V2201 Series Windows 10 LTSC Software User's Manual

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www.moxa.com/product



V2201 Series Windows 10 LTSC Software User's Manual

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System Initialization

This chapter describes how to initialize the system settings when you boot up the computer for the first time.

The following topics are covered in this chapter:

- Initializing User Settings
- Initializing the System

Initializing User Settings

The following is a non-exhaustive list of screens that you will see when configuring the Out Of Box Experience (OOBE) settings.

1. Select your region.

	Basics		
Let's	start with region. Is this r	right?	
		N	
	Uganda		
	Ukraine		
	United Arab Emirates		
	United Kingdom		
	United States		
	Uruguay		
	Uzbekistan		
	Vanuatu		
	Vatican City	~	

2. Select your keyboard layout.

	Basics		
ls t	his the right keyboard lay	out?	
	If you also use another keyboard layout, you can add that next.	0.000	
	US		
	Canadian Multilingual Standard		
	English (India)		
	Irish		
	Scottish Gaelic		
	United Kingdom		
	United States-Dvorak		
	United States-Dvorak for left hand		
	United States-Dvorak for right hand	~	

3. Select a second keyboard layout if necessary.



4. Connect to a network. You may click **Skip for now** if you do not want to connect to a network now.

Let's connect you to a network
Ethernet 3 Not connected

We recommend that you click **Yes** and connect to a network.



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

Account	
Who's going to use this PC?	
Name	

6. Enter the password for this user and click **Next** to continue.



7. Click **Yes** to see additional settings.

	Services
Do more across devices with a	activity history
If you want timeline and other Windows features to hely you continue what you were doing, es activity history, which includes info about websites you browse and how you use apps and servi products and services use this data to personalize experiences while r	ices. Select Learn more to find out how Microsoft
	No Yes

8. Choose the privacy settings for your device and configure them on the setting page. When finished, click **Accept** to complete.

<section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header>		Services
Ley our view for dictation and to talk to Cortana and other apps that use Get location-based experiences like directions and allow Microsoft to use your location be primary experiences. Set in the second second provide more personalized advertising to Yes Set in the second second to the formation of the second	Microsoft puts you in control of your privacy. Choose your settings,	then select 'Accept' to save them. You can change these settings at any
The final my device and use your device's location data to help you find you device if you loce it, hou must sign in 10 Windows with you with the website source and how you use spos and features, plus additional into about the websites features.	Jse your voice for dictation and to talk to Cortana and other apps that use Windows cloud-based speech recognition. Send Microsoft your voice data o help improve our speech services.	Get location-based experiences like directions and weather. Let Windows and apps request your location and allow Microsoft to use your location data to improve location services.
Turn on Find my device and use your device's location data to help you Microsoft society of the first society of the society	Yes	Yes
Tailored experiences Let Microsoft of ther you tailored experiences based on the diagnostic data to Microsoft of ther you tailored experiences based on the diagnostic data to Microsoft of ther you tailored experiences based on the diagnostic data to Microsoft of ther you tailored experiences based on the diagnostic data to Microsoft of ther you tailored experiences based on the diagnostic data to Microsoft products and services for your and recommendations to enhance Microsoft products and services for your and experiences Advertising ID Aps can use advertising ID to provide more personalized advertising in Microsoft Diagnostic data to microsoft products and services for your on the above settings, how Windows Defended Select Learn more for into on the above settings, how Windows Defended microsoft products and services more on the other data transfers and uses.	furn on Find my device and use your device's location data to help you ind your device if you lose it. You must sign in to Windows with your	Send all Basic diagnostic data, along with info about the websites you browse and how you use apps and features, plus additional info about
Serd raking and Typing data to Microsoft to improve the language recognition and suggestion capabilities of apps and services running on Windows. Yes Advertising ID Apps can use advertising ID to provide more personalized advertising in Pags can use advertising ID to provide more personalized advertising in Pags can use advertising ID to provide more personalized advertising in Pags can use advertising ID to provide more personalized advertising in Pags can use advertising ID to provide more personalized advertising in Pags can use advertising ID to provide more personalized advertising in Pags can use advertising ID to provide more personalized advertising in Page advertising ID to provide more personalized advertising in Pa	💽 Yes	Full
Advertising ID Apps can use advertising ID to provide more personalized advertising in Select 'Learn more' for info on the above settings, how Windows Defender SmartScreen works, and the related data transfers and uses.	Send inking and typing data to Microsoft to improve the language ecognition and suggestion capabilities of apps and services running on Windows.	Let Microsoft offer you tailored experiences based on the diagnostic data you have chosen (either Basic or Full). Tailored experiences mean personalized tips, ads, and recommendations to enhance Microsoft products and services for your needs.
	Apps can use advertising ID to provide more personalized advertising in	Select 'Learn more' for info on the above settings, how Windows Defender

