DEBIX_Windows 10 IoT Enterprise User Manual

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Complied by: Polyhex Technology Company Limited (http://www.polyhex.net/)

Windows 10 IoT is a member of the Windows 10 family that brings enterprise-class power, security, and manageability to the Internet of Things. DEBIX products support Windows 10 IoT running on i.MX 8M Plus processors with highly optimized systems that make it easier to build secure, scalable solutions from device to cloud, from resource provisioning to managing and protecting devices at scale.

DEBIX with Windows 10 IoT will be the new platform for fast, secure and real-time data processing on the intelligent edge.

Figure 1

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Chapter 1 Windows 10 IoT Introduction

Windows 10 IoT is a member of the Windows 10 family designed for a wide range of smart devices, including larger, more complex devices from small industrial gateways to point-of-sale terminals and ATMs. It leverages Windows' embedded experience, ecosystem and cloud connectivity to provide an end-to-end solution for creating the Internet of Things with secure devices. These devices can be quickly provisioned, easily managed, and seamlessly connected to an overall cloud strategy.

1.1. Editor

Windows 10 IoT is available in two editions:

● Windows 10 IoT Core, the smallest member of the Windows 10 operating system family. While only running a single app, it still has the manageability and security expected from Windows 10.

● Windows 10 IoT Enterprise, a full version of Windows 10 with specialized features to create dedicated devices locked down to a specific set of applications and peripherals.

It is because of the uniqueness of Windows 10 IoT Enterprise that DEBIX has chosen to support Windows 10 IoT Enterprise.

1.2. Feature

Windows 10 IoT Enterprise LTSC is the latest operating system designed for embedded and IoT devices. It's productive, trusted, and smart, and can be used to build any kind of OEM style appliance.

Main features:

● Support built-in Microsoft Edge browser

● Customize Windows Update user experience via Device Update Center (DCU)

● Support Soft Real-Time

● Linux Subsystem for Windows (WSL)

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- Support GPU computing for machine learning and other compute-intensive workflows

- Support WPA3 H2E standard for enhanced Wi-Fi security

- Unified Write Filter (UWF) updates, including allowing creation and use of UWF Swapfile (DISK Overlay), read-only media mode, etc. on any volume

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Chapter 2 Windows 10 IoT Enterprise Installation Guide

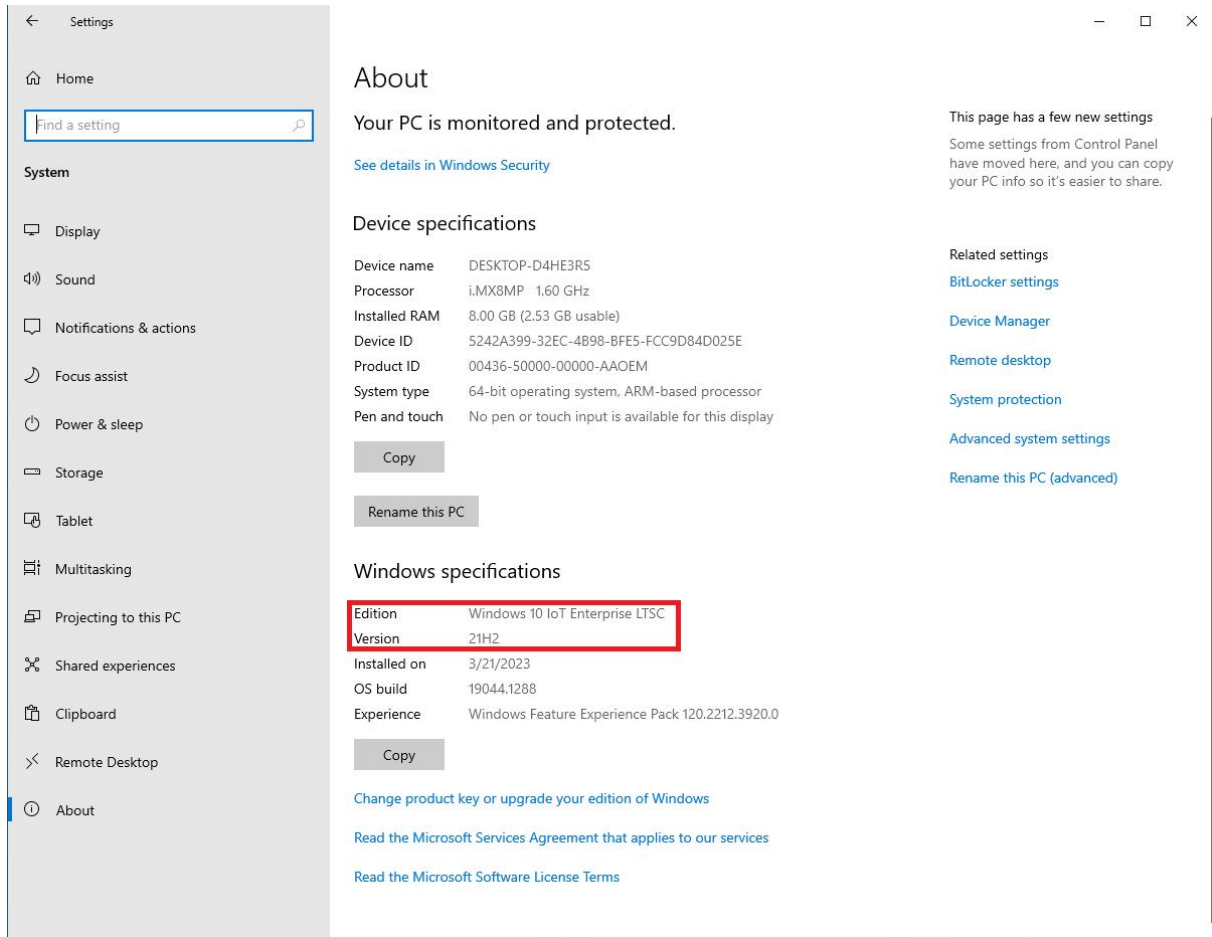Windows 10 IoT Enterprise specific release information is as follows:

