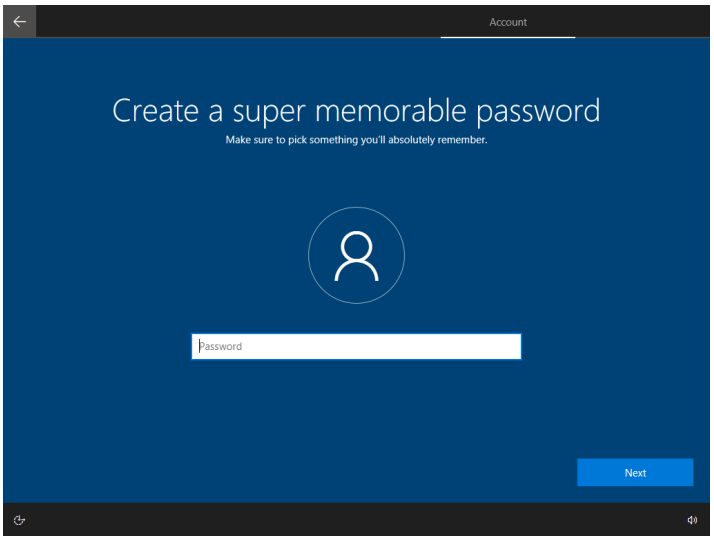


5. Enter a username for this computer and click **Next.**

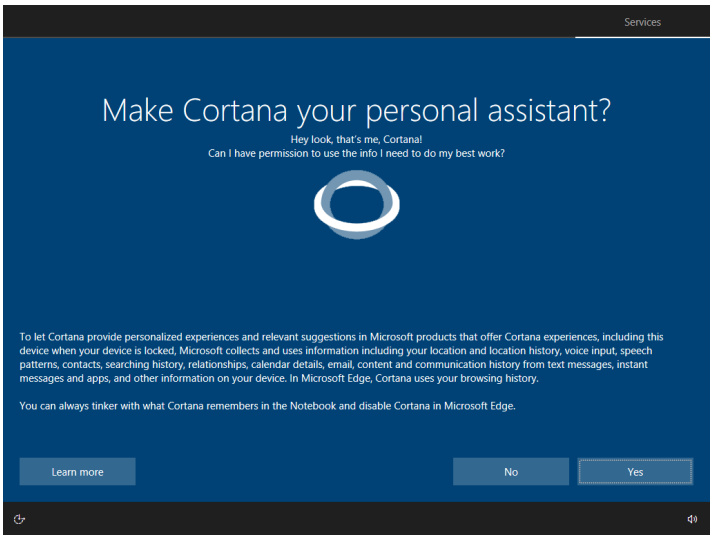


6. Set an account password.

   If you do not want to set a password, leave the field blank and click **Next.**



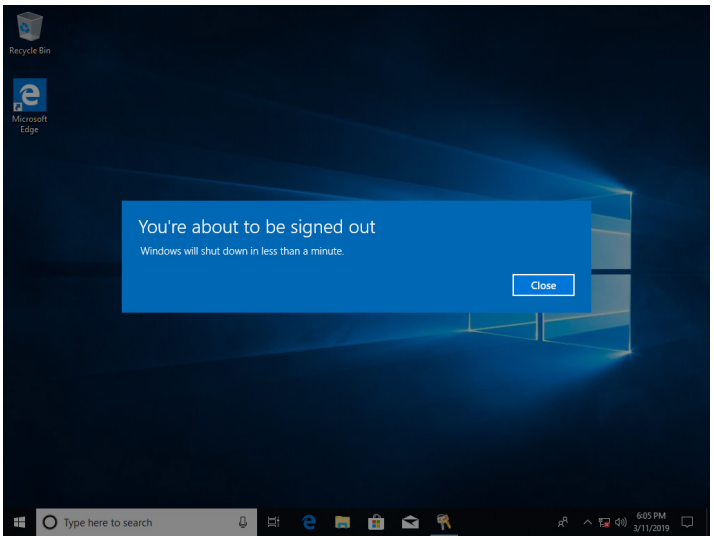
7. Select if you want to make Cortana your personal assistant.



8. Choose privacy settings for your device and click **Accept**.

9. Wait for the computer to process the new user account information. The computer will restart automatically.

   You can now start using the MPC-2121/2101 computer.



3

Utility

This chapter describes the utilities supported on the MPC-2121/2101 computer.

The following topics are covered in this chapter:

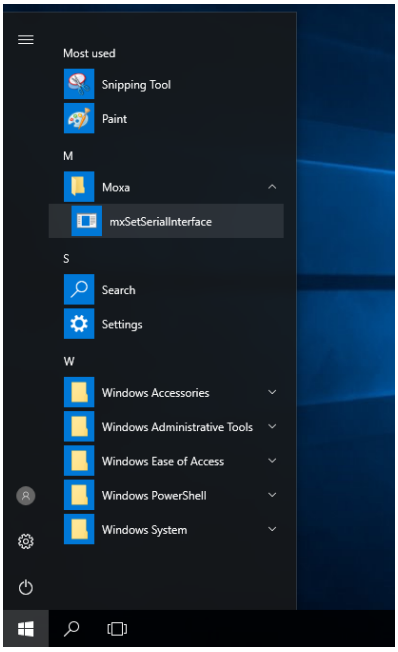
- **Serial Interface Utility**

Serial Interface Utility

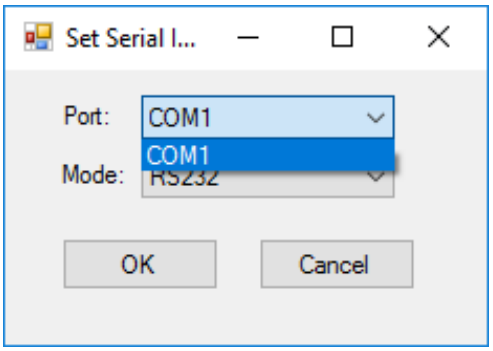
The Serial Interface utility can be used to configure different serial modes on the MPC-2121 computer. The MPC-2121 supports the serial modes **RS232, RS485-2-wire,** and **RS422/RS485-4-wire**.

Follow these steps to change the serial interface mode settings.

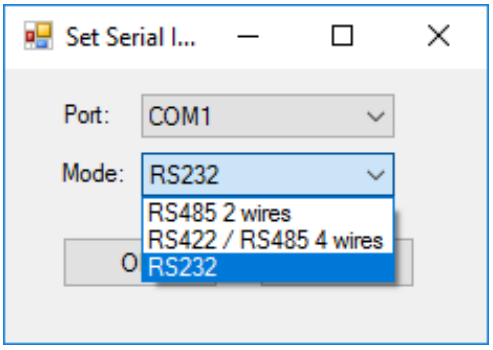
1. From the Start menu, Click **All Programs >Moxa >mxSetSerialInterface**.



2. Select the port, for which you want to set the mode, from the **Port** combo box.



3. Select the mode for the port.



4. Click **OK**.

4

Enabling Embedded Filters

This chapter describes how to operate the embedded enabling features on the MPC-2121/2101 embedded computer.

- **Unified Write Filter**
  - Overview
  - Configuring File-Based Write Filter

Unified Write Filter

Overview

What is Unified Write Filter (UWF)?

The Unified Write Filter (UWF) is a feature to protect physical storage media from data writes. UWF intercepts all write attempts to a protected volume and redirects those write attempts to a virtual overlay. This improves the reliability and stability of your device and reduces the wear on write-sensitive media, such as flash memory media like solid-state drives.

About UWF Overlay

UWF intercepts all modifications to any sector on a protected volume. A sector is the smallest unit that can be changed on a storage volume. Any time the file system attempts to modify a protected sector, UWF instead copies the sector from the protected volume to the overlay, and then modifies the overlay instead. If an application attempts to read from that sector, UWF returns the data from the overlay instead, so that the system maintains the appearance of having written to the volume, while the volume remains unchanged.

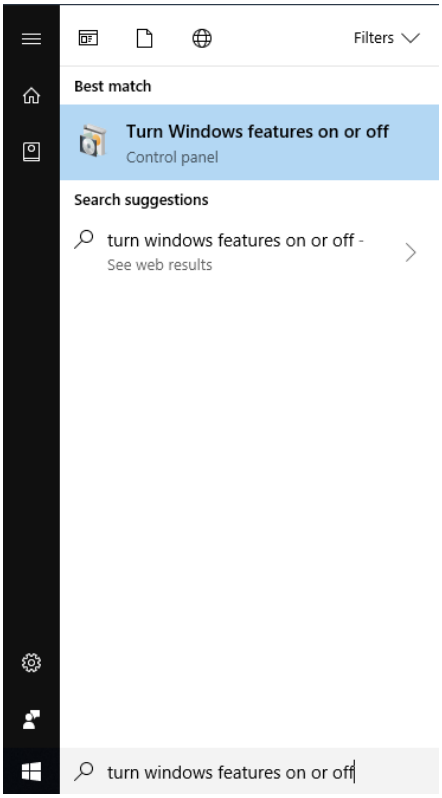
Source: www.microsoft.com

Configuring File-Based Write Filter

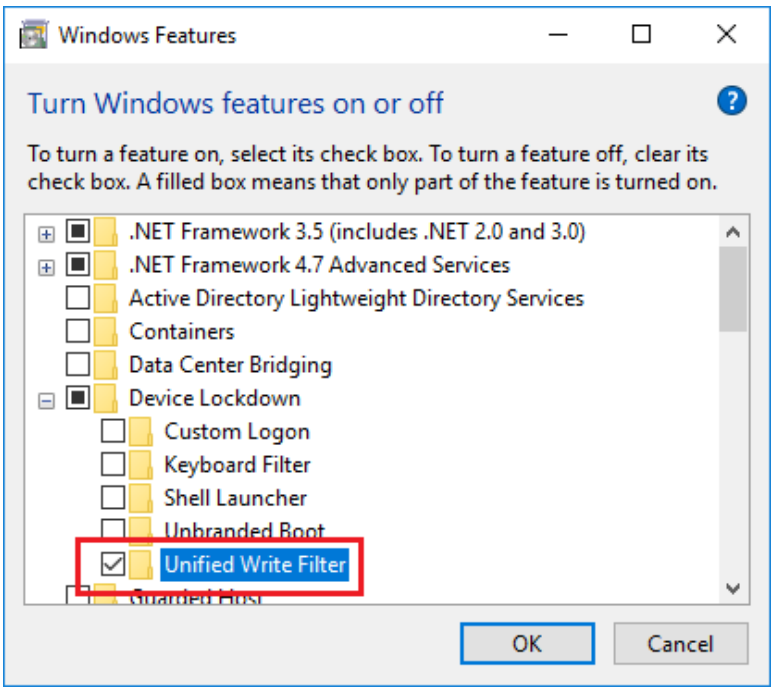
1) Enabling or Disabling the UWF Function

To enable the UWF function, do the following:

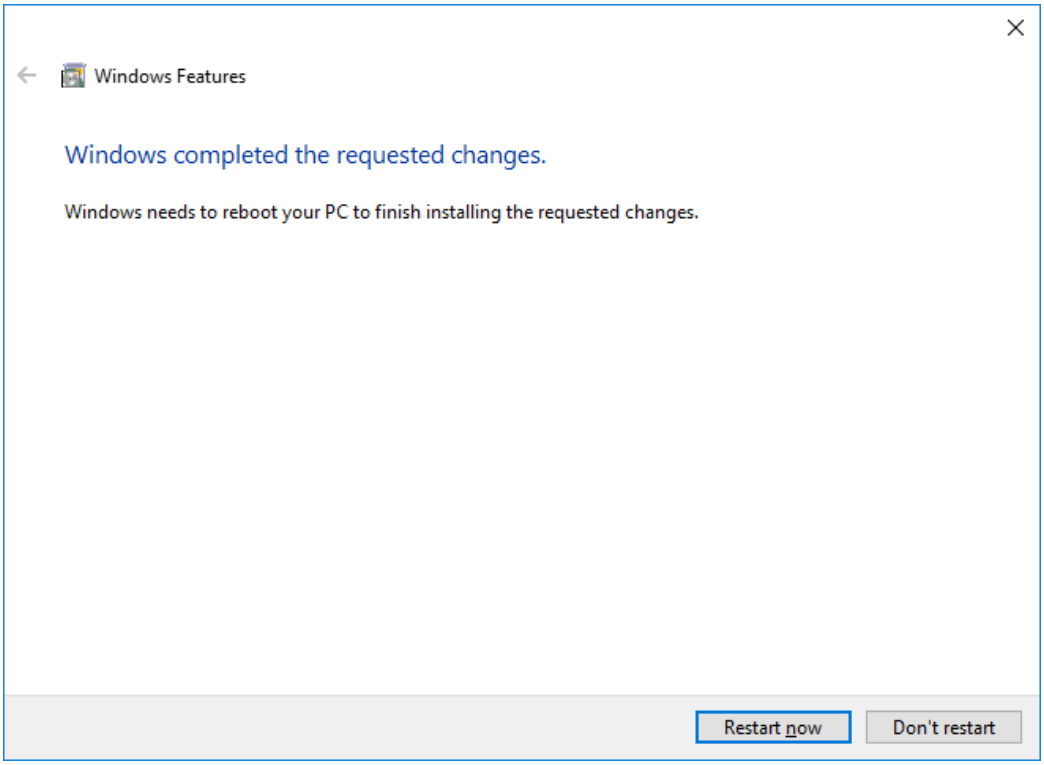
1. Type and start **Turn Windows Features On or Off** in the Windows Start menu.