Initializing the System

 When you sign in for the first time, the system will run the Windows Command Processor and the message "Do you want to allow this app to make changes to your device?" is displayed. Click Yes.



2. Wait for the process to complete. It might take a couple of seconds.



This chapter describes the $\ensuremath{\mathsf{BitLocker}}$ setup process.

The following topics are covered in this chapter:

- Enabling the BitLocker
- Disabling the BitLocker

Enabling the BitLocker

To enable the BitLocker for a drive:

1. Right-click on the drive and select the **Turn on BitLocker** option.

Regel Bn		
💻 i 😥 🛄 💌 i	Drive Tools This PC	- 0 X
Fide Computer ← → * ↑ 💻	View Manage	~ (0
← → * ↑		Search This PC , P
 Image: Point and Point	Folders (6) Destrop Destrop	
💻 This PC	V Devices and drives (1)	
€ Mitsock	ted Dok (C)	
# A 🗆 🔚		r ^R ∧ 12 di) 443.1M

2. Select a method to back up the recovery key. For example, select Save to a file.

		×
~	New BitLocker Drive Encryption (C:)	
	How do you want to back up your recovery key?	
	A recovery key can be used to access your files and folders if you're having problems unlocking your PC. It's a good idea to have more than one and keep each in a safe place other than your PC.	
	\rightarrow Save to your <u>M</u> icrosoft account	
	\rightarrow Save to a <u>file</u>	
	\rightarrow Print the recovery key	
	How can I find my recovery key later?	
	Next Cancel	

3. Select the path to store the file.

							×	
\leftarrow \rightarrow \checkmark \uparrow \blacksquare \rightarrow This PC \rightarrow NEW VOLUME (D:) \checkmark \bigcirc Search NEW VOLUME (D:) \rightarrow								(D:) ,0
Organize 🔻 Ne	Organize 🔻 New folder							= - ()
Cuick access Desktop Downloads Documents Pictures This PC NEW VOLUME Network	* * * (D:)	Name	^	Date modified No items ma	Type tch your search.	Size		
File <u>n</u> ame: Save as <u>t</u> ype:			06A92F47-93AA-4514-1	BB5F-D6B2C6F43C03				>
∧ Hide Folders							<u>S</u> ave	Cancel .:

4. Select an option to specify which part of the drive to encryption and click **Next**.

		×	
←	RitLocker Drive Encryption (C:)		
	Choose how much of your drive to encrypt		
	If you're setting up BitLocker on a new drive or a new PC, you only need to encrypt the part of the drive that's currently being used. BitLocker encrypts new data automatically as you add it.		
	If you're enabling BitLocker on a PC or drive that's already in use, consider encrypting the entire drive. Encrypting the entire drive ensures that all data is protected—even data that you deleted but that might still contain retrievable info.	I	
	Encrypt used disk space only (faster and best for new PCs and drives)		
	\bigcirc Encrypt entire drive (slower but best for PCs and drives already in use)		
	<u>N</u> ext Cancel		
			1

5. Choose the drive encryption mode and click **Next**.

		\times
÷	New BitLocker Drive Encryption (C:)	
	Choose which encryption mode to use	
	Windows 10 (Version 1511) introduces a new disk encryption mode (XTS-AES). This mode provides additional integrity support, but it is not compatible with older versions of Windows.	
	If this is a removable drive that you're going to use on older version of Windows, you should choose Compatible mode.	
	If this is a fixed drive or if this drive will only be used on devices running at least Windows 10 (Version 151 or later, you should choose the new encryption mode	1)
	<u>N</u> ew encryption mode (best for fixed drives on this device)	
	\bigcirc Compatible mode (best for drives that can be moved from this device)	
	<u>N</u> ext Cance	