Figure 2

The following is a brief introduction to the installation process of Windows 10 IoT Enterprise systems on DEBIX.

2.1. Download installation package

● Prepare a Win10(and up) PC.

● Download the latest system installation package we provide for DEBIX, at official website
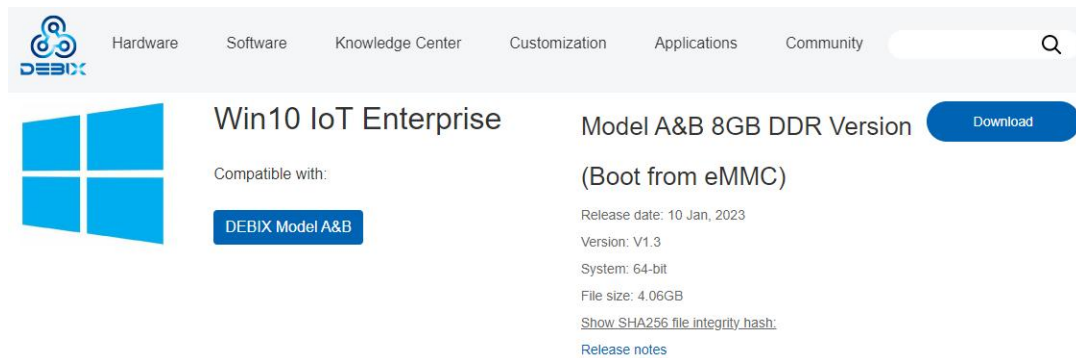
   address: https://debix.io/Software/download.html.

Figure 3

● The system installation package contains firmware.rar and win10_iot_x.x.x-xxxxxxx.img.

   The firmware.rar file needs to be extracted for file burning. The composition of system

   installation package is referenced as follows:

Figure 4

2.2. Installation

Due to the large space occupied by the system installation package, two points need to be
met:

1. DEBIX onboard memory capacity at least 8GB, eMMC capacity at least 16GB.

2. Prepare a Micro SD Card of 8GB or more.

Note: DEBIX DIP switch, up is 1, down is 0.

2.2.1. Flash on DEBIX Model A

1. Turn the DIP switch of the DEBIX Model A to **01** (USB mode).
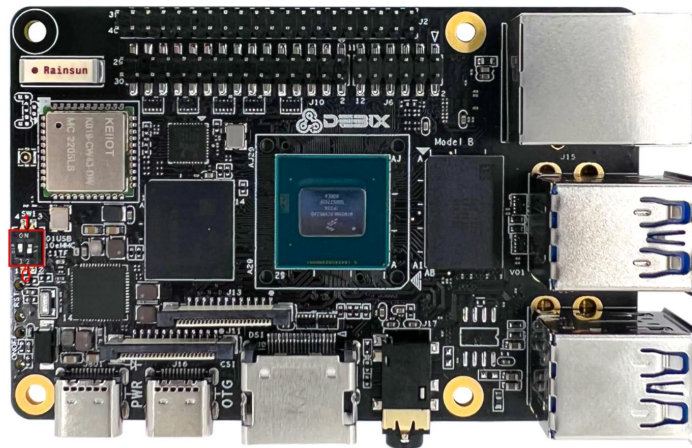
Figure 5

2. Prepare a USB-Type-c cable to connect PC to the motherboard OTG port.

3. **Burn firmware to eMMC**: On a win10 PC, open WindowsPowerShell in administrator mode.