2. Select **Unified Write Filter** from the list and click **OK.**

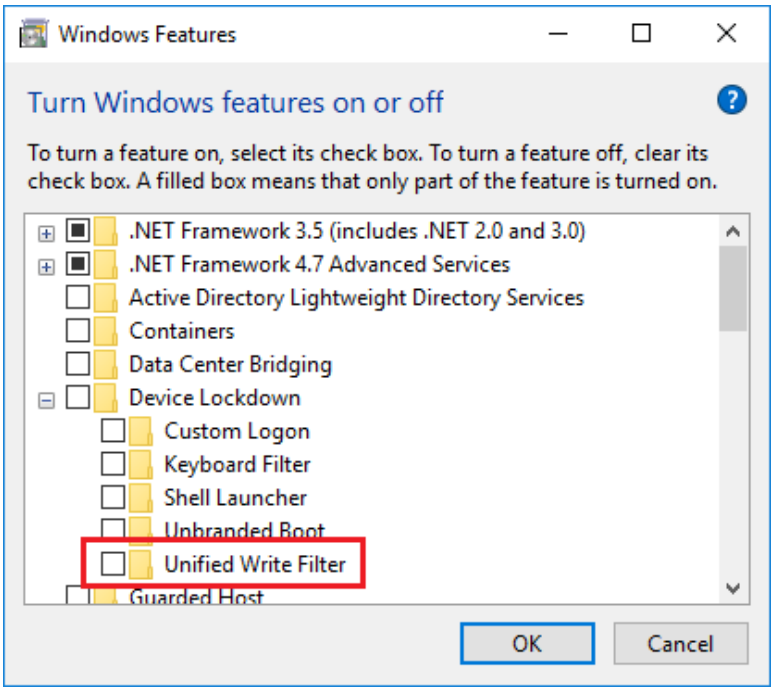


3. Click **Restart now** to apply the changes.

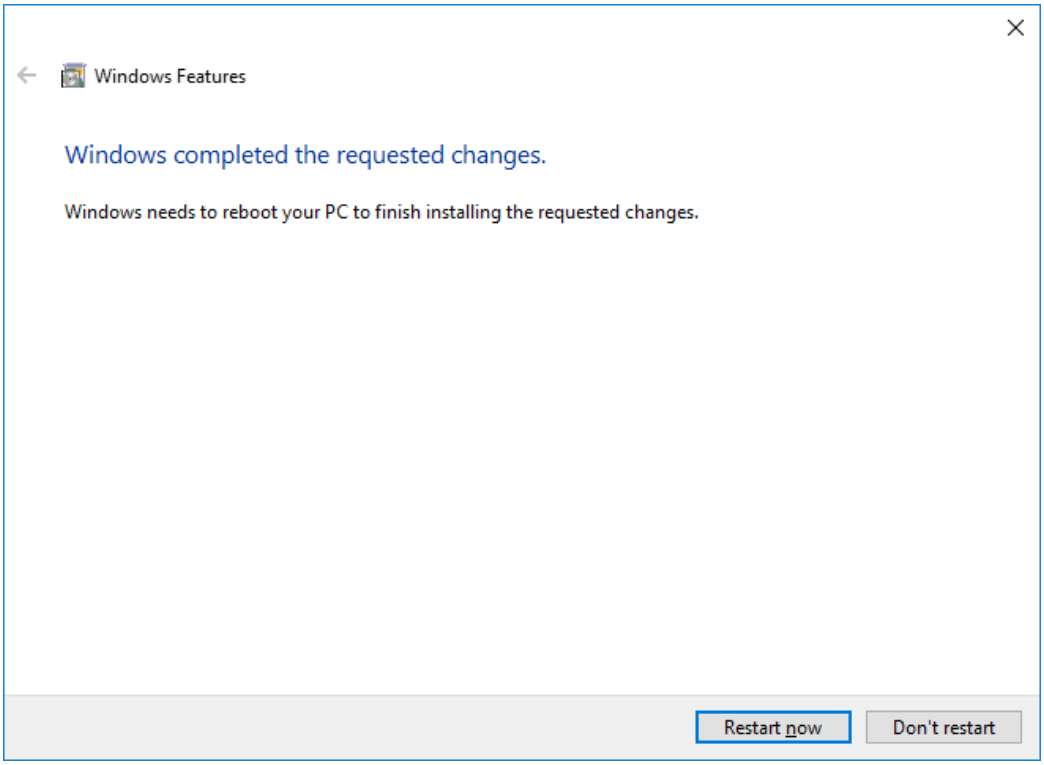


To disable the UWF function, do the following:

1. Start the **Windows Features** function, uncheck the **Unified Write Filter**, and click **OK.**



2. Click **Restart now** to apply the changes.

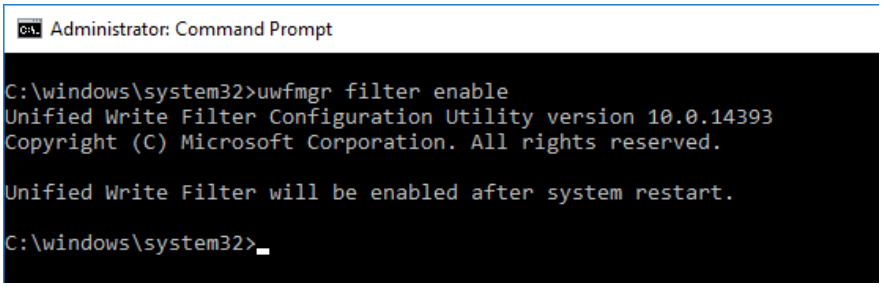


2) Configuring the UWF Overlay Settings

To configure the UWF overlay settings, do the following:

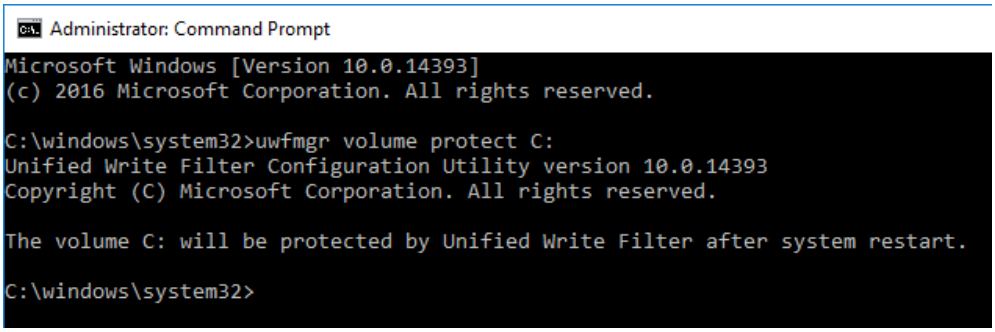
1. Open the Command Prompt as an Administrator and run the following command to enable UWF protection:

   uwfmgr filter enable

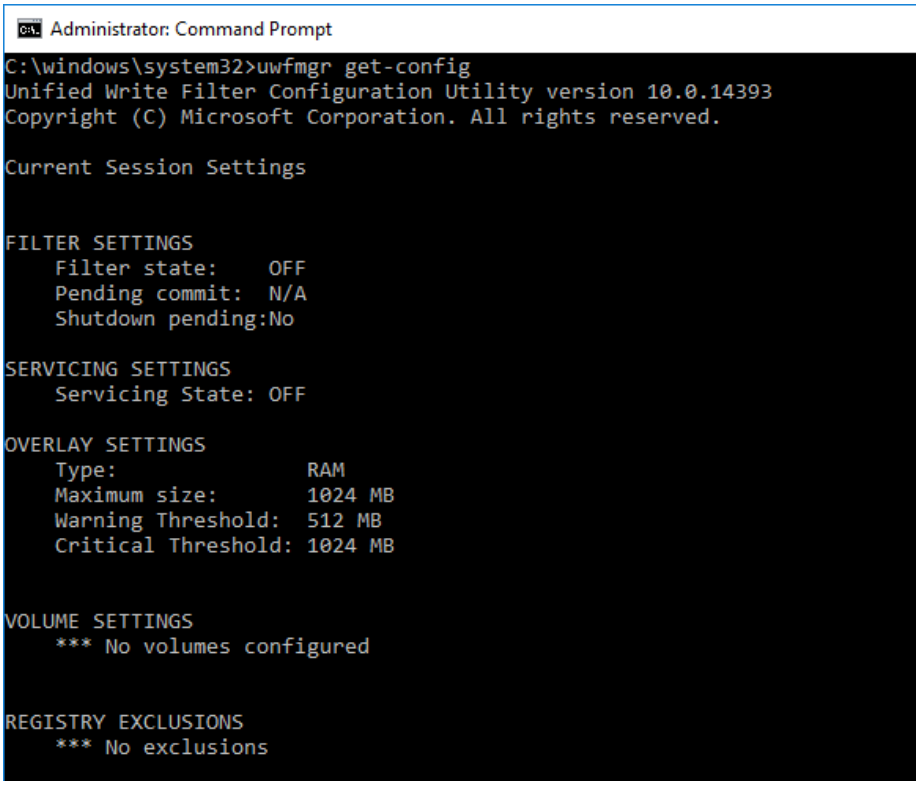


2. Run the following command to protect the computer volume C:

   uwfmgr volume protect C:



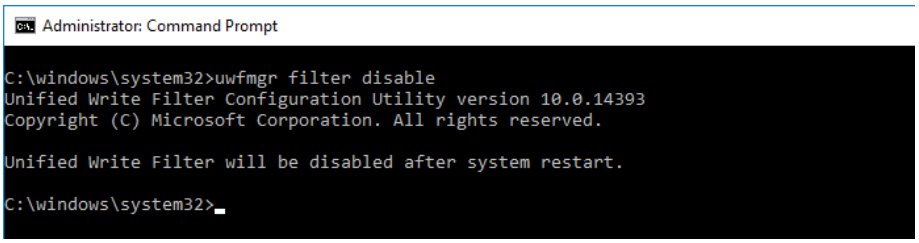
3. Restart the computer for the changes to take effect.
4. After restarting the computer, you can check the UWF status by running the **uwfmgr get-config** command.



To configure the UWF overlay settings, do the following:

1. Open the Command Prompt as an Administrator and run the following command to disable UWF protection:

   uwfmgr filter disable



2. Restart the computer for the changes to take effect.

To test the UWF protection:

1. After enabling the UWF protection, create files in the C:\ folders.
2. Restart the computer. The file that you created in the C:\ folder is erased.