6. Click **Continue** with the **Run BitLocker**... option checked (default).

		\times
~	New BitLocker Drive Encryption (C:)	
	Are you ready to encrypt this drive?	
	Encryption might take a while depending on the size of the drive.	
	You can keep working while the drive is being encrypted, although your PC might run more slowly.	
	✓ <u>R</u> un BitLocker system check	
	The system check ensures that BitLocker can read the recovery and encryption keys correctly before encrypting the drive.	
	BitLocker will restart your computer before encrypting.	
	Note: This check might take a while, but is recommended to ensure that your selected unlock method works without requiring the recovery key.	I
	<u>C</u> ontinue Cancel	

7. Click **Restart now**.



8. Wait for the encryption process to complete and click **Close**.



The system will be restarted immediately.

Disabling the BitLocker

To disable the BitLocker for a drive:

1. Right-click on the drive and select the **Manage BitLocker** option.



2. Click Turn off BitLocker.

Si Avguta Be			
EtLocker Drive Encryption		- 0 X	
	> System and Security > BitLocker Drive Encryption	 ♥ Search Control Panel 	
Caded hard lives	BitLocker Drive Encryption bit protect you files and folders from unactivitied access by protecting your drives with BitLocker. The Tor your surply scene withings are managed by your system achiekhotter.	9	
	Operating system drive		
	Windows (C) BitLock Encoder Drive Encoders	0	
	Vour dries will be decryster. This might lake is trays time, but you can keep using your PC during the decryster process. Fixed data drives		
	Removable data drives - BitLocker To Go D: BitLocker off		A PART SALE
See also			
💎 TFM Administration			
🧐 Osk Management			
Phacy statement			
# 2 H 🐐			R ⁴ ^ 😱 (0) 651 FM 1/31 A0119 📆

3. Wait for the decryption process to complete and click **Close** to exit the program.

Rocyla Bre				
	Bibodar Dive Encyption		- 0 ×	
	->		v b Search Control Parrel P	
	Help pro	ker Drive Encryption tect your files and folders from unauthorized access by protecting your drives with Billocker.		
	Operat	ting system		
	Wind	Sows (C) Bit Recrypting Drive C-462% Completed	0	
		•		
	Fixed o	data drives Menage Bitcolor		
		vable data drives - BitLocker To Go		
	D: Bit	Locker off	\odot	
	See also TPM Administration			
	Disk Management			
	Privacy statement			
• 0 74 ·				A A 17 44 651 PM

Reycle Bro			
	Bittocker Orive Encryption	- D X	
	-> - + I > Control Fanel > System and Security > BitLocker Drive Encryption	 δ South Control Pand 	
	Concerted with a function of the state and encouples and the state of		
	See also		
👳	TPM Administration		
	Disk Management		
	Phacy statement		
■ <i>P</i> III *		A ~ 99 %	SSI FM.

4. Check the disk status after the decryption process is complete.



3

Unified Write Filter

This chapter describes how to use the Unified Write Filter.

The following topics are covered in this chapter:

- Getting Started
- Turning On UWF in a Running PC
- Installing UWF Using WMI

Getting Started

The Unified Write Filter (UWF) needs to be installed and enabled (and optionally configured) on your system before you can use it. The first time you enable UWF on your system, the following changes are made to improve the performance of UWF.

- Paging files are disabled.
- System restore is disabled.
- SuperFetch is disabled.
- File indexing service is turned off.
- Fast boot is disabled.
- Defragmentation service is turned off.
- BCD setting **bootstatuspolicy** is set to **ignoreallfailures**.

After UWF is enabled, select a drive to protect and start using UWF. You can install UWF for running PCs and devices and manage them remotely using Windows Management Instrumentation (WMI).

Turning On UWF in a Running PC

Using Windows Features.

- a. In the Windows taskbar, click on the start icon and type Turn Windows features on or off.
- b. In Windows Features, expand the Device Lockdown node and check Unified Write Filter.
- c. Click OK.



A progress bar is displayed indicating that Windows is searching for required files. Once the files are found, the progress bar will indicate that Windows is applying the changes.

d. When the process is completed, click $\ensuremath{\textbf{Restart}}\xspace$ now to reboot your computer.