●   Type the command to enter the firmware folder

cd E:\firmware

```
PS C:\Windows\system32> cd E:\firmware
PS E:\firmware> .\flash_bootloader.cmd /device MX8M_PLUS_EVK /secure 0
```

Figure 6

●   Enter flash command to start burning

.\flash_bootloader.cmd /device MX8M_PLUS_EVK /secure 0

```
PS E:\firmware> .\flash_bootloader.cmd /device MX8M_PLUS_EVK /secure 0
Selected: firmware_uuu.bin

Device:    MX8M_PLUS_EVK
Firmware:  MX8M_PLUS_EVK\firmware_uuu.bin

Temporary firmware with UUU tool: MX8M_PLUS_EVK\firmware_uuu.bin
        1:1     MX865   SDPS:   0x1FC9 0x0146    0x0002
Device in serial download mode, start flash

uuu (Universal Update Utility) for nxp imx chips — libuuu_1.3.191-0-g4fe24b9

Success 1    Failure 0


1:1      7/ 7 [Done                                        ] FB: Done
```

Figure 7

4. Use the Etcher tool to write the image to the Micro SD card. Etcher download address: https://www.balena.io/etcher/.

Burn img file: Start Etcher, insert the Micro SD Card, select the img file to be installed and the corresponding disk of Micro SD Card.

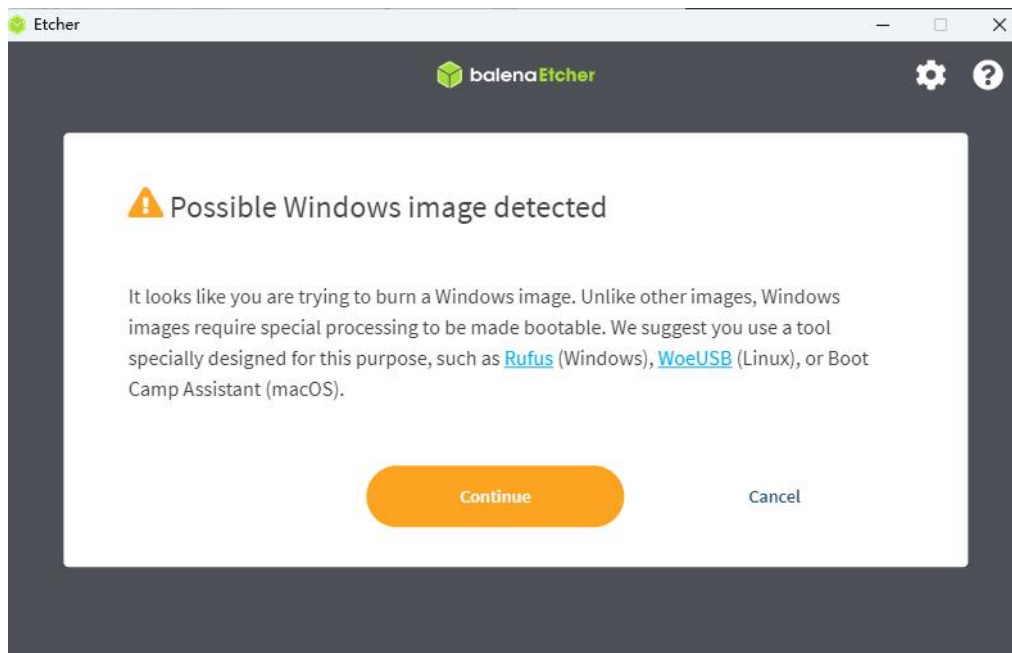If there is a prompt as shown in the figure below, click Continue, then click Flash, and wait for the burning to end.