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Utility

The following topics are covered in this chapter:

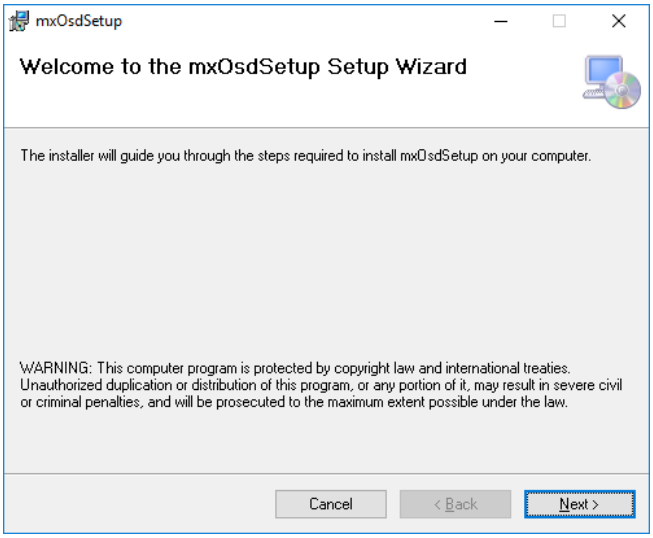
- **OSD**
- **Firmware Upgrade**
- **Light Sensor Control**
- **Set Light Sensor Level (example)**

OSD

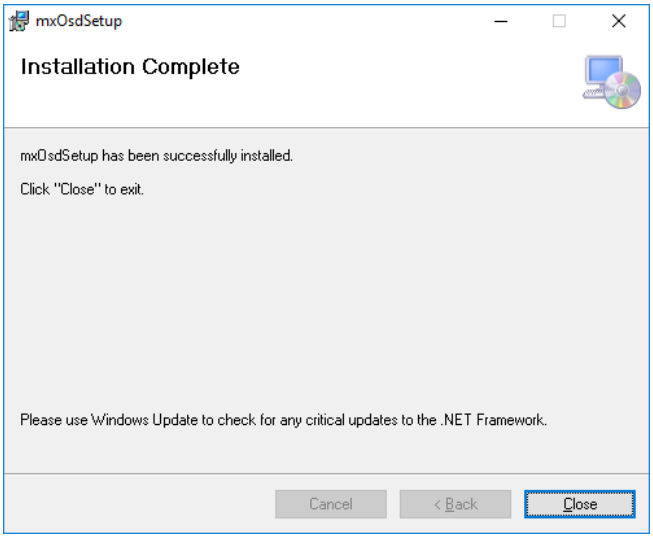
The MPC-2121/2101 computers provide OSD utility when the buttons on the panels are pressed.

To install the utility:

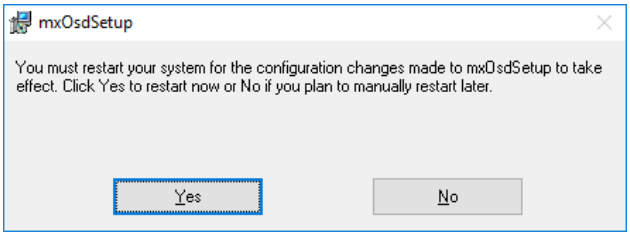
1. Run the <Software DVD>\driver\MPC-2121/2101-W10_V1.0_Driver_Perpheral program.
2. Follow the onscreen instructions to install the OSD utility.



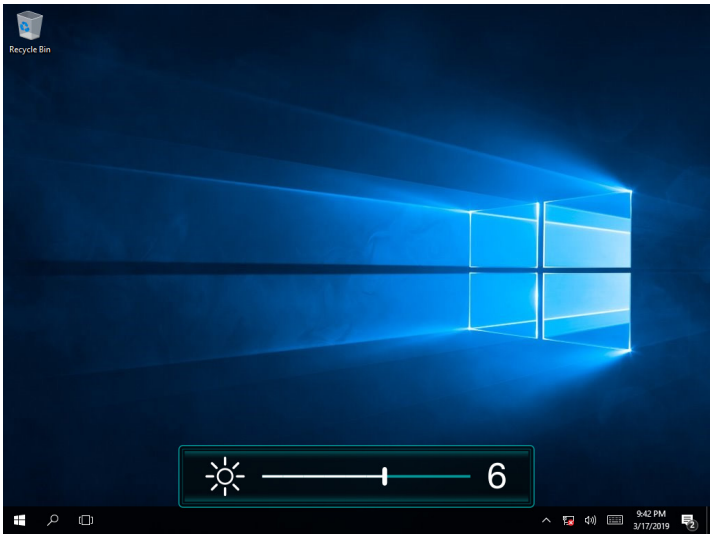
3. Close the setup program.



4. After the utility is installed on the computer, the setup program will ask to reboot the computer. Click **Yes** to reboot.



5. After reboot, press the buttons to change the brightness of the panel; a brightness bar will show the brightness level on the screen.

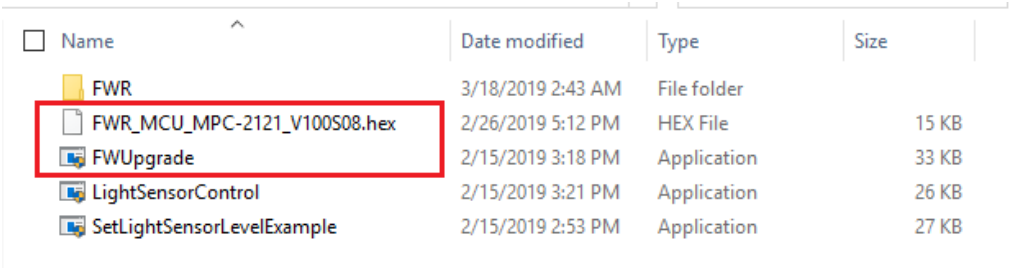


Firmware Upgrade

The FWUpgrade utility helps you upgrade the firmware on your computer with ease. The new firmware file (*.hex file) should be located in the same folder as the utility file.

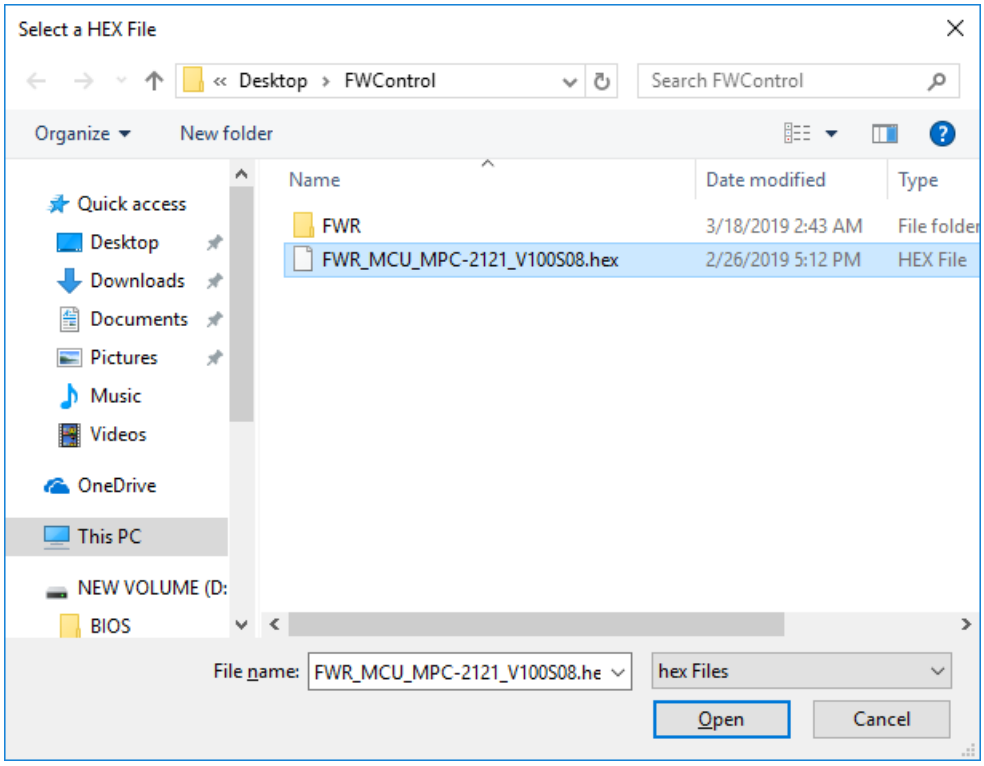
To upgrade the firmware on your computer, do the following:

1. Run the <Software DVD>**\Utility\FWControl\FWUpgrade.exe** program.

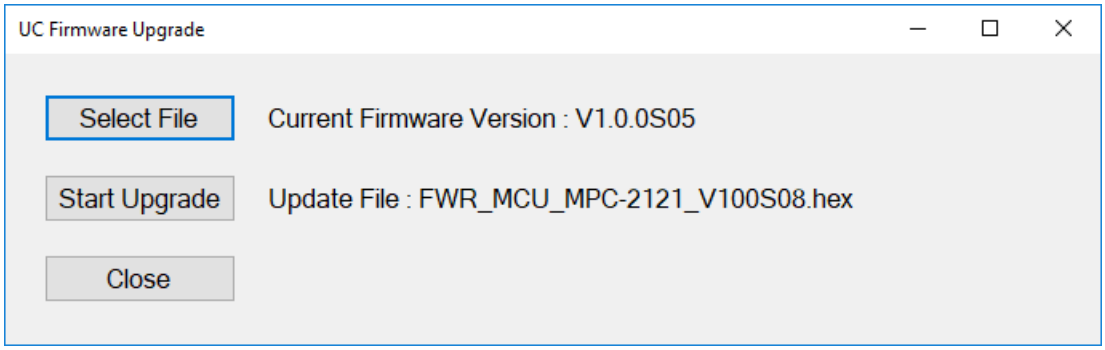


2. Click **Select File.**

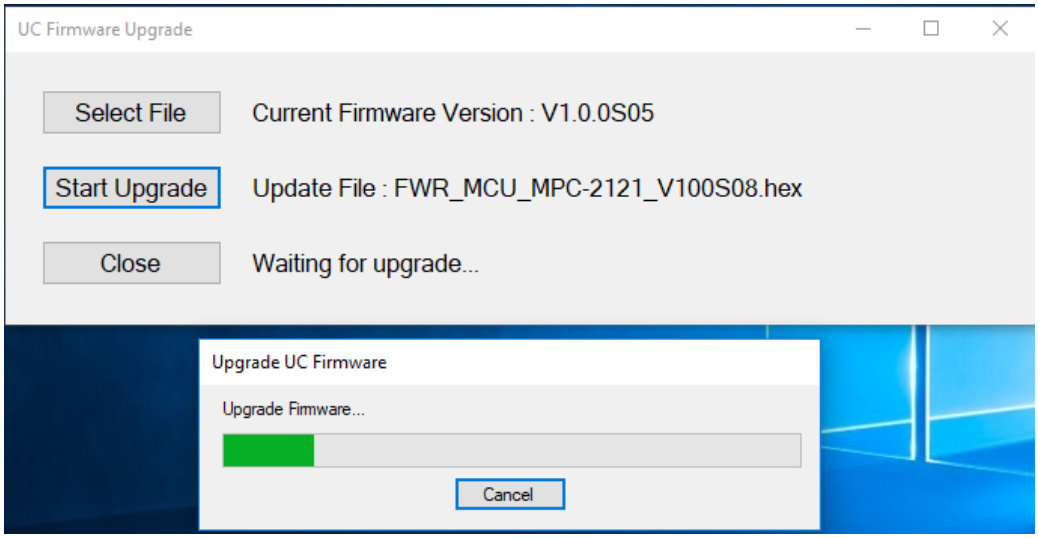
3. Select new firmware file and click **Open**.



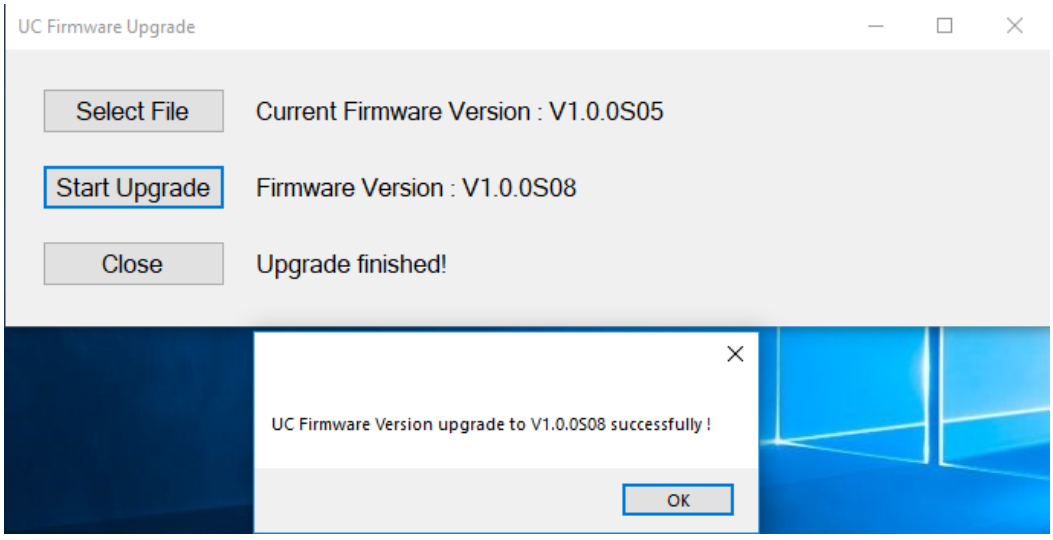
4. Check the update file name and click **Start Upgrade**.