Using the Windows Command Line

1. Type **CMD** in the Windows search box and select **Run as administrator**.



Run the following command to enable the filter.
 cmd uwfmgr filter enable



2. To enable write protection for a specific drive (e.g., **C**), run the command:

cmd uwfmgr.exe volume protect C:



- 3. Restart your computer.
- 4. After the computer restarts, use the following command to confirm that UWF is running:

cmd uwfmgr.exe get-config

```
Administrator: Command Prompt
C:\Windows\system32>uwfmgr.exe get-config
Unified Write Filter Configuration Utility version 10.0.17763
Copyright (C) Microsoft Corporation. All rights reserved.
Current Session Settings
FILTER SETTINGS
     Filter state:
                          OFF
     Pending commit: N/A
     Shutdown pending:No
SERVICING SETTINGS
     Servicing State: OFF
OVERLAY SETTINGS
                               RΔM
     Type:
                               1024 MB
     Maximum size:
     Warning Threshold: 512 MB
     Critical Threshold: 1024 MB
     Freespace Passthrough: OFF
Persistent: OFF
     Reset Mode: N/A
```

Installing UWF Using WMI

If your computer is already set up and you do not want to use a provisioning package, you can configure UWF using Windows Management Instrumentation (WMI) providers. To turn on UWF using WMI, use the **UWF_Filter** function, specifically the **UWF Filter.Enable** method, in one of the following ways:

- Use the WMI providers in a PowerShell script
- Use the WMI providers in an application
- Use the command line tool uwfmgr.exe

You must restart your device after you turn on or turn off UWF for the changes to take effect.

You can change the UWF settings even after the UWF is turned on. For example, you can move the page file location to an unprotected volume and re-enable the paging files.



IMPORTANT!

If you have added UWF to your image by using SMI settings in a unattend.xml file, turning on UWF will only set the bootstatuspolicy BCD setting and turn off the defragmentation service. In this case, you must manually turn off the other features and services if you want to increase the performance of UWF.

All configuration settings for UWF are stored in the registry. UWF automatically excludes these registry entries from filtering. After a device restarts, the configuration settings are stored in the registry for the current session and the next session. Static configuration changes do not take effect until after a device restarts, and these changes are saved in the registry entries for the next session. Dynamic configuration changes occur immediately and take effect after a device restart.

Moxa IO Controller Utility

This chapter describes how to use the Moxa IO Controller utility.

The following topics are covered in this chapter:

- Getting Started
- Setting the DIO Status
- Setting the UART Mode
- Setting the PCIE Status
- Setting the LED Status

Getting Started

To use the Moxa IO Controller utility, do the following:

- 1. Install the utility.
- 2. Enable the settings for DIO, UART mode, PCIE, and LED.
- 3. Run the **Command Prompt** as an **Administrator and** change the path to:

C:\Program Files\Moxa\Moxa Computer IO Controller.

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.17763.292]
(c) 2018 Microsoft Corporation. All rights reserved.
C:\Windows\system32>cd /d C:\Program Files\Moxa\Moxa Computer IO Controller
C:\Program Files\Moxa\Moxa Computer IO Controller>_
```

Refer to the following sections for instructions on configuring additional settings.

Setting the DIO Status

Run **DIO.exe** and follow the onscreen instructions to view or configure the DIO status.



IMPORTANT!

The DIN and DOUT indices start from 0 in the Moxa IO Controller utility although the indices are printed starting from 1.

```
D:\2201\x64\DIO.exe
UART Mode Test Program
         (0) Exit Program
         (1) Display DIN
         (2) Display DOUT
         (3) Set DOUT value
         (4) Display both DIN and DOUT
Input the Port Number (0 ~ 3) =
Input the value (0 or 1) = 0
Set digital output success!
UART Mode Test Program
         (0) Exit Program
         (1) Display DIN
         (2) Display DOUT
         (3) Set DOUT value
         (4) Display both DIN and DOUT
Din0 = 1 , Dout0 = 0
Din1 = 1 , Dout1 = 1
Din2 = 1 , Dout2 = 1
Din3 = 1 , Dout3 = 1
```

Setting the UART Mode

Run UartMode.exe and follow the onscreen instructions to view or configure the UART mode.



IMPORTANT!

The UART index starts from 0 in the Moxa IO Controller utility although it is printed starting with 1.