Figure 8

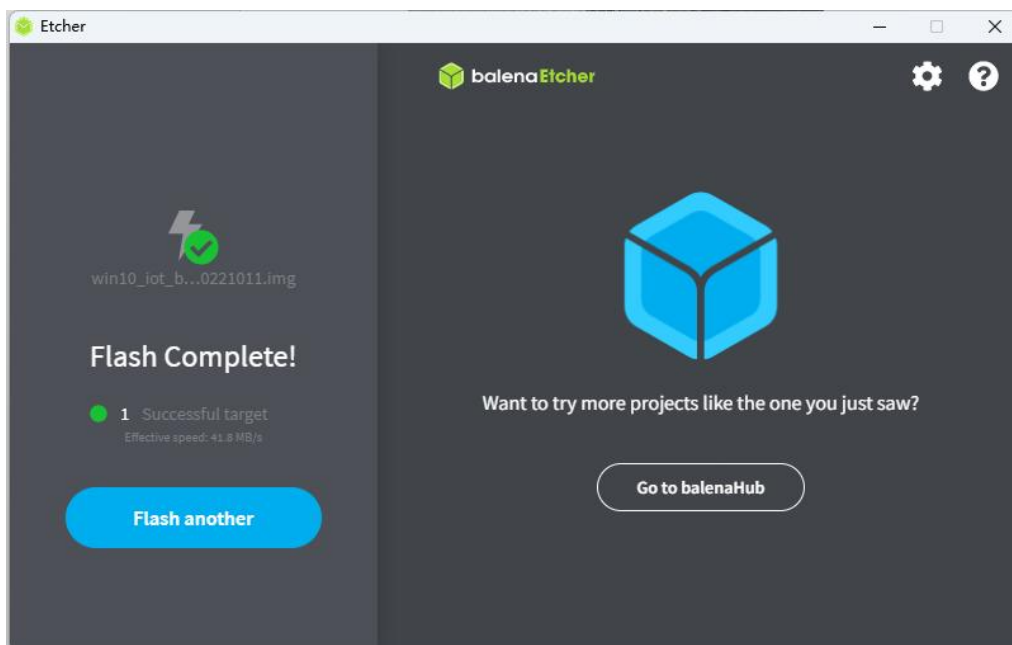Figure 9

When prompt Flash Complete! It means that the system has been successfully burned into the Micro SD Card.

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5. Make sure DEBIX is powered off, set the DIP switch to **10** (eMMC mode), and insert the Micro SD Card.
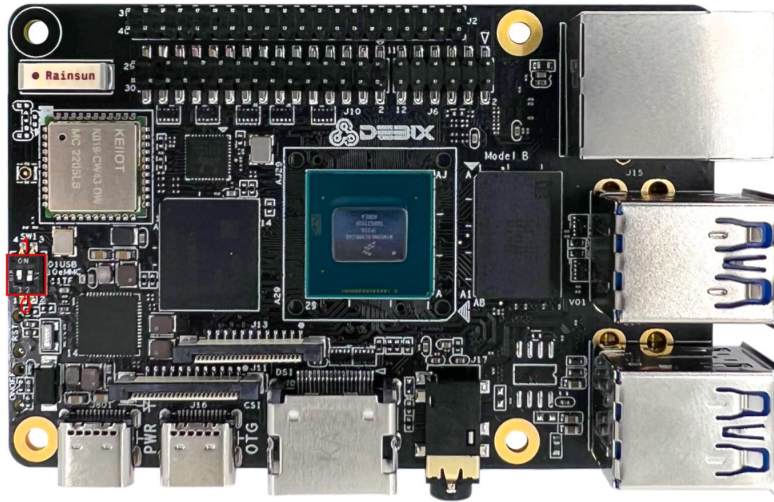
Figure 10