5. Wait for the upgrade finish.



6. Click **OK** and the program will close automatically.

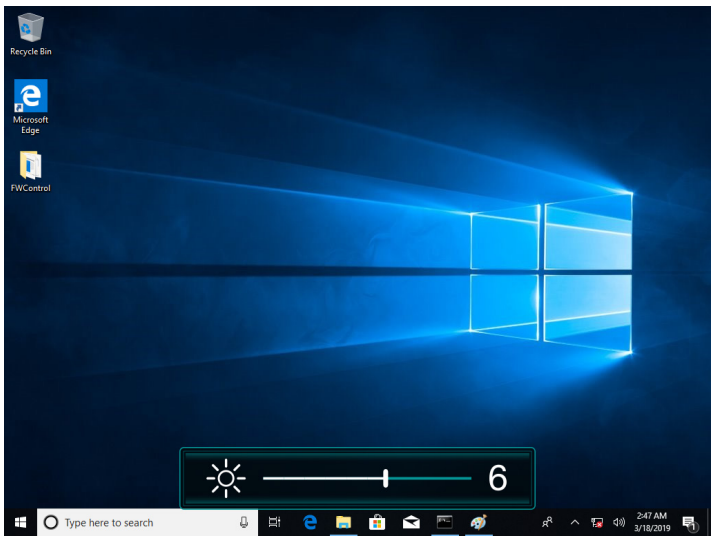


Light Sensor Control

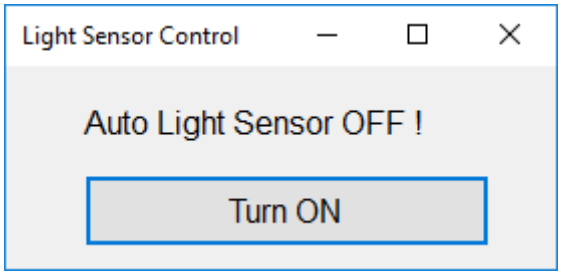
The UC Light Sensor Control utility is used to turn the Ambient Light Sensor function ON/OFF. Run the program from <Software DVD>**\Utility\FWControl** folder and follow the instructions given below to control the light sensor.

Turning the Auto Brightness Function ON

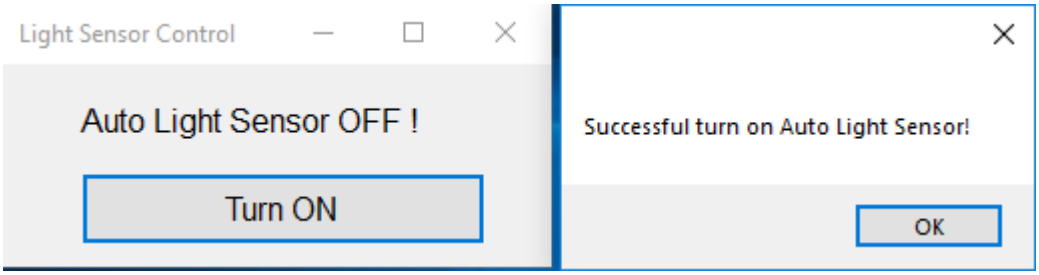
1. If the Light Sensor function is off, press the brightness button to show the brightness bar on the screen.



2. Run the <Software DVD>**\Utility\FWControl\LightSensorControl.exe** program.



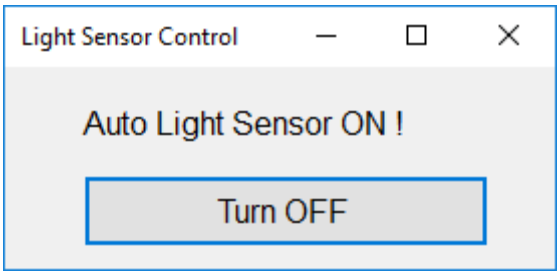
3. Click **Turn ON**.
4. Wait for a message, which confirms that the function has been successfully turned ON.



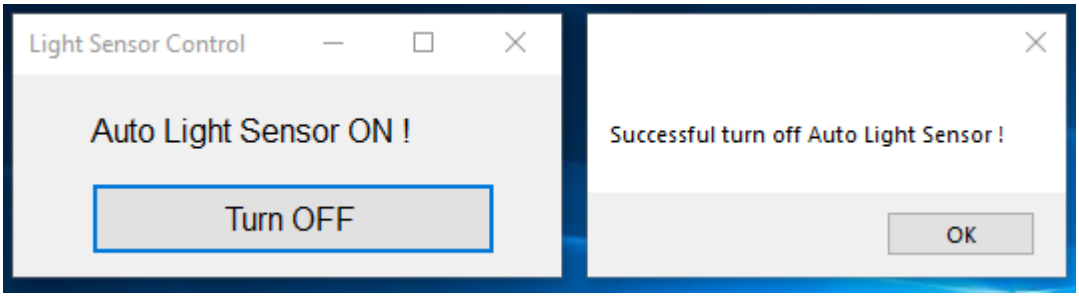
5. Click on the **OK** button in the message box to close the program.

Turning the Auto Brightness Function OFF

1. Run the **LightSensorControl.exe** program.



2. Click **Turn OFF.**
3. Wait for a message, which confirms that the function has been successfully turned OFF.



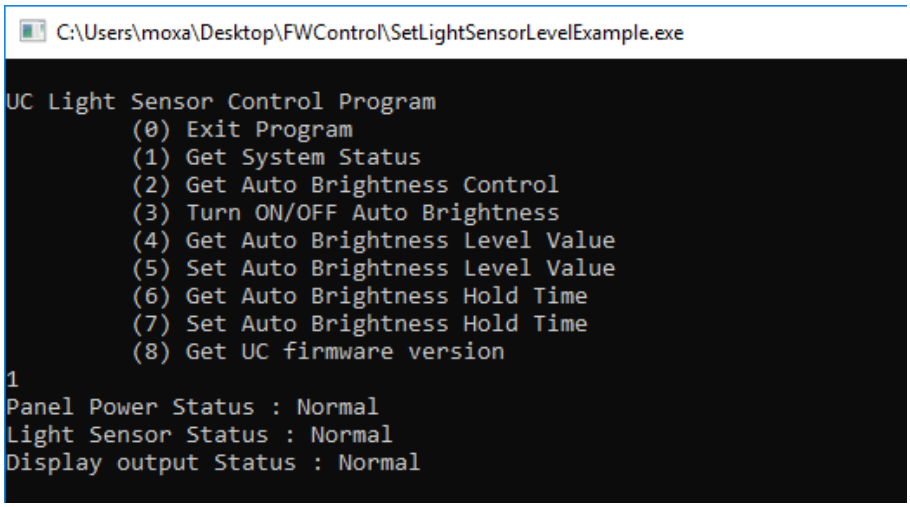
4. Click on the **OK** button in the message box to close the program.

Set Light Sensor Level (example)

Use the **SetLightSensorLevelExample.exe** program to check the system status, turn ON/OFF Auto Brightness function, get/set Auto Brightness Level Value, get/set Auto Brightness Hold Time, and get UC firmware version. Run the program from the <Software DVD>**\Utility\FWControl** directory and follow the instructions given below.

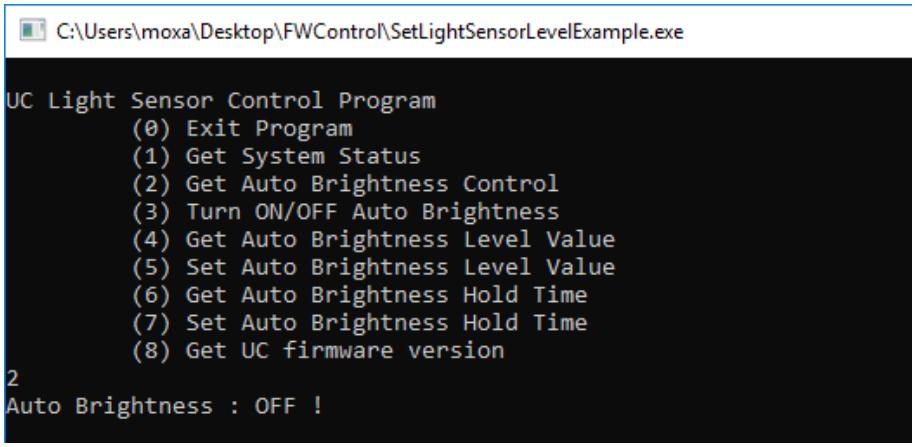
Check System Status

Type **1** to get the system status; panel power status, light sensor status, and display output status.



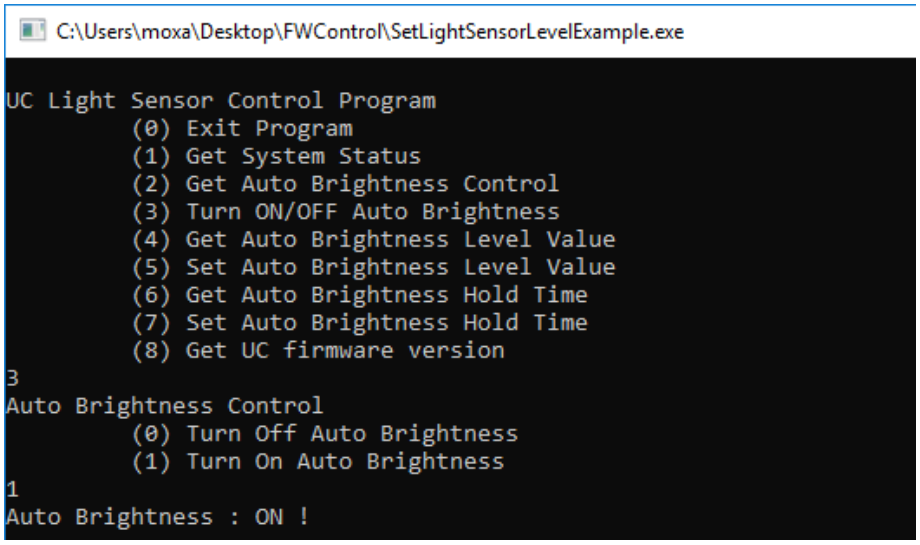
Auto Brightness Control

Type **2** to get Auto Brightness status.



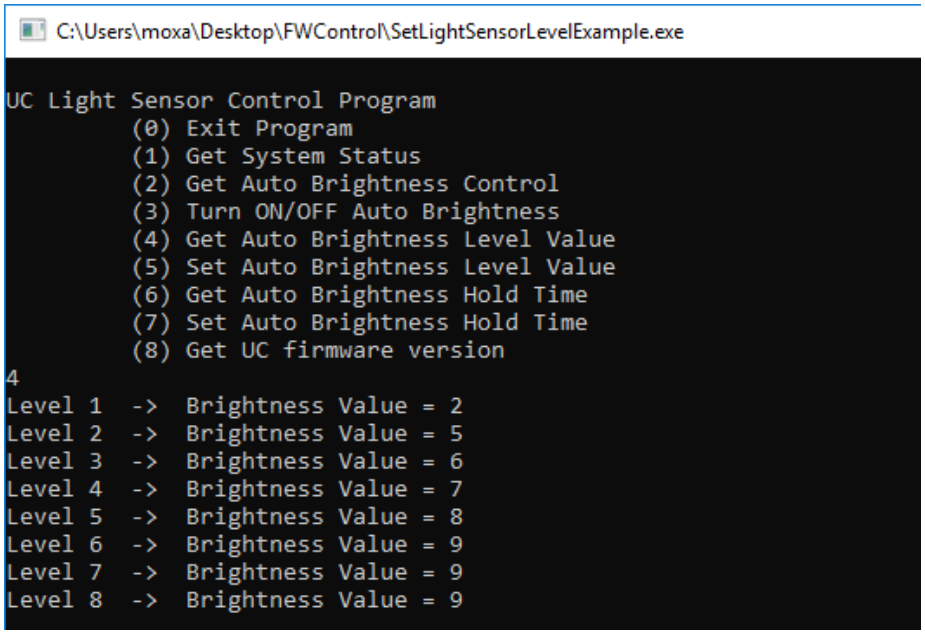
Auto Brightness ON/OFF

Type **3** and follow the on-screen instruction to turn the Auto Brightness function ON/OFF.



