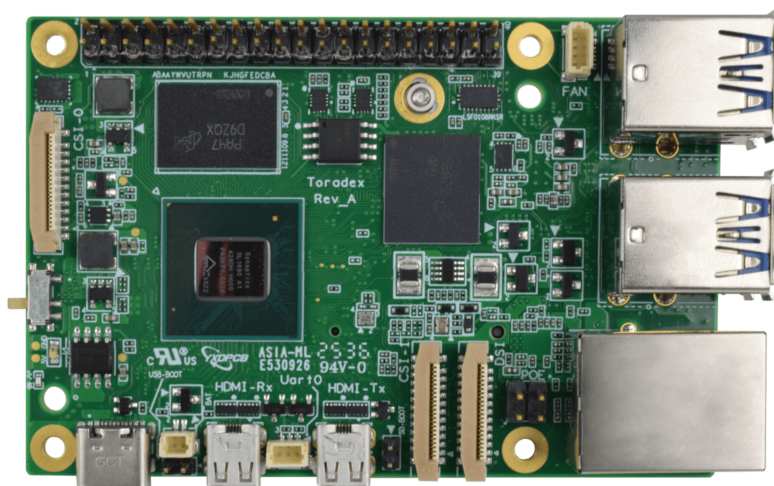


Luna SL1680 SBC

Getting Started



Revision History

Document Revisions

Date	Doc. Revision	Product Version	Changes
22-Dec-2025	Rev. 0.1	V1.0	Initial release
19-Mar-2026	Rev. 0.2	V1.0	Section 4.2: update download link for SYNAIMG
23-Mar-2026	Rev. 0.3	V1.0	Section 4.2: changed references to the product page from Toradex Labs to the Toradex main website

Contents

1	Introduction	5
2	Prerequisites	6
2.1	Hardware	6
2.2	Software	6
3	Hardware Setup	7
3.1	Connect the Cables	7
3.2	Connect Power Supply	8
4	Flash Torizon OS	10
4.1	Prepare the Board	10
4.2	Flash the Image	10
5	Getting Started with Torizon Cloud	11
5.1	Pair the Device	11
5.2	Deploy a Demo Application	11
5.3	Remote Access	12
6	Develop Applications with Torizon IDE Extension	13
6.1	Application Development Workflow	13
7	Support	14
8	Appendix	15

List of Tables

1	HDMI - Compatible Resolutions	15
2	Non-HDMI Resolutions	15

List of Figures

1	HDMI connection	7
2	Ethernet connection	7
3	USB connection	8
4	USB-C connection	8
5	Torizon OS Easy Pairing	9
6	USB BOOT location	10
7	USB BOOT jumper	10
8	Torizon OS Easy Pairing - Entering the Code	11

1 Introduction

The [Toradex Luna SL1680 SBC](#)¹ is a next-generation Single Board Computer (SBC) designed for mass production, targeting commercial and light industrial applications. Powered by the **Synaptics SL1680** processor family, it is optimized for integration into end products and offers a compelling balance of price, performance, and reliability, with built-in AI capabilities and Torizon support.

By the end of this guide, you will be able to:

- Set up the Luna SL1680 SBC hardware components.
- Flash the Torizon OS.
- Access the board remotely via SSH.
- Deploy your first containerized application using the Torizon IDE Extension.

¹<https://www.toradex.com/single-board-computers/luna-sl1680/>

2 Prerequisites

2.1 Hardware

- **Module:** Toradex Luna SL1680 SBC.
- **Power Supply:** USB-C (5V/5A recommended).
- **Cables:**
 - USB-C to USB-A cable (for data/flashing).
 - Ethernet cable.
 - Micro-HDMI cable (*optional*).
- **Peripherals:** HDMI display screen/monitor, keyboard, and mouse (*optional*).
- **Storage:** micro-SD card (*optional*).
- **Optional:** External peripherals (cameras via MIPI-CSI or USB, sensors via GPIO).

2.2 Software

- [Torizon IDE Extension²](#) for VS Code installed.
- A [Torizon Cloud³](#) account.
- (*Optional*) Docker, if testing locally.

