ASUS Tinker Edge R Single Board Computer

ASUS Tinker Edge R Single Board Computer User Guide

Contents

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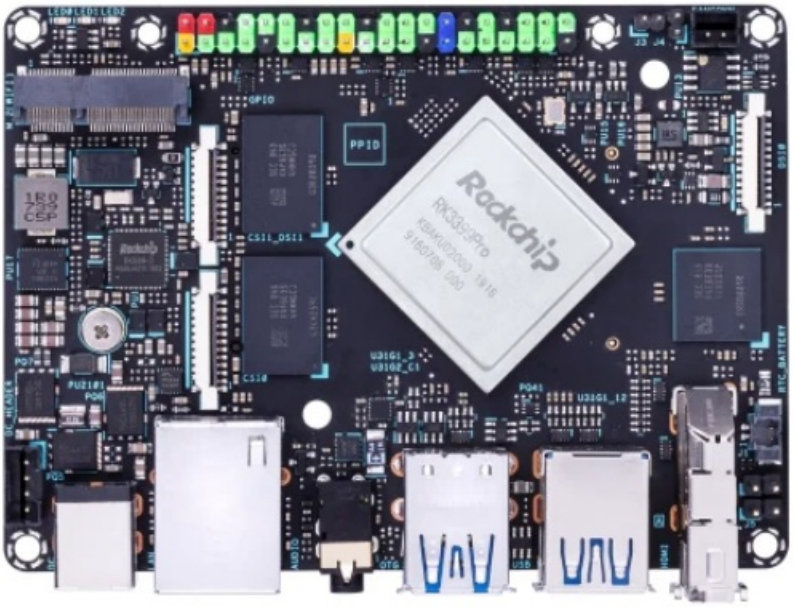


ASUS Tinker Edge R
Innovatively enjoy a whole new digital experience E16030 First Edition February 2020

Thank you for purchasing ASUS Tinker Edge R! Tinker Edge R is more than a dream for the DIY-obsessed: it's a gateway to new ideas and new relationships. Experienced makers will love Tinker Edge R's performance-to-price ratio and strong brand heritage, while novices and younger users will appreciate its accessibility and ease of use. But all will come together to create — Together We Make!

Package Contents

- 1 x Tinker Edge R
- 2 x Wi-Fi/BT antenna cable
- 1 x Standoff set (4 x Screw + 4 x Hex)
- 2 x Camera MIPI Convert cable (22P to 15P)
- 1 x Shielding bag
- 1 x Quick Start guide

Safety Information
15060-88970000

ASUS TINKER EDGE R Specifications Summary

SoC	CPU	GPU	NN Processor	Display	Memory Size	Storage	Connectivity	Expansions	Audio	USB	Camera Interface	Internal Headers	Power Connector (up to 65 W)	OS Support	Dimension
Rockchip RK3399Pro						16GB eMMC Micro SD(TF) card slot (push/pull)								Debian 9 / Android 8.1	

Getting Started
Windows Driver Installation

1. Find the DriverAssistant zip package in the provided directory.
2. Unzip the package and execute DriverInstall.exe to install the driver.

Entering MASKROM Mode

1. Ensure the Tinker Edge R is powered off.
2. Use a metal object or a jumper cap to short-circuit the Recovery header (J3) on the board.
3. Keep the Recovery header shorted and power on the board.
4. The board should automatically boot into MASKROM mode for download.

Please refer to the Top View illustration for the location of the Recovery header (J3).

Flashing the OS Image

1. Download the OS image from the Tinker Edge R website and unzip the image files.
2. Ensure the Recovery header (J3) is no longer being shorted.
3. Run the flash script flash.cmd for Windows or flash.sh for Linux to start the flash process.
4. The flash process should take a few minutes.
5. Once the flash is completed, you can reboot the Tinker Edge R and it should boot to the OS.

For more details, please refer to the readme file in the unzipped folder.

Notices
Federal Communications Commission Interference Statement: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

RF exposure warning:
This equipment must be installed and operated in accordance with provided instructions. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

End Product Labeling:
This transmitter module is authorized only for use in devices where the antenna may be installed such that 20cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: Contains FCC ID: TX2 RTL8822CE and Contains IC: 6317A-RTL8822CE

FAQ

Q: Where can I find the Tinker Edge R driver for Windows?
A: The Tinker Edge R driver for Windows can be found in the DriverAssistant zip package in the provided directory.

Q: How do I enter MASKROM mode for download?
A: To enter MASKROM mode, power off the Tinker Edge R, short-circuit the Recovery header (J3) using a metal

object or jumper cap, and then power on the board. The board should automatically boot into MASKROM mode.

Q: How do I flash the OS image onto the Tinker Edge R?
A: To flash the OS image, download the image files from the Tinker Edge R website, unzip them, ensure the Recovery header (J3) is no longer being shorted, and run the appropriate flash script (flash.cmd for Windows or flash.sh for Linux). The flash process should take a few minutes, and once completed, you can reboot the Tinker Edge R to boot into the OS.

Innovatively enjoy a whole new digital experience

Thank you for purchasing the ASUS Tinker Edge R!
Tinker Edge R is more than a dream for the DIY-obsessed: it's a gateway to new ideas and new relationships. Experienced makers will love Tinker Edge R's performance-to-price ratio and strong brand heritage, while novices and younger users will appreciate its accessibility and ease of use. But all will come together to create — Together We Make!

Package contents

Check your Tinker Edge R package for the following items:

- 1 x Tinker Edge R
- 2 x Wi-Fi/BT antenna cable
- 1 x Standoff set (4 x Screw + 4 x Hex)
- 2 x Camera MIPI Convert cable (22P to 15P)
- 1 x Shielding bag
- 1 x Quick start guide

Safety Information

- The power supply used with the Tinker Edge R shall comply with relevant regulations and applicable standards.
- DO NOT overclock the board, as this may cause damage to the board.
- Ensure that the board is placed in a well-ventilated environment.
- The board should be placed on a flat, stable, non-conductive surface.
- Avoid handling the board while powered. Handle the board by the edges to minimize risk of Electronic Static Damage (ESD).

specifications summary

SoC	Rockchip RK3399Pro
CPU	Dual-core Arm® Cortex®-A72 @ 1.8 GHz Quad-core Arm® Cortex®-A53 @ 1.4 GHz* * **The CPU will operate at full capacity, take note of heat dissipation and AC adaptor stability.**
GPU	Arm® Mali™-T860 MP4 GPU @ 800 MHz
NN Processor	Rockchip NPU
Display	1 x HDMI™ with CEC hardware ready 1 x USB Type-C® (DP) 