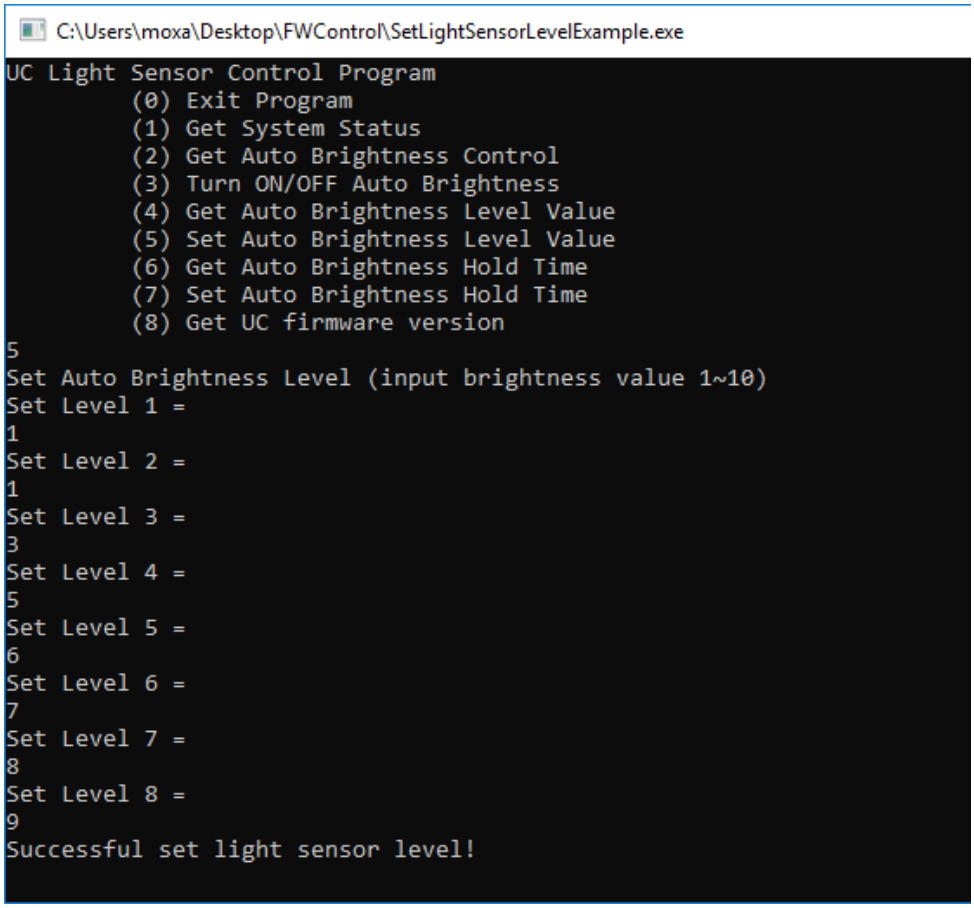
Auto Brightness Level Value

Type **4** to get the current Auto Brightness value for each level.



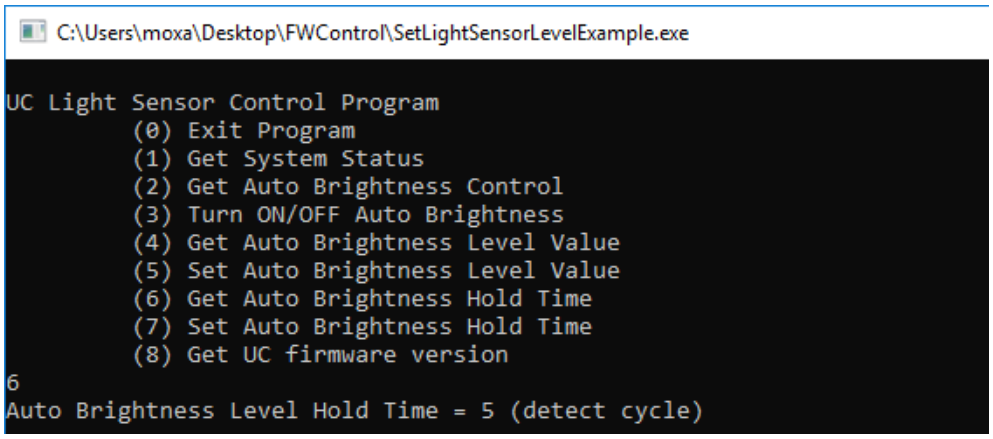
Auto Brightness Level Value Setting

Type **5** and follow the onscreen instruction to set a value for each level.



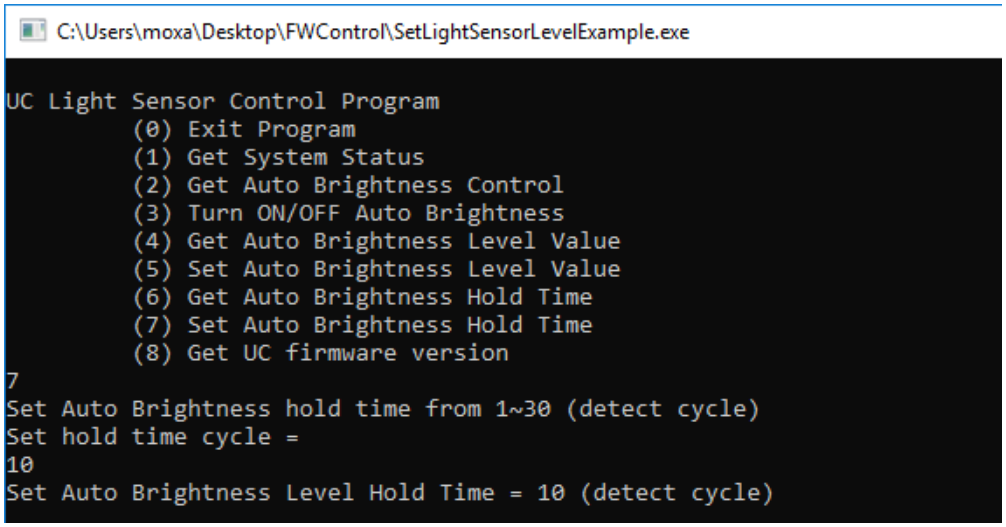
Auto Brightness Hold Time

Type **6** to get Auto Brightness Hold Time (by detect cycle, 1 detect cycle will cost 0.8 sec).



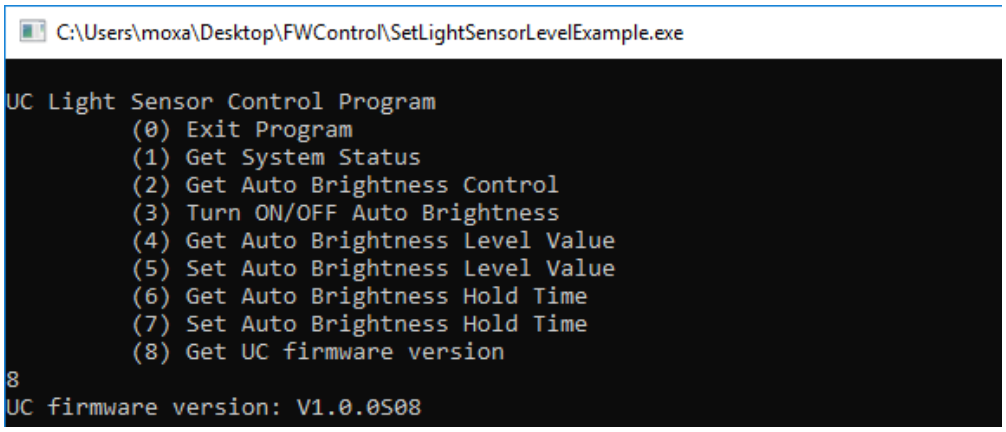
Auto Brightness Hold Time Setting

Type **7** and follow the onscreen instructions to set the hold Time. (by detect cycle, 1 detect cycle = 0.8 sec).



UC Firmware Version

Type **8** to get the firmware version.



6

Examples

The following topics are covered in this chapter:

- **Watchdog Function**
  - Enabling Watchdog Function
- **Serial Interface**
- **DIO**

Watchdog Function

You can use the watchdog program included in the MPC-2121/2101 software DVD to implement the watchdog function.

Enabling Watchdog Function

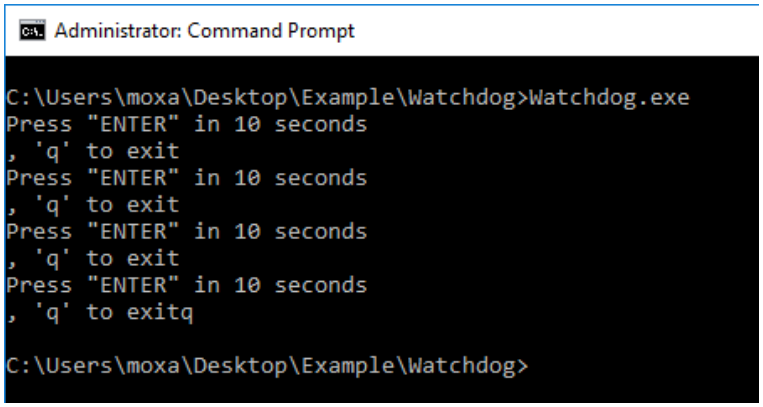
To enable the watchdog function on your MPC-2121/2101, do the following:

1. Create an **example\Watchdog** folder on your system and copy the following files from the product software DVD:

   mxdwg.dll: <Software DVD>\Example\[Library]\Release\x64\mxdwg\

   Watchdog.exe: <Software DVD>\Example\Release\x64\Watchdog\

2. Run the **Watchdog.exe** program**.**
3. You need to press **Enter** every 10 seconds to prevent the system from rebooting.
4. To stop the watchdog function and exit the program, press **q**.



You can use the watchdog program included in the MPC-2121/2101 software DVD to implement the watchdog function.

Serial Interface

The **UartMode.exe** script reports on and controls the serial interface mode.

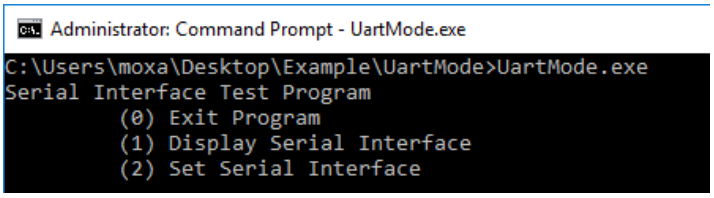
To enable the serial interface mode on your MPC-2121/2101, do the following:

1. Create an **example\UartMode** folder on the desktop and copy the following files from the product software DVD:

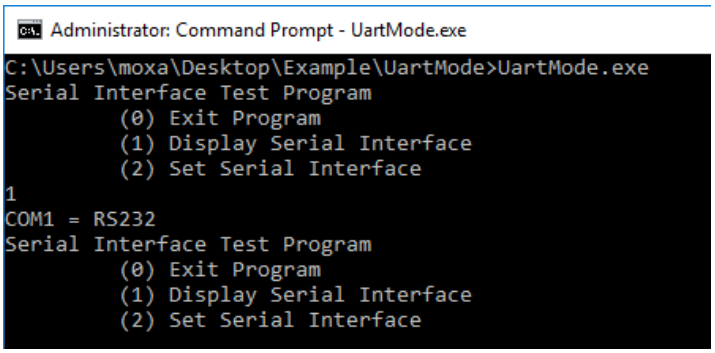
   mxsp.dll: <Software DVD>\Example\[Library]\Release\x64\mxsp\

   UartMode.exe: <Software DVD>\Example\Release\x64\UartMode\

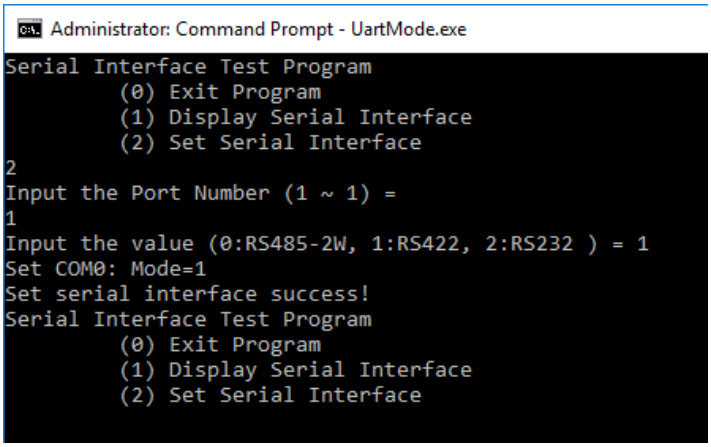
2. Run the UartMode.exe program.