```
Administrator: Command Prompt - UartMode.exe
C:\Users\moxa\Desktop\example>UartMode.exe
Serial Interface Test Program
         (0) Exit Program
         (1) Display Serial Interface
         (2) Set Serial Interface
COM1 = RS485-2W
COM2 = RS485-2W
Serial Interface Test Program
         (0) Exit Program
         (1) Display Serial Interface
         (2) Set Serial Interface
2
Input the Port Number (1 \sim 2) =
1
Input the value (0:RS485-2W, 1:RS422, 2:RS232 ) = 2
Set serial interface success!
Serial Interface Test Program
         (0) Exit Program
         (1) Display Serial Interface
         (2) Set Serial Interface
1
COM1 = RS232
COM2 = RS485 - 2W
Serial Interface Test Program
         (0) Exit Program
         (1) Display Serial Interface
         (2) Set Serial Interface
```

Setting the PCIE Status

Run **PwrExample.exe** and follow the onscreen instructions to view or configure the PCIE status.



IMPORTANT!

The PCIE index starts from 0 in the Moxa IO Controller utility although it is printed starting with 1.

```
D:\2201\x64\PwrExample.exe
         (2) Set Power on/off
Input the Socket Number (1 ~ 2) =
Input 0 or 1 (0 = Off, 1 = On) = 0
Set Power success!
Mini PCIE Power Contol Test Program
         (0) Exit Program
         (1) Display Power condition
         (2) Set Power on/off
Socket1 is on
Socket2 is off
Mini PCIE Power Contol Test Program
         (0) Exit Program
         (1) Display Power condition
         (2) Set Power on/off
Input the Socket Number (1 ~ 2) =
Input 0 or 1 (0 = Off, 1 = On) = 1
Set Power success!
Mini PCIE Power Contol Test Program
         (0) Exit Program
         (1) Display Power condition
         (2) Set Power on/off
```

Setting the LED Status

Run LEDexample.exe and follow the onscreen instructions to view or configure the LED status.



IMPORTANT!

The LED index starts from 0 in the Moxa IO Controller utility although it is printed starting with 1.