6. Connect the power supply and wait for the system to be installed automatically. Do not power off during the installation process.
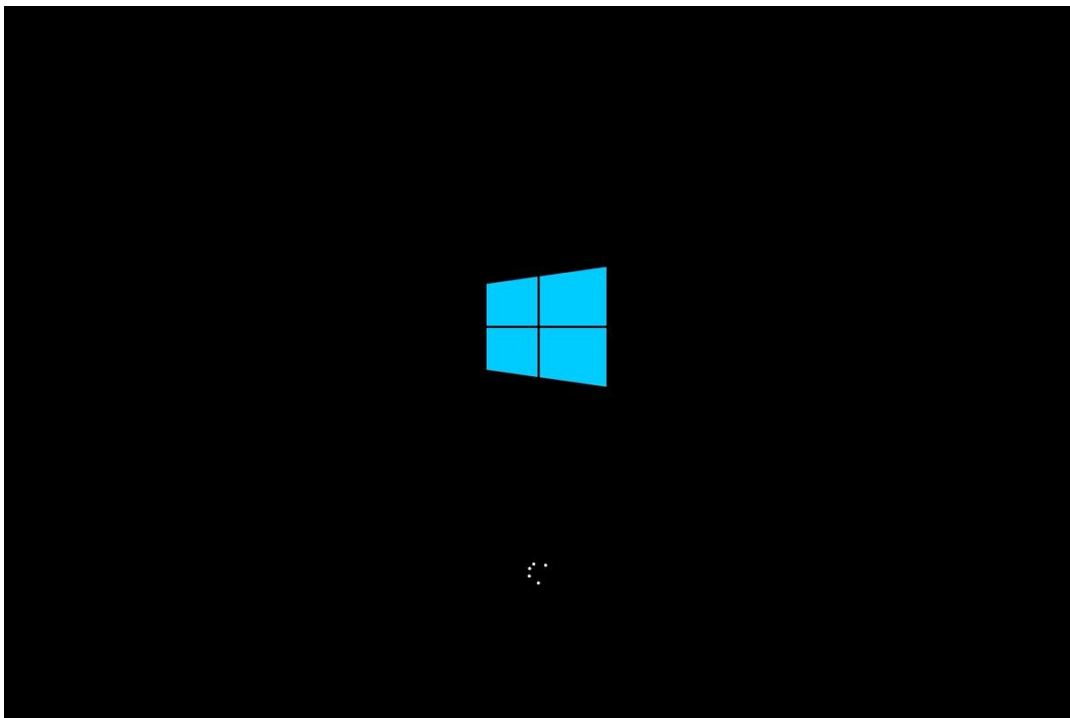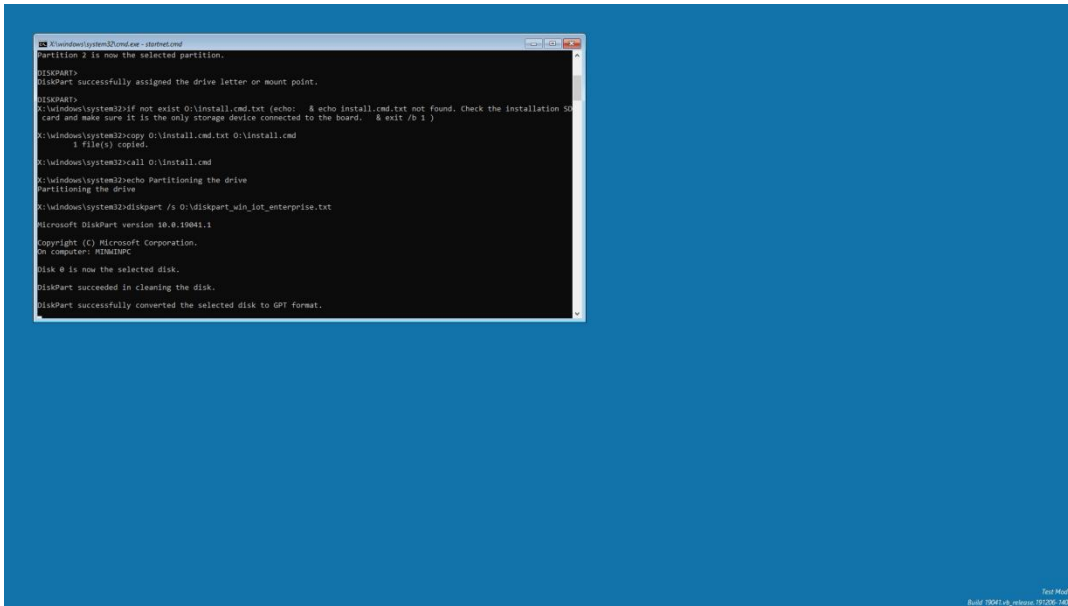

Figure 11

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Figure 12

7. After the system is automatically installed, DEBIX will automatically restart and enter the WindowsToGo page, and wait for the system to load after making settings according to your region and other conditions.
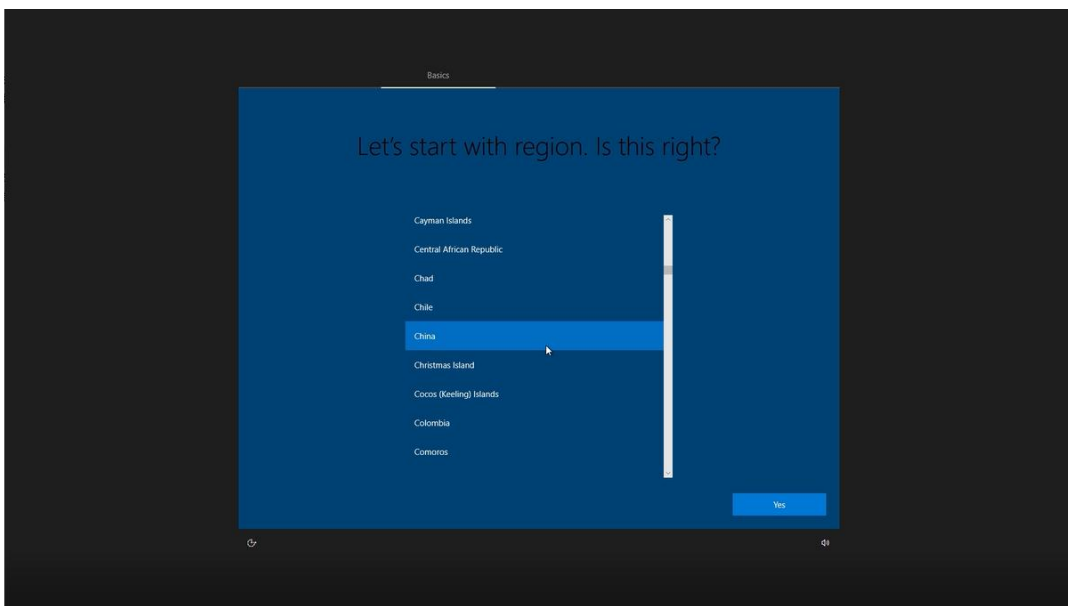