3. Type **1** to display the current serial interface settings.



4. Type **2** to set the serial interface. Follow the on-screen instructions.



DIO

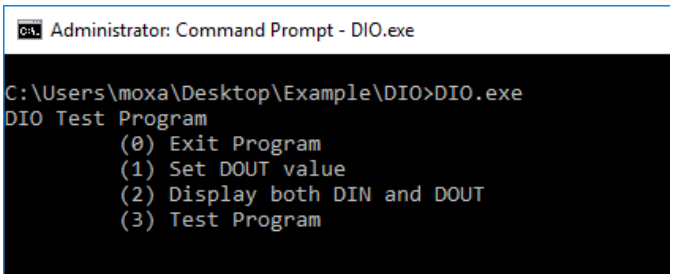
This script reports on and controls the state of the DIs and DOs, switching them between high and low.

To enable the DIO script, do the following:

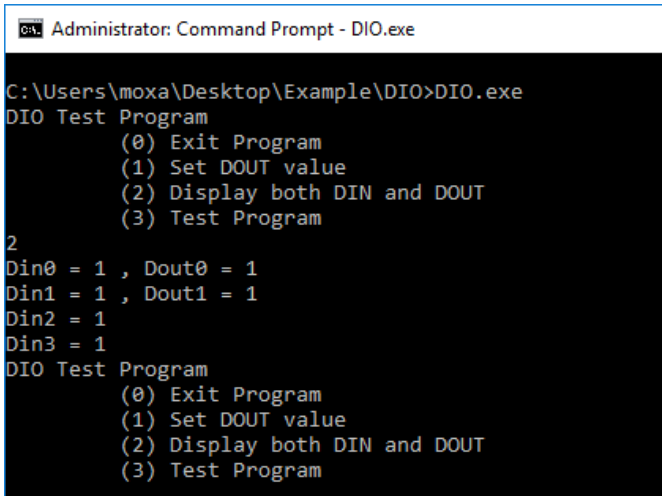
1. Make sure the DI/DO connect correctly before running the test program. (Please connect DOUT 1 to DIN 0 and DIN 1, connect DOUT 0 to DIN 2 and DIN 3.)
2. Create an **example\DIO** folder on the desktop and copy the following files from the product software DVD.

   mxdgio.dll: <Software DVD>\Example\[Library]\Release\x64\mxdgio

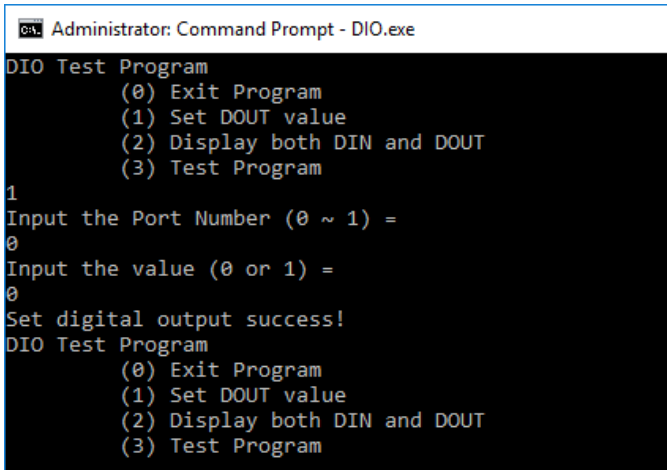
   DIO.exe: <Software DVD>\Example\Release\x64\DIO
3. Run the **DIO.exe** program



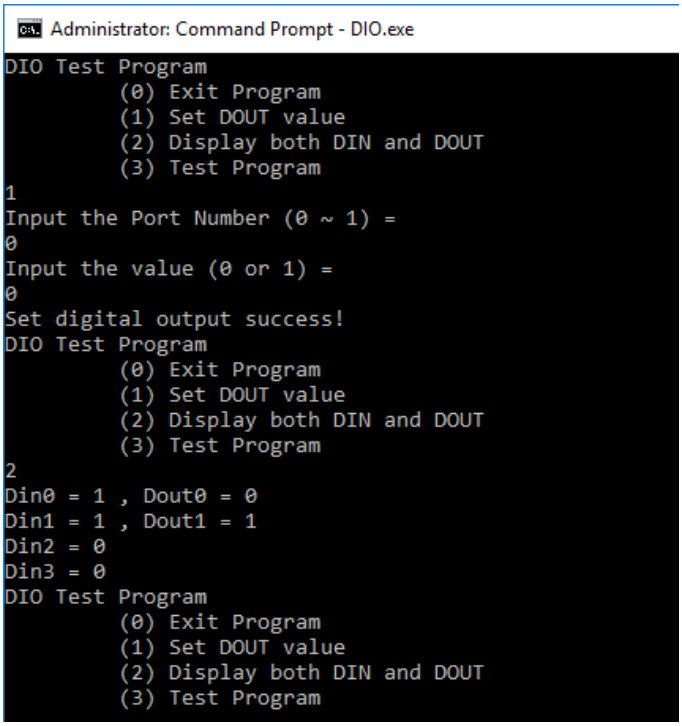
4. Type **2** to display the current DIO status. Follow the on-screen instructions.



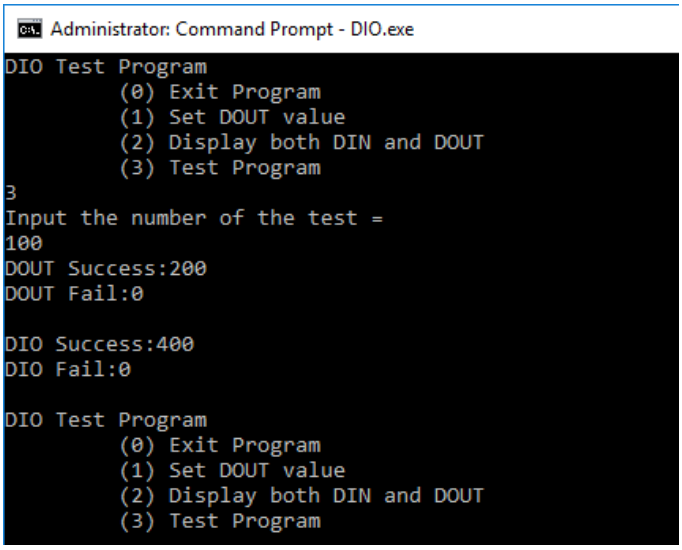
5. Type **1** to set DOUT value. Follow the on-screen instructions. Enter the target port and value.



6. Type **2** to check the DIO status.



7. Type **3** to execute the test program. Enter the number of test. After the test program finished, the test report will be shown on the screen. (100 times * 2 DOUT ports, 100 times * 4 DIN ports)



7

System Recovery

This chapter describes the recovery process in the event of system instability.

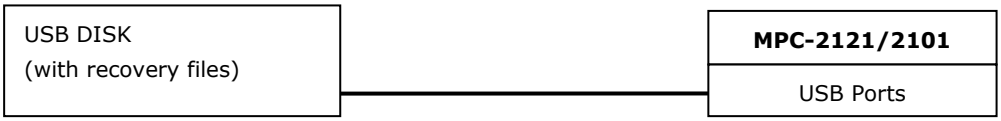
The following topics are covered in this chapter:

- **Recovery Environment**
- **Recovery Procedure**
- **Saving the System to the USB Drive**

Recovery Environment

The recovery environment includes a PC, a MPC-2121/2101 computer, and a bootable USB disk with the recovery programs and system image file.

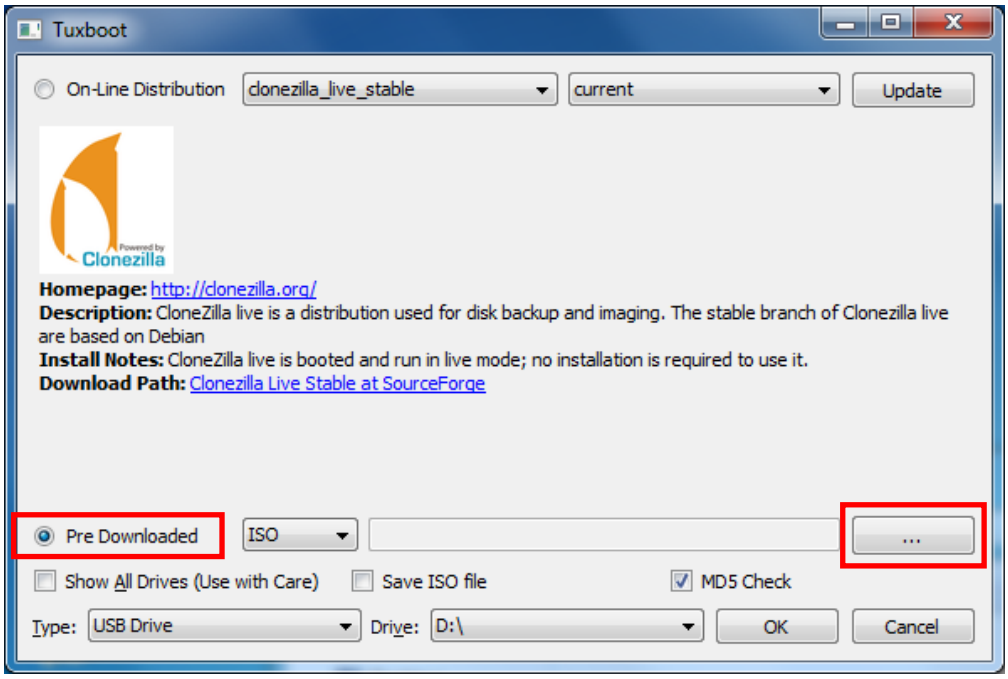
(Note: The USB disk should be at least 8GB.).



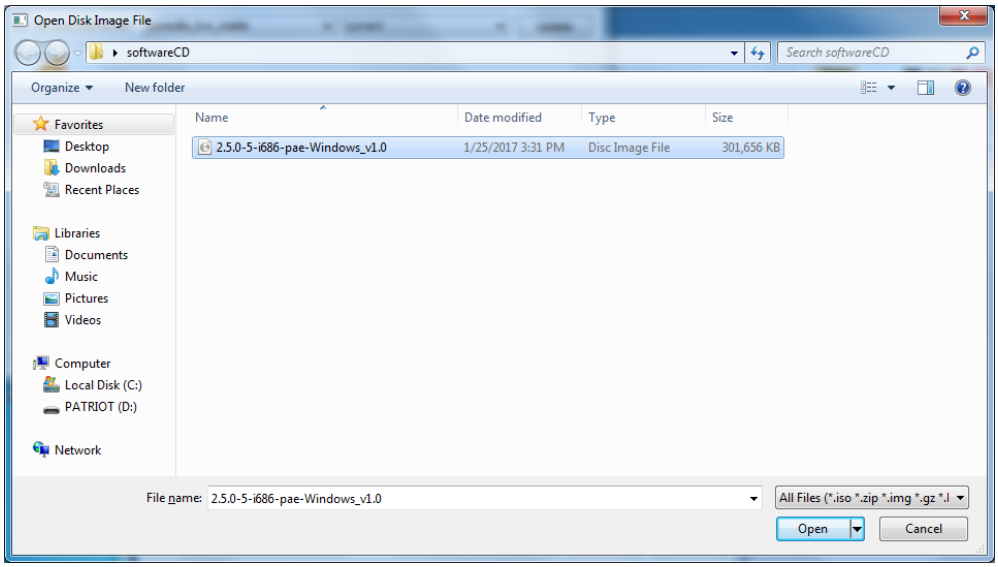
Recovery Procedure

Step 1: Prepare your USB drive

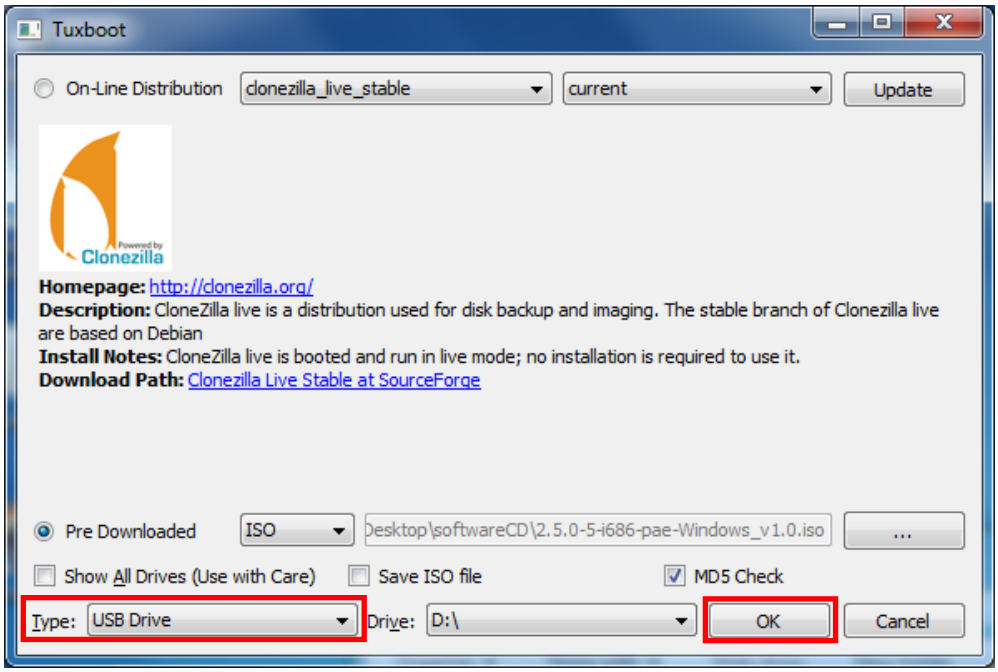
1. Format the USB disk to the **FAT32** file system
2. Run the **tuxboot-windows-23.exe** program from the <Software DVD>**\recovery** folder, then select **Pre Download**, and then click "**...**".