```
D:\2201\x64\LEDexample.exe
LED Test Program
         (0) Exit Program
         (1) Display LED
         (2) Set LED value
Input 0 or 1 (0 = Off, 1 = On) = 1
Set LED success!
LED Test Program
         (0) Exit Program
         (1) Display LED
         (2) Set LED value
LED1 is on
LED Test Program
         (0) Exit Program
         (1) Display LED
         (2) Set LED value
Input 0 or 1 (0 = Off, 1 = On) = 0
Set LED success!
LED Test Program
         (0) Exit Program
         (1) Display LED
         (2) Set LED value
LED1 is off
LED Test Program
         (0) Exit Program
         (1) Display LED
             Set LED value
         (2)
```

Moxa Serial Interface Utility

This chapter describes how to use Serial Interface utility to set the UART mode.

The following topics are covered in this chapter:

Setting the UART Mode

Setting the UART Mode

1. Install the Moxa Serial Interface utility.

After the installation is complete, you should be able to see the **mxSerialInterface** utility in the programs menu by clicking on the **Start** button.

	М		
	🦲 Моха	^	
	mxSerialInterface		
	s		
	Search		
	🔅 Settings		
8	w		
ŝ	Windows Accessories	~	
ഗ്ര	Windows Administrative Tools	×	
<u> </u>		~	v

- 2. Run the **mxSerialInterface** utility.
- 3. Select the target COM port and UART mode and click \mathbf{OK} to save the settings.

🖳 Set Se	rial I	_		×
Port:	COM1 RS232		~]
			~	
C	K		Cancel	

6

IO Control API

The following topics are covered in this chapter:

🛛 mxgpio

- mxdgio_open
- mxgpio_get_data
- mxgpio_set_data
- > mxgpio_close

🛛 mxdgio

- mxdgio_open
- mxdgio_get_input_signal
- mxdgio_get_output_signal
- > mxdgio_set_output_signal_low
- mxdgio_set_output_signal_high
- mxdgio_close

🛛 mxsp

- mxsp_open
- mxsp_get_interface
- mxsp_set_interface
- mxsp_close

🛛 mxwdg

- mxwdg_open
- mxwdg_refresh
- mxwdg_close

mxgpio

The **mxgpio** library operates on the general-purpose I/Os (GPIO) and consists of the following functions:

- mxgpio_open
- mxgpio_get_data
- mxgpio_set_data
- mxgpio_close

Requirements

Name	Items
Header	mxgpio.h
Library	mxgpio.lib
DLL	mxgpio.dll

mxdgio_open

Syntax	HANDLE mxgpio_open(void);	
Description	ription Open a GPIO handle	
Parameters None		
Return Value The status of the GPIO interface (1 or 0)		

mxgpio_get_data

Syntax	<pre>int mxgpio_get_data(HANDLE fd, unsigned int port_no);</pre>			
Description	Get the GPIO	Get the GPIO input status.		
Parameters	fd Handle of the GPIO device			
	port A GPIO port index; starts from 0.			
Return Value	The status of GPIO port; 0 is low, 1 is high.			

mxgpio_set_data

Syntax	<pre>int mxgpio_set_data(HANDLE fd, unsigned int port_no, int data);</pre>			
Description	Set the GPIO	Set the GPIO status to high.		
Parameters	fd Handle of the GPIO device			
	port A GPIO port index; starts from 0.			
Return Value	Returns 0 on success, otherwise the function has failed			

mxgpio_close

Syntax	void mxgpi	void mxgpio_close(HANDLE fd);	
Description	Close the GPIO device.		
Parameters	fd	Handle of the GPIO device	
Return Value	None		

mxdgio

The **mxdgio** library operates on the digital I/Os and consists of the following functions:

- mxdgio_open
- mxdgio_get_input_signal
- mxdgio_get_output_signal
- mxdgio_set_output_signal_low
- mxdgio_set_output_signal_high
- mxdgio_close

Requirements

Name	Items
Header	mxdgio.h
Library	mxdgio.lib
DLL	mxdgio.dll

mxdgio_open

Syntax	HANDLE mxdgio_open();	
Description	Opens the digital I/O device	
Parameters	None	
Return Value	The handle of the digital I/O	

mxdgio_get_input_signal

Syntax	<pre>int mxdgio_get_input_signal(HANDLE fd, int port);</pre>	
Description	Gets the digital input status	
Parameters	fd Handle of the digital I/O device	
	port A digital input port index; starts from 0	
Return Value	The status of the digital input port; 0 is low, 1 is high	

mxdgio_get_output_signal

Syntax	<pre>int mxdgio_get_output_signal(HANDLE fd, int port);</pre>	
Description	Gets the digital output status	
Parameters	fd	Handle of the digital I/O device
	port	A digital output port index; starts from 0
Return Value	The status of the digital output port; 0 is low, 1 is high	

mxdgio_set_output_signal_low

Syntax	<pre>int mxdgio_set_output_signal_low(HANDLE fd, unsigned int port);</pre>		
Description	Sets the digital output status to low		
Parameters	fd	Handle of the digital I/O device	
	port	A digital output port index; starts from 0	
Return Value	Returns 0 on success; otherwise, the function has failed		

mxdgio_set_output_signal_high

Syntax	<pre>int mxdgio_set_output_signal_high(HANDLE fd, unsigned int port);</pre>		
Description	Sets the digital output status to high		
Parameters	fd Handle of the digital I/O device		
	port A port index of a digital output port; starts from 0		
Return Value	Returns 0 on success; otherwise the function has failed		

mxdgio_close

Syntax	void mxdgio_close(HANDLE fd);	
Description	Closes the digital I/O device	
Parameters	fd Handle of the digital I/O device	
Return Value	None	

mxsp

The **mxsp** library operates on the UART (serial) interface and consists of the following functions:

- mxsp_open
- mxsp_get_interface
- mxsp_set_interface
- mxsp_close

Requirements

Name	Items
Header	mxsp.h
Library	mxsp.lib
DLL	mxsp.dll

mxsp_open

Syntax	HANDLE mxsp_open();;	
Description	Initializes the serial interface	
Parameters	None	
Return Value	Returns the serial interface handle.	

mxsp_get_interface

Syntax	<pre>int mxsp_get_interface(HANDLE fd, int port_index);</pre>		
Description	Gets the serial	Gets the serial interface mode	
Parameters	fd	fd The serial interface handle	
	<pre>port_index</pre>	A serial interface port index; starts from 0.	
Return Value	0: RS-232 mode		