²<https://developer.toradex.com/torizon/application-development/ide-extension/>

³<https://app.torizon.io/>

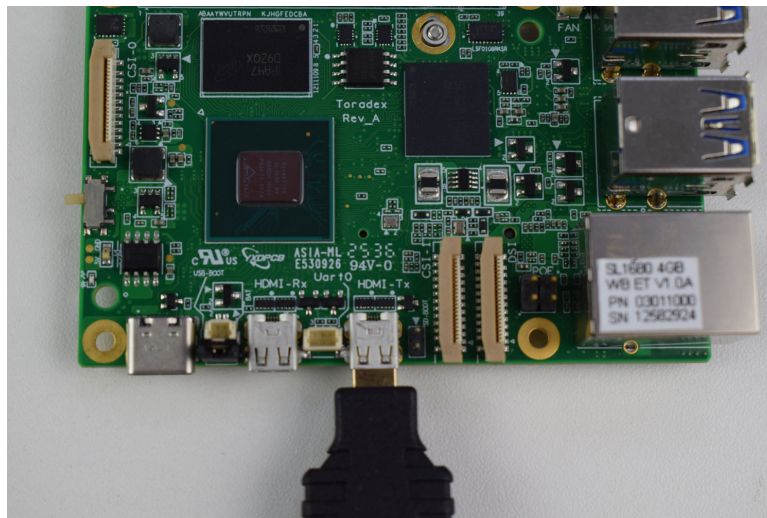
3 Hardware Setup

Follow these steps to properly set up the hardware for your Luna SL1680 SBC.

3.1 Connect the Cables

- Plug the **Micro-HDMI cable** into the **HDMI Tx** port on your board and the output to your monitor. Refer to [Table 1](#) for supported resolutions.

Figure 1: HDMI connection



- Connect the **Ethernet cable** to the jack for network access.

Figure 2: Ethernet connection



- (Optional) Connect a USB keyboard/mouse to the **USB 3.0 Type-A** ports.

Figure 3: USB connection



3.2 Connect Power Supply

- Connect the USB-C power supply to the **USB-C Power/GCT** port. The **Power LED** should illuminate, indicating that the board is powered.

Figure 4: USB-C connection



The Toradex Luna SL1680 SBC will be shipped either with a fresh eMMC or with the eMMC containing the Torizon OS pre-installed, in some cases. If Torizon OS is pre-installed on your board, you should see the following screen in the connected display and can proceed to [Section 5](#):

Figure 5: Torizon OS Easy Pairing



If Torizon OS is not pre-installed on your board, you will need to manually flash it. Follow the steps available on [Section 4](#).

4 Flash Torizon OS

4.1 Prepare the Board

1. Insert a jumper in the USB_BOOT Connector pins.

Figure 6: USB BOOT location

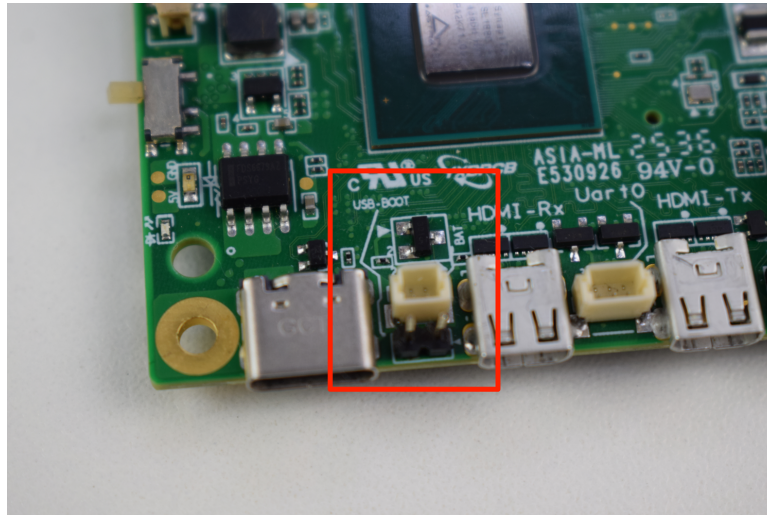
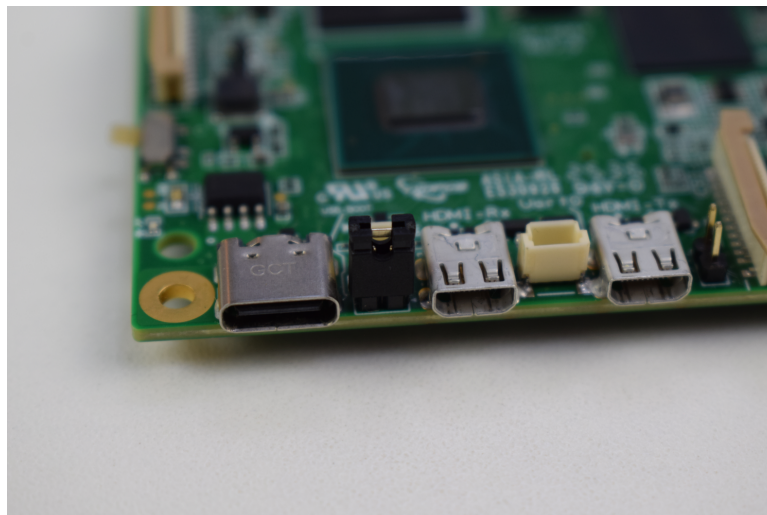