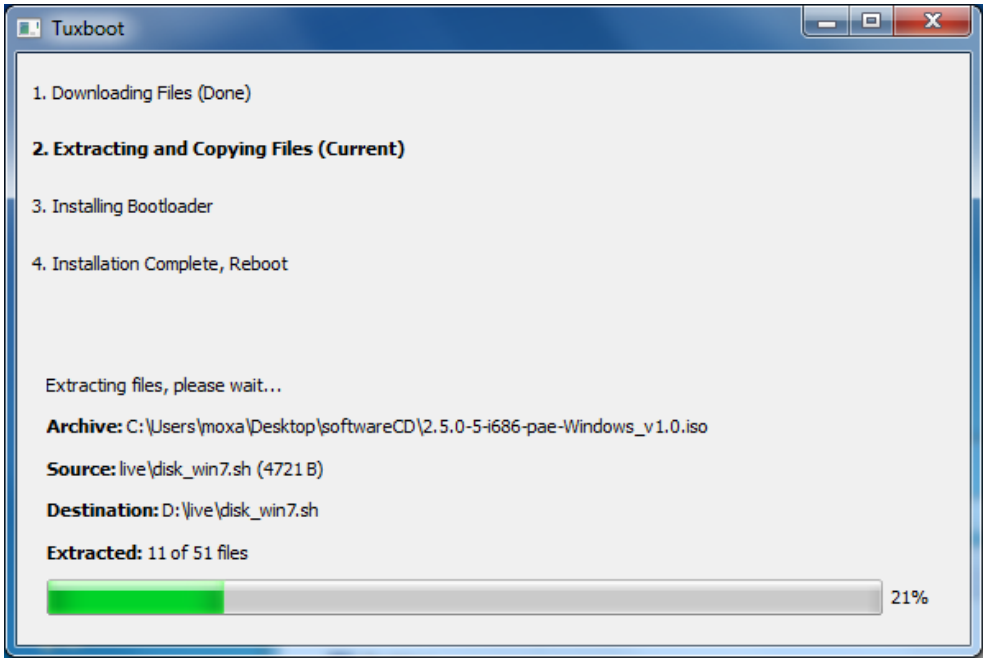
3. Select the ISO file from <Software DVD>**\recovery**



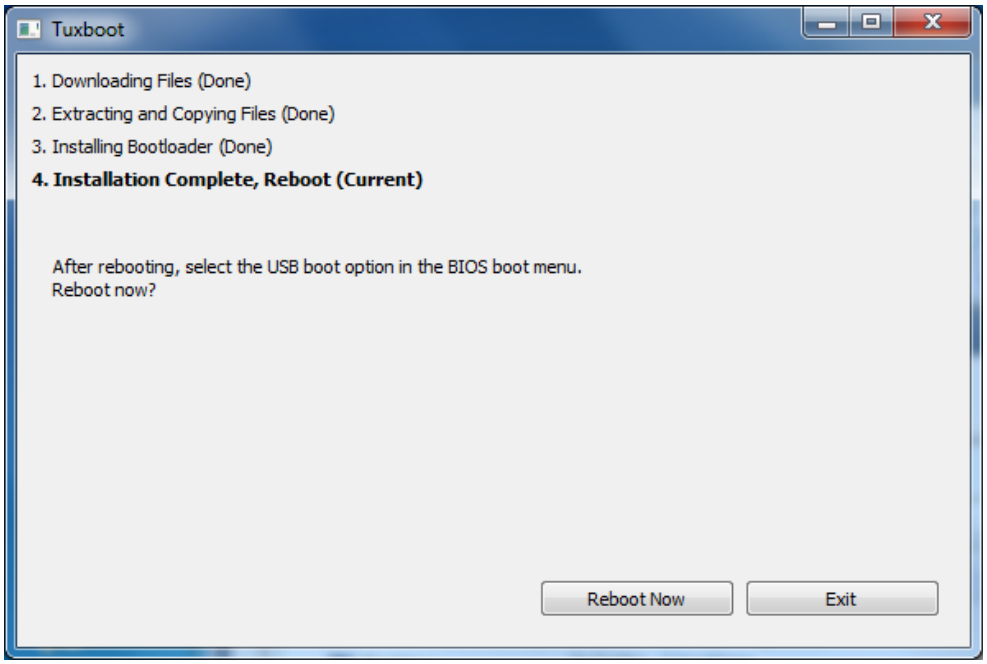
4. Select **USB Drive** type, select a **Drive**, and then click **OK** to continue.



5. The boot files will be copied to your USB drive.



6. When finished, click **Exit** to stop the program.

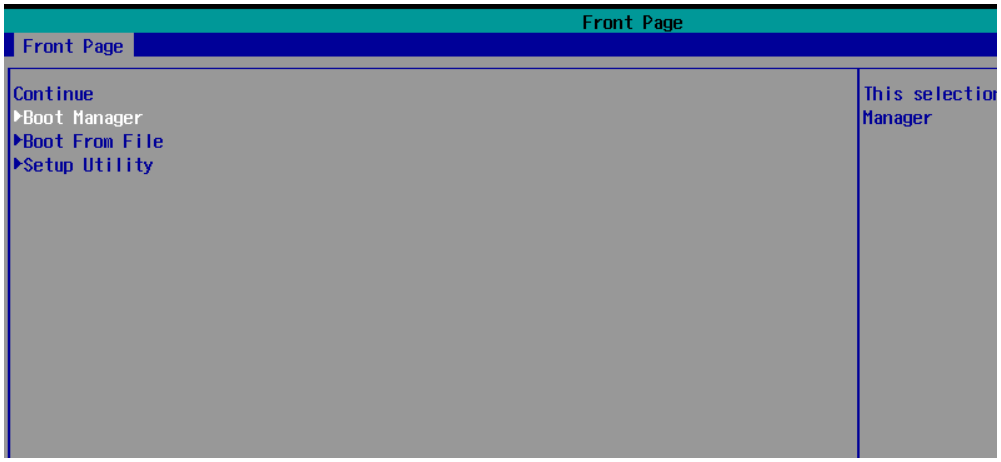


7. Copy the **os_image** directory from the <Software DVD>**\recovery** folder to the **\home\partimag** folder on the USB drive.
   The USB disk is now ready for use in the recover process.

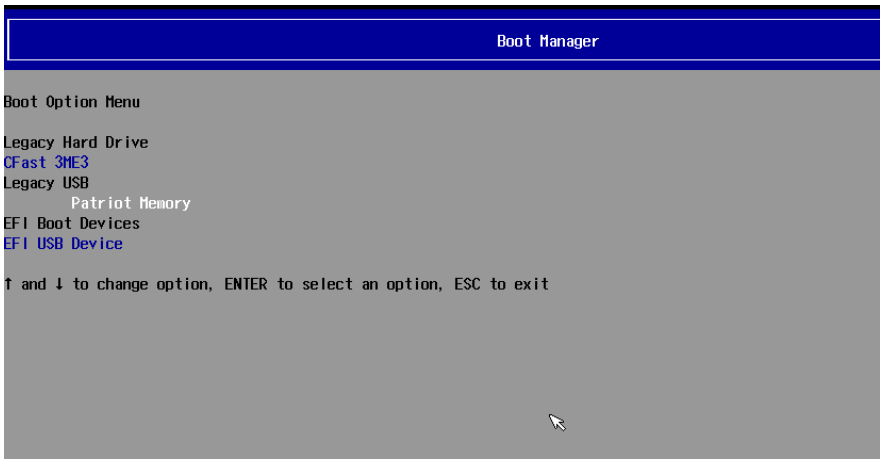
Step 2: Boot from USB disk

You will need to change the BIOS settings to boot from the USB disk.

1. Turn on the computer and press **F2** when you hear the beep sound to enter the BIOS setup menu.
2. Select **Boot** and then select **Legacy**. Press **Enter** to continue.



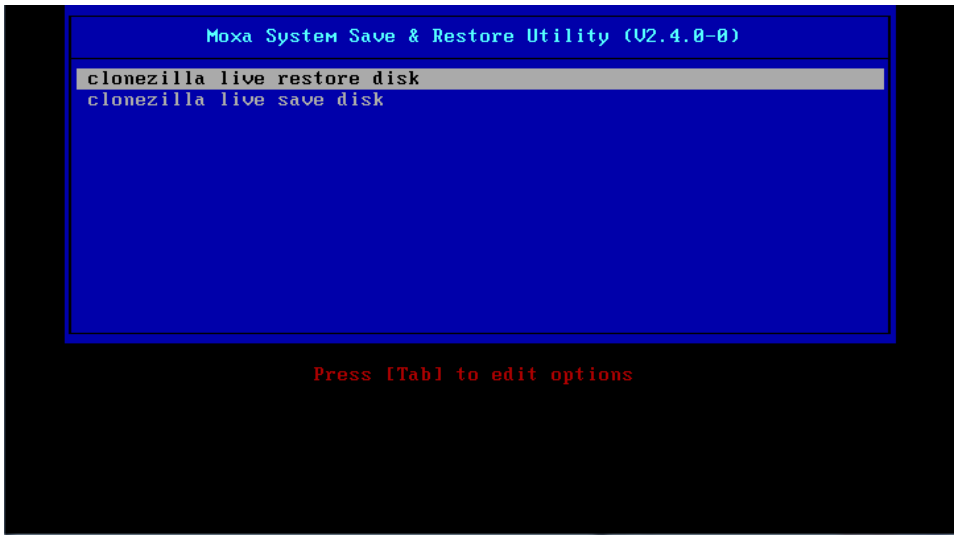
3. Select the **USB device** on the computer and press **Enter** to continue to boot from USD device.



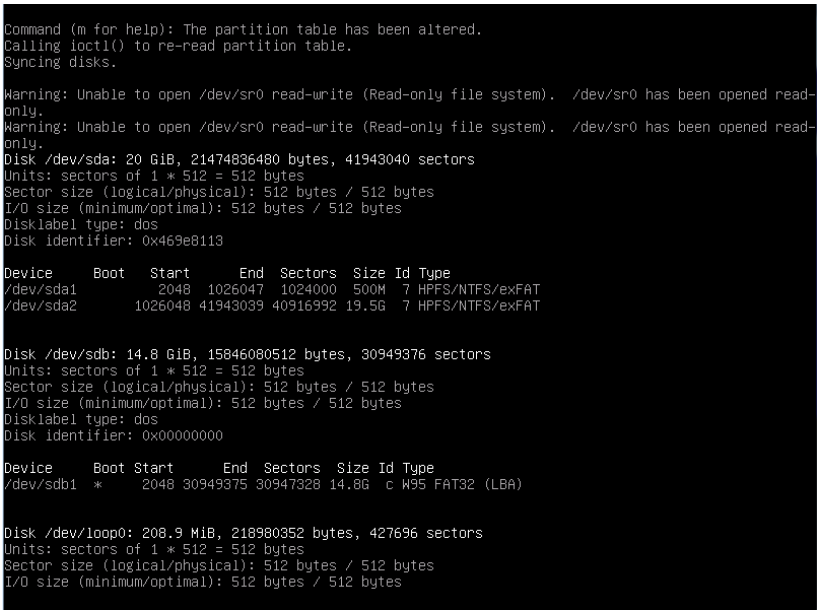
Step 3: Restore the system from USB drive

After select the USB device, the system will boot from the USB disk. The Pre-installation Environment and the recovery utility will displayed.