	1: RS-485-2W	1: RS-485-2W mode	
	2: RS-422 mode		
	3: RS-485-4W	3: RS-485-4W mode	

mxsp_set_interface

Syntax	<pre>int mxsp_set_interface(HANDLE fd, int port_index, int</pre>		
	<pre>port_interface);</pre>		
Description	Sets the serial interface mode		
Parameters	fd The serial interface handle		
	<pre>port_index</pre>	A port index of the serial port; starts from 0	
	<pre>port_interface</pre>	0: RS-232 mode	
		1: RS-485-2W mode	
		2: RS-422 mode	
		3: RS-485-4W mode	
Return Value	Return 0 on success, otherwise the function has failed.		

mxsp_close

Syntax	<pre>void mxsp_close();</pre>
Description	Close the serial interface.
Parameters	None
Return Value	None

mxwdg

The **mxwdg** library operates on the watchdog timer and consists of the following functions:

- mxwdg_open
- mxwdg_refresh
- mxwdg_close

Requirements

Name	Items
Header	mxwdg.h
Library	mxwdg.lib
DLL	mxwdg.dll

mxwdg_open

Syntax	PVOID mxwdg_open(unsigned long time);		
Description	Open the watchdog timer		
Parameters	time	time Initial refresh time in second.	
Return Value	Return Pointer to Watchdog handle. Return -1 on failure.		

mxwdg_refresh

Syntax	<pre>int mxwdg_refresh(PVOID fd);</pre>		
Description	Refresh the watchdog timer.		
Parameters	fd The handle.		
Return Value	Returns 0 on success, otherwise the function has failed.		

mxwdg_close

Syntax	<pre>void mxwdg_close(PVOID fd);</pre>		
Description	Closes the watchdog timer.		
Parameters	fd The handle.		
Return Value	This function does not return a value.		

This chapter describes the Windows Recovery setup process.

The following topics are covered in this chapter:

- Preparing a USB device
- Booting From a USB Disk
- Creating a Backup Image
- Restoring the System Using a Backup Image

Preparing a USB device

- 1. Format the USB disk for the FAT32 file system.
- 2. Run the **tuxboot-windows-23.exe** program from the **\recovery** folder.
- 3. Select **Pre Downloaded** and click on the browse button (...).

Tuxboot	
On-Line Distribution donezilla_live_stable	Update
Clonezilla	
Homepage: http://clonezilla.org/ Description: CloneZilla live is a distribution used for disk backup and imaging. The stable branch of C are based on Debian Install Notes: CloneZilla live is booted and run in live mode; no installation is required to use it.	lonezilla live
Download Path: <u>Clonezilla Live Stable at SourceForge</u>	
Pre Downloaded ISO	
Show All Drives (Use with Care) Save ISO file	
Ţype: USB Drive ▼ Drive: D:\ ▼ OK	Cancel

4. Browse to and select the ISO file from the \recovery folder.

Softwar					✓	ch softwareCD	-
rganize 🔹 New fol	der					100 ·	
Favorites	Name	^	Date modified	Туре	Size		
Desktop	e 2.5.0-5-i686-	pae-Windows_v1.0	1/25/2017 3:31 PM	Disc Image File	301,656 KB		
🐌 Downloads							
Recent Places							
Distantas							
Libraries							
Music							
E Pictures							
Videos							
Computer							
Computer							
PATRIOT (D:)							
Local Disk (C:)							

- 5. Select the USB Drive type and the Drive.
- 6. Click **OK**.

Tuxboot			- • ×
On-Line Distribution donezil	a_live_stable	current	Update
Clonezilla Homepage: http://clonezilla.org Description: CloneZilla live is a d are based on Debian		and imaging. The stable brar	nch of Clonezilla live
Install Notes: CloneZilla live is bo Download Path: <u>CloneZilla Live S</u>		stallation is required to use	it.
Pre Downloaded ISO	Desktop\softwareCD\2.5.	0-5-i686-pae-Windows_v1	0.iso
Show <u>All</u> Drives (Use with Care) 📃 Save ISO file	MD5 Check	
Type: USB Drive	▼ Dri <u>v</u> e: D:\	• ОК	Cancel

The boot files will be copied to your USB device.

Tuxboot	- X
1. Downloading Files (Done)	
2. Extracting and Copying Files (Current)	
3. Installing Bootloader	
4. Installation Complete, Reboot	
Extracting files, please wait	
Archive: C: \Users\moxa\Desktop\softwareCD\2.5.0-5-i686-pae-Windows_v1.0.iso	
Source: live\disk_win7.sh (4721 B)	
Destination: D: \ive \disk_win7.sh	
Extracted: 11 of 51 files	
	21%

7. After the files are copied, click **Exit** to stop the program.

Tuxboot	
1. Downloading Files (Done)	
2. Extracting and Copying Files (Done)	
3. Installing Bootloader (Done)	
4. Installation Complete, Reboot (Current)	
After rebooting, select the USB boot option in the BIOS boot menu. Reboot now?	
Reboot Now	Exit

8. Copy the **os_image** directory from the **\recovery** folder to the ***\home\partimag*** folder on the USB device.

The USB disk is now ready for use in the recovery process.

Booting From a 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 Manager and press Enter to continue.



3. Select EFI USB Devices and press Enter to continue to boot from the USB device.



Creating a Backup Image

After you boot the system from a USB disk, you will see the Moxa System Save & Restore Utility page.

1. In the Moxa System Save & Restore Utility, select clonezilla live save disk.



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



3. Click y to continue the process.



4. Wait for the backup process to complete.



5. Select **poweroff** to power off the computer when the backup process is completed.

	can choose to:
powerof reboot	Poweroff Reboot Enter command line prompt
rerun1 rerun2	Start over (image repository /home/partimag, if mounted, will be umounted) Start_over_(keep_image_repository_/home/partimag_mounted)
	<0k>

Restoring the System Using a Backup Image

After you boot the system from a USB disk, you will see the Moxa System Save & Restore Utility page.

1. In the Moxa System Save & Restore Utility, select clonezilla live restore disk.

1	Moxa System Save & Restore Utility (V2.4.0-0)
	live restore disk live save disk

2. Wait for the USB boot process to complete.