Figure 7: USB BOOT jumper



2. Connect one end of a USB-C cable into the GCT connector on the Luna board and the other end into the host computer.
3. Turn on the board.

4.2 Flash the Image

1. Download the SYNAIMG.tar.gz image from the [Toradex Artifactory repository](https://artifacts.toradex.com/artifactory/common-torizon-oneshot-frankfurt/luna-sl1680-common-torizon-easy-pairing-7.5.0-2.1.0/luna-sl1680-common-torizon-easy-pairing-7.5.0-2.1.0.zip)⁴.
2. Extract the .tar.gz and navigate to the SYNAIMG-flash/ folder.
3. Run the flash-image.sh script to flash the image directly to the board.

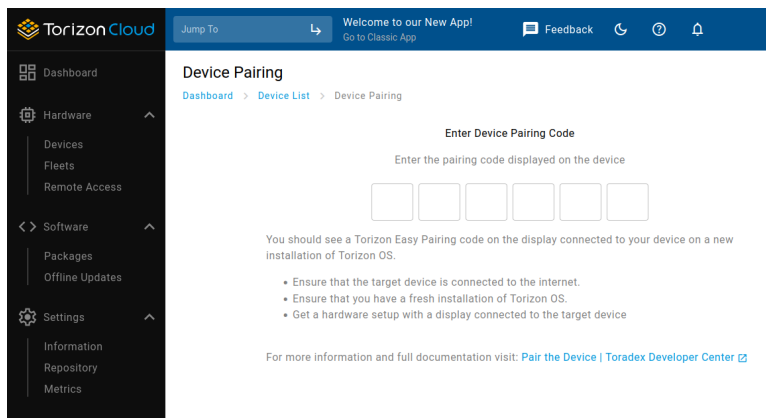
⁴<https://artifacts.toradex.com/artifactory/common-torizon-oneshot-frankfurt/luna-sl1680-common-torizon-easy-pairing-7.5.0-2.1.0/luna-sl1680-common-torizon-easy-pairing-7.5.0-2.1.0.zip>

5 Getting Started with Torizon Cloud

5.1 Pair the Device

1. Power up the device. Upon first boot, you should see the Torizon Easy Pairing screen in the connected display as shown in [Figure 5](#).
2. Access your [Torizon Cloud](#)⁵ account.
3. Go to [pair.torizon.io](#) and type the code from the Torizon OS Easy Pairing screen.

Figure 8: Torizon OS Easy Pairing - Entering the Code



4. Confirm the pairing completion. If the provisioning process is successful, you will see a screen with the message "Device paired successfully".

You can now use all the Torizon Cloud features on your Luna SL1680 board!

5.2 Deploy a Demo Application

As an example, you are going to install the Qt6 example applications on your device.

1. Go to the [Qt6 Demo Gallery](#)⁶ on the Torizon webpage.
2. Under the "Synaptics SL1680" column, click "Deploy" for the Luna > Qt6 Community package.
3. Click the **Install this version** button.
4. Deploy the application package to the target device. Select the target device and click on the **Initiate update** button.
5. Follow the steps to start the update.
6. After the update is complete, Weston will start running on your device automatically, and you should see the Qt6 demo applications on the display.

⁵<https://app.torizon.io/>

⁶<https://www.torizon.io/qt-demo-applications/>

5.3 Remote Access

After the Torizon OS initializes, the Luna SL1680 SBC supports remote access via SSH over the local network and integration with Torizon Cloud via the internet.

Follow the instructions available at:

- **SSH:** <https://developer.toradex.com/software/development-resources/ssh/#establishing-an-ssh-connection>
- **Torizon Cloud:** <https://developer.toradex.com/torizon/torizon-platform/remote-access/>



Default Credentials

Note that the default password for the user torizon is torizon. You will be prompted to change it on the first login.

6 Develop Applications with Torizon IDE Extension

The easiest way to build applications for the Luna SL1680 SBC is using the [Torizon IDE Extension](#)⁷ for Visual Studio Code. We provide an extensive and detailed walkthrough to use the Torizon IDE Extension through the [Toradex Developer Center](#)⁸.

6.1 Application Development Workflow

1. **Set up the Torizon IDE Extension Environment:** <https://developer.toradex.com/torizon/application-development/ide-extension/set-up-the-ide-ext2-environment/>
2. **Create a Torizon Project:** <https://developer.toradex.com/torizon/application-development/ide-extension/create-torizon-project/>
3. **Connect a Target Device:** <https://developer.toradex.com/torizon/application-development/ide-extension/connect-a-torizoncore-target-device/>
4. **Remote Debug and Deploy Projects:** <https://developer.toradex.com/torizon/application-development/ide-extension/remote-debug-and-deploy-projects/>

⁷<https://developer.toradex.com/torizon/application-development/ide-extension/>

⁸<https://developer.toradex.com/>

7 Support

Having trouble? Please contact our technical support. Various options of technical support are mentioned below:

- **Technical Support Channels:** <https://www.toradex.com/support/>
- **Toradex Community:** <https://community.toradex.com/>

8 Appendix

Table 1: HDMI - Compatible Resolutions

Mode	Resolution	Refresh	Scan	Pixel Clock	Notes
720p50	1280x720	50 Hz	Progressive	74250	HDMI CEA
720p60	1280x720	60 Hz	Progressive	74250	HDMI CEA
720p59.94	1280x720	59.94 Hz	Progressive	74176	HDMI CEA
1080i50	1920x1080	50 Hz	Interlaced	74250	HDMI CEA
1080i60	1920x1080	60 Hz	Interlaced	74250	HDMI CEA
1080i59.94	1920x1080	59.94 Hz	Interlaced	74176	HDMI CEA
1080p24	1920x1080	24 Hz	Progressive	74250	HDMI CEA
1080p23.976	1920x1080	23.976 Hz	Progressive	74176	HDMI CEA
1080p25	1920x1080	25 Hz	Progressive	74250	HDMI CEA
1080p30	1920x1080	30 Hz	Progressive	74250	HDMI CEA
1080p29.97	1920x1080	29.97 Hz	Progressive	74176	HDMI CEA
1080p50	1920x1080	50 Hz	Progressive	148500	HDMI CEA
1080p60	1920x1080	60 Hz	Progressive	148500	HDMI CEA
1080p59.94	1920x1080	59.94 Hz	Progressive	148352	HDMI CEA
4K30 (3840x2160)	3840x2160	30 Hz	Progressive	297000	HDMI 2.0
4K29.97	3840x2160	29.97 Hz	Progressive	296703	HDMI 2.0
4K25	3840x2160	25 Hz	Progressive	297000	HDMI 2.0
4K24	3840x2160	24 Hz	Progressive	297000	HDMI 2.0
4K23.976	3840x2160	23.976 Hz	Progressive	296703	HDMI 2.0
4K60 (4:2:0)	3840x2160	60 Hz	Progressive	594000	HDMI 2.0 (YCbCr 4:2:0)
4K59.94 (4:2:0)	3840x2160	59.94 Hz	Progressive	593407	HDMI CEA
4K50 (4:2:0)	3840x2160	50 Hz	Progressive	594000	HDMI CEA

Table 2: Non-HDMI Resolutions

Mode	Resolution	Refresh	Scan	Pixel Clock	Notes
NTSC_M / NTSC_J	720x480	59.94i	Interlaced	27000	Analog SDTV
PAL_M / PAL_BG	720x576	50i	Interlaced	27000	Analog SDTV
525i60 / 525i59.94	720x480	59-60i	Interlaced	27000-27027	Internal SD formats
VGA_480P60	640x480	60p	Progressive	25200	VGA timing
VGA_480P59.94	640x480	59.94p	Progressive	25175	VGA timing
LVDS_1080P48/50/60	1920x1080	Various	Progressive	148470-148500	LVDS panel-specific
LVDS 3D Modes	1920x540 / 960x1080	48-120 Hz	Progressive	74250-148500	Panel interface only
720p100/120 3D	1280x720	100-120p	Progressive	148500	Internal 3D formats
1080p 3D variants	1920x1080	48-60p	Progressive	148500	Internal 3D formats (non-CEA)
Frame-packing modes (*_FP)	1920x2228	N/A	FP	148500	Not a display mode

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