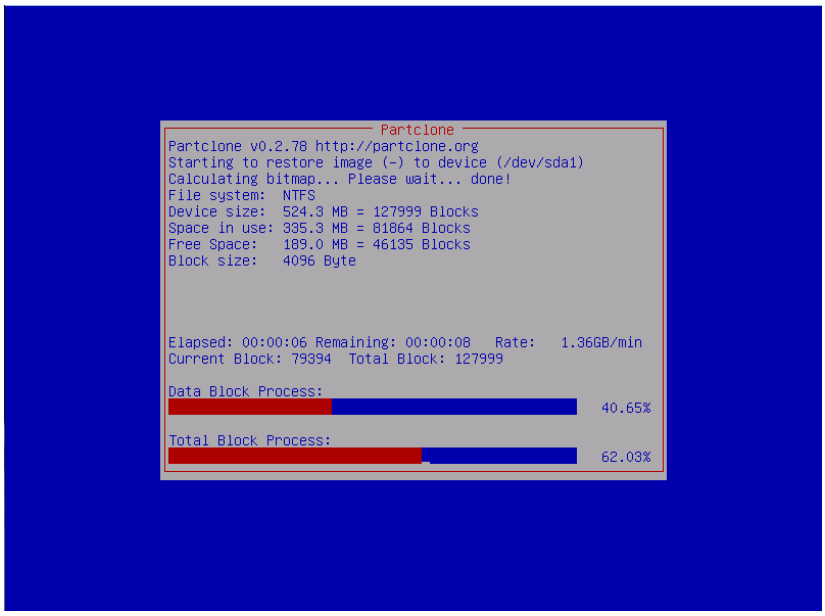
1. Select **clonezilla live restore disk**.



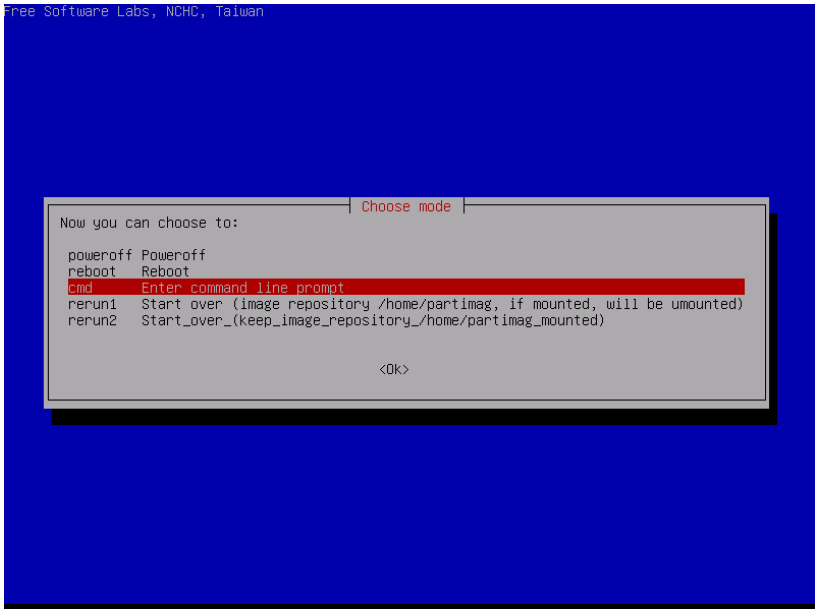
2. Wait for the USB drive boot process to finish.



3. Wait for the process to finish.



4. Select **(0) Poweroff** to power off the computer.



5. Remove the USB drive after the computer has been powered off.

Step 4: Reboot the Computer

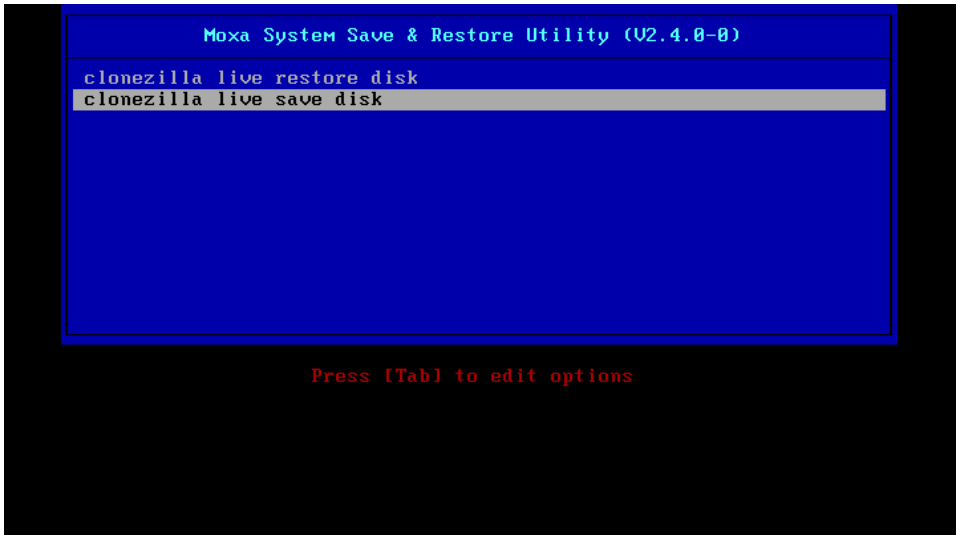
When you restart the computer, you will need to wait about 5 minutes for the computer to go through two cycles of the reboot process. The system configuration files will be initiated during the first boot-up process. **Do not turn off the computer or shut down the computer** while the system is restarting. When the operating system has successfully launched, follow the "System Initialization" to process.

Saving the System to the USB Drive

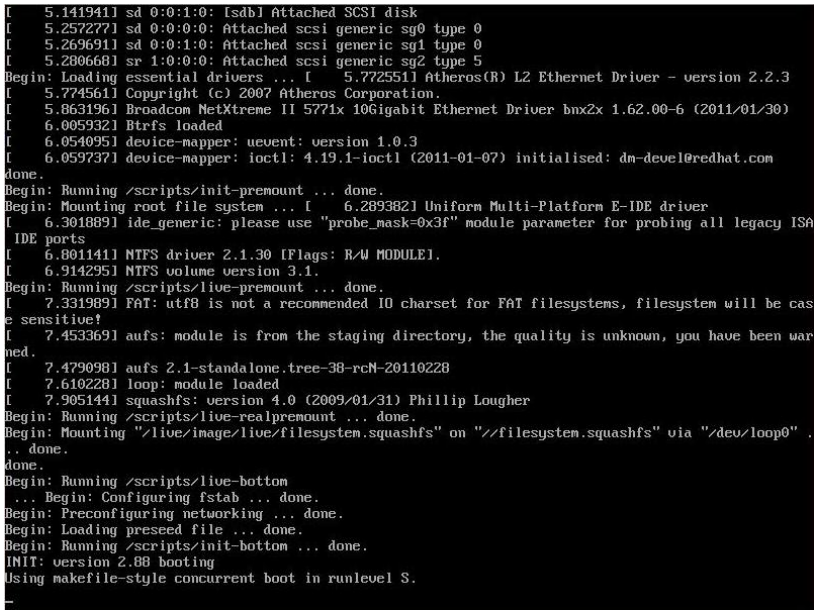
You can save the current system to the USB drive for system recovery in case the system crashes. Before saving the system image to the USB drive, we suggest you remove all files under **\home\partimag** on the USB drive.

Boot from USB disk, when the system has been launched, and take the following steps.

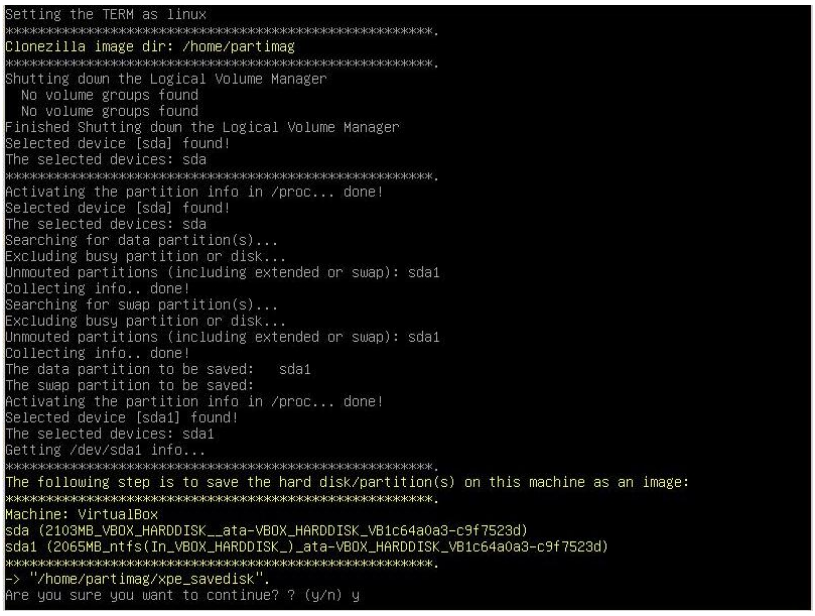
1. Select **clonezilla live save disk.**



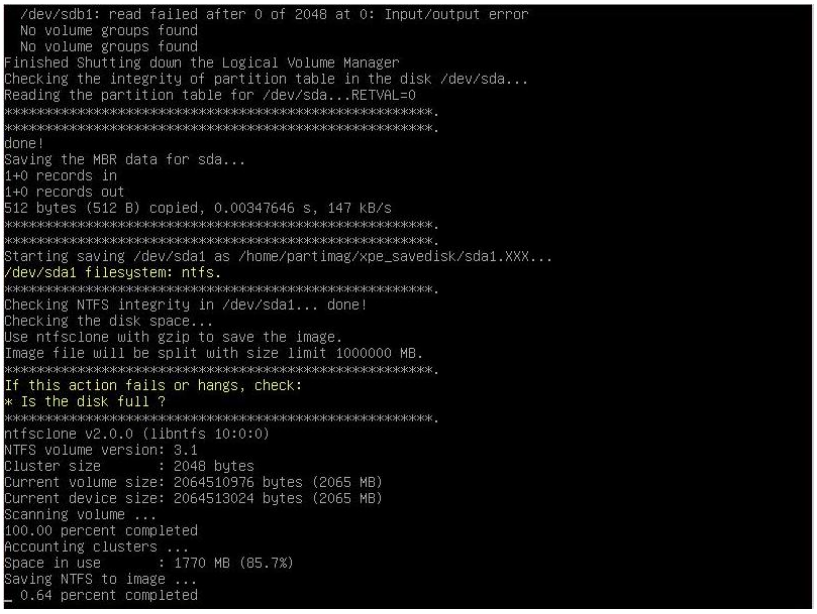
2. Wait for the USB drive boot process to finish.



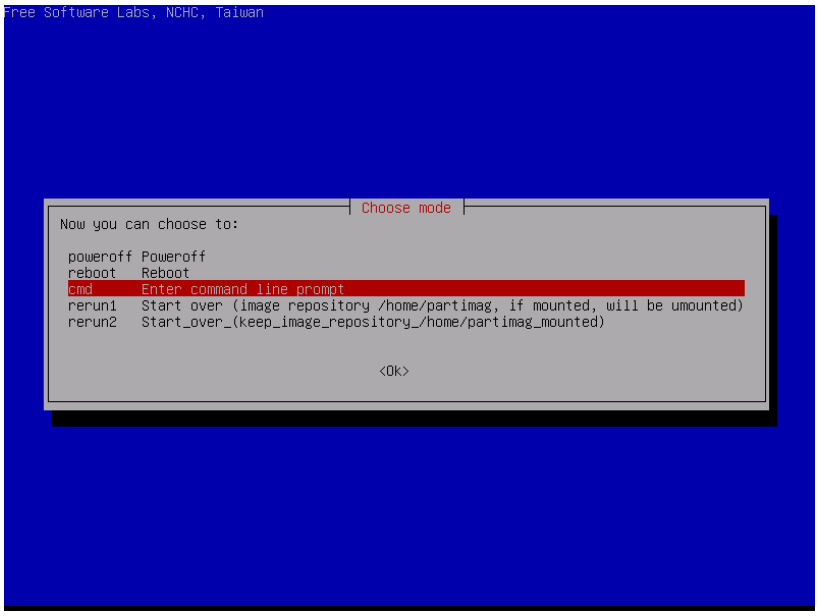
3. Enter **y** to continue.



4. Wait for the process to finish.



5. Select **(0) Poweroff** so that the computer will power off when the process is finished.



The system image is store in the **\home\partimag\os_image** folder on the USB disk, keep the USB disk save for system recover in the future.