```
Command (m for help): The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
 Aarning: Unable to open /dev/sr0 read–write (Read–only file system).  /dev/sr0 has been opened read-
 אarning: Unable to open /dev/sr0 read-write (Read-only file system). /dev/sr0 has been opened read-
Disk /dev/sda: 20 GiB, 21474836480 bytes, 41943040 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
 I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x469e8113
 device Boot Start
                   Noot Start End Sectors Size Id Type
2048 1026047 1024000 500M 7 HPFS/NTFS/exFAT
1026048 41943039 40916992 19.5G 7 HPFS/NTFS/exFAT
Device
 /dev/sda2
Disk /dev/sdb: 14.8 GiB, 15846080512 bytes, 30949376 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
Disklabel type: dos
Disklabel type: dos
Disklabel type: dos
 Device Boot Start End Sectors Size Id Type
/dev/sdb1 * 2048 30949375 30947328 14.8G c W95 FAT32 (LBA)
Device
Disk /dev/loop0: 208.9 MiB, 218980352 bytes, 427696 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
```

3. Wait for the system restore process to complete.

Partclone Partclone v0.2.78 http://partclone.org Starting to restore image (-) to device (/d Calculating bitmap Please wait done! File system: NTFS Device size: 524.3 MB = 127999 Blocks Space in use: 335.3 MB = 81864 Blocks Free Space: 189.0 MB = 46135 Blocks Block size: 4096 Byte	vv∕sda1)
Elapsed: 00:00:06 Remaining: 00:00:08 Rate Current Block: 79394 Total Block: 127999	:: 1.36GB∕min
Data Block Process:	40.65
Total Block Process:	

4. Select **poweroff** to power off the computer after the backup process is complete.

		Choose	mode		
	can choose to: f Poweroff				
reboot	Reboot				
cmd rerun1 rerun2	Enter command lin Start over (image Start_over_(keep_	e repository /home	/partimag, if n /home/partimag_	wounted, will be mounted)	umounted)
		<0k>			

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