Figure 13

8. After the system is loaded, it can be used as normal. The desktop we see below is the familiar Windows 10 interface.
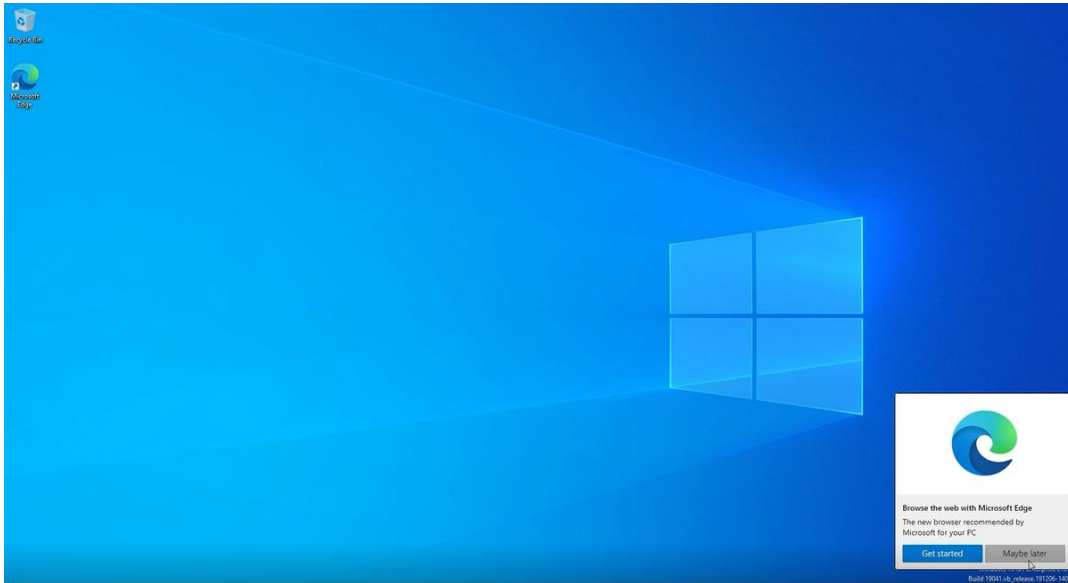
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Figure 14

2.2.2. Flash on DEBIX SOM A IO Board

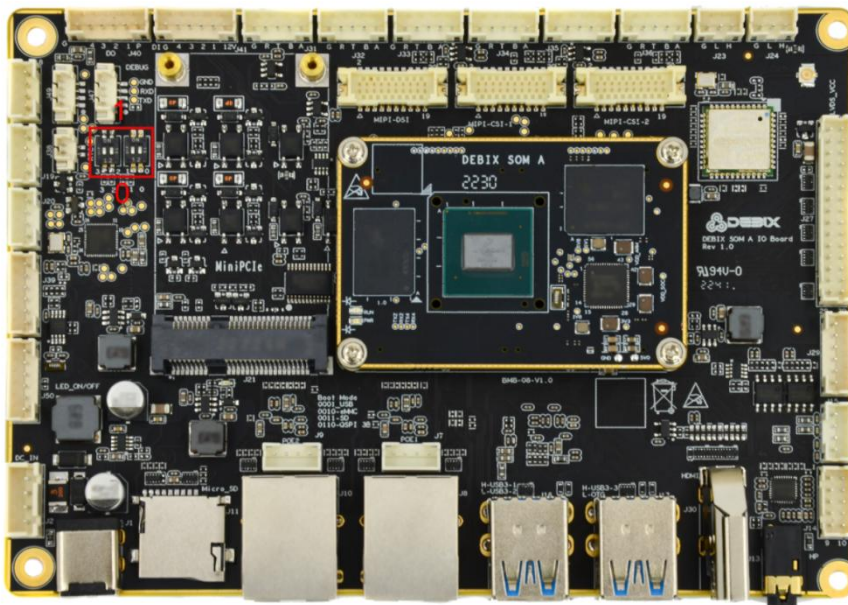1. Turn the DIP switch of the DEBIX SOM A IO Board to **0001** (USB mode).

Figure 15

2. Prepare a male to male USB cable to connect PC with USB-OTG port highlighted on the board below.
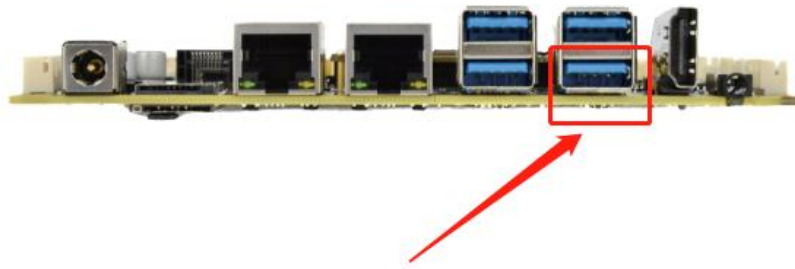
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Figure 16

3. **Burn firmware to eMMC**: On a win10 PC, open WindowsPowerShell in administrator mode.

● Type the command to enter the firmware folder

cd E:\NXP\i.MX8XX\i.MX8MP\Debix\Debix_Windows10-IOT\win10_Iot\firmware

Figure 17

● Enter flash command to start burning

.\flash_bootloader.cmd /device MX8M_PLUS_EVK /secure 0

Figure 18

4. **Burn img file**: Start Etcher, insert the Micro SD Card, select the img file to be installed and the corresponding disk of Micro SD Card. If there is a prompt as shown in the figure below, click Continue, then click Flash, and wait for the burning to end. When prompt Flash Complete! It means that the system has been successfully burned into the Micro SD Card.

5. Make sure the motherboard is powered off, set the DIP switch to 0010 (eMMC mode), and insert the Micro SD Card.
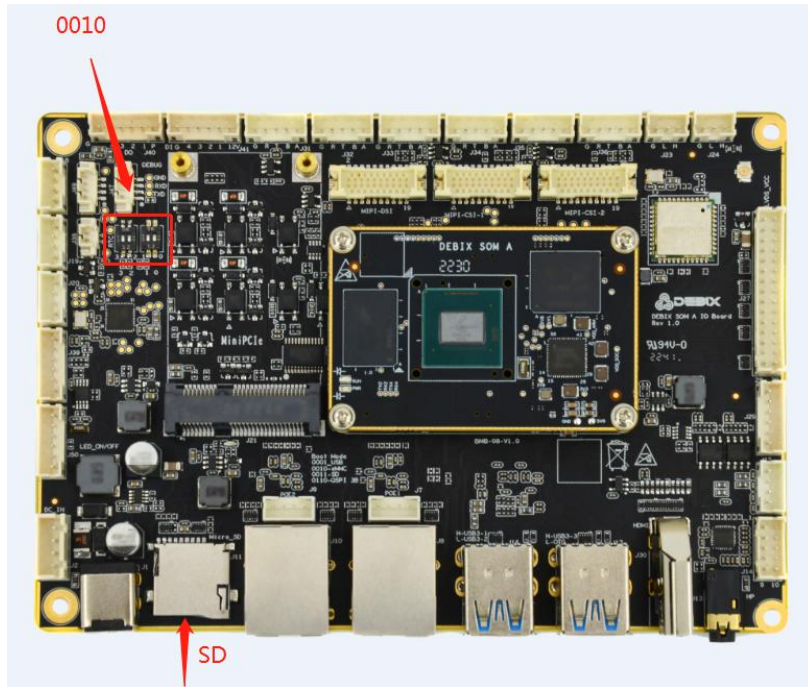
Figure 19

6. Connect the power supply and wait for the system to be installed automatically. Do not cut off the power during the installation process.
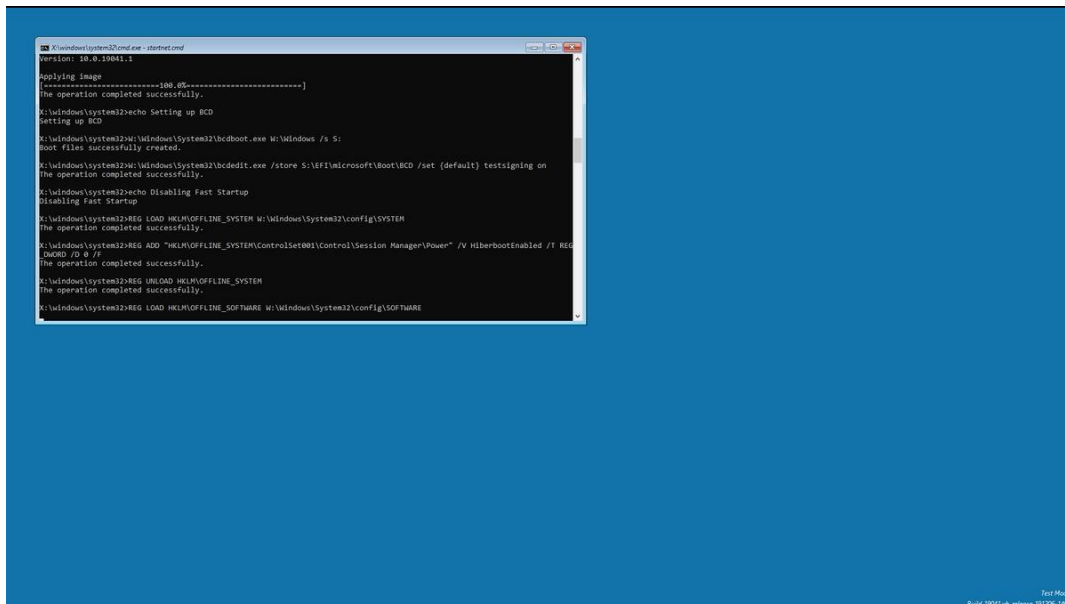

Figure 20

7. After the system is automatically installed, DEBIX will automatically restart and enter the WindowsToGo page, and wait for the system to load after making settings according to your region and other conditions.
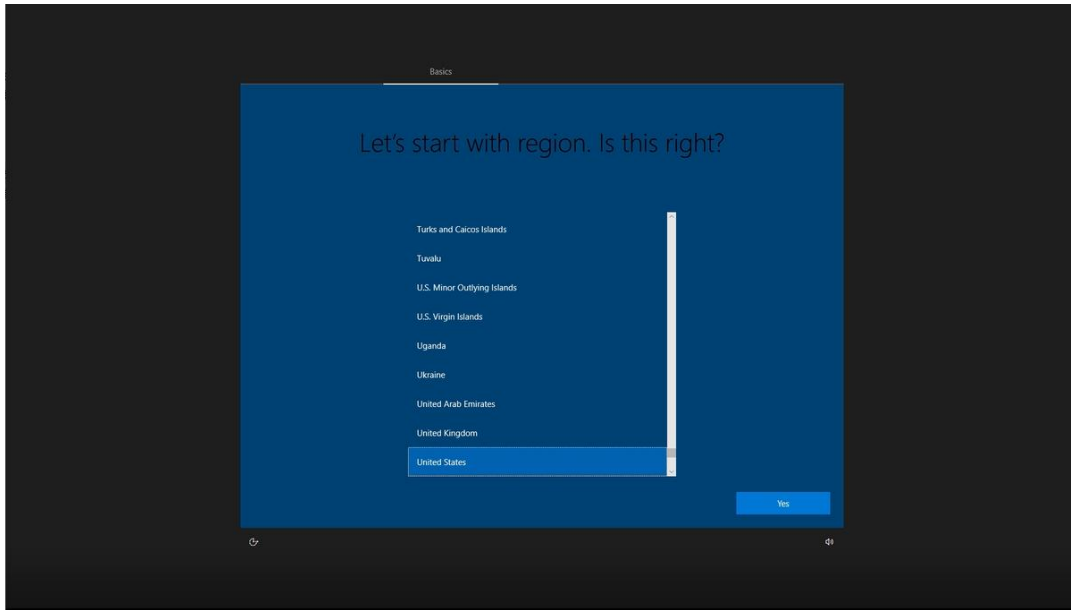
Figure 21

8. After the system is loaded, it can be used as normal. The desktop we see below is the familiar Windows 10 interface.

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Chapter 3 Functions Supported on Windows 10 IoT Enterprise

Currently, Windows 10 IoT Enterprise has been adapted to some interface functions of DEBIX Model A and DEBIX SOM A IO Board.

Important: When used with USB, the size of SDRAM is limited to 6GB due to USB host controller issues.

The supported functions are as follows:

Function	DEBIX Model A	DEBIX SOM A IO Board
OS	Windows 10 IoT Enterprise LTSC 21H2	
Power input	DC 5V	DC 12V
USB	1) 4x USB3.0 Host Type-A 2) 1x USB2.0 OTG Type-C	1) 4x USB3.0 Host Type-A 2) 3x USB2.0
Storage	Micro SD Card	
Ethernet	1) 1 x Ethernet 2) 1 x pin header (without network transformer)	2 x Gigabit Ethernet
LVDS	1x LVDS, support 1280 x 800	
HDMI	1x HDMI, support 1920 x 1080, 1366 x 768@60, 1024 x 768@60. Support the option of rotated modes and enlarges modes.	
MIPI DSI	1x MIPI DSI, support 1920 x 1080	
MIPI CSI	1x MIPI CSI	
Audio	-	Support left and right speaker SPK
Wi-Fi & Bluetooth	-	
Key	1) 1 x Reset key 2) 1 x ON/OFF key	1 x ON/OFF key

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Other I/O	SPI/GPIO/I2C/CAN/PWM/UART **Note:** DMA mode is available in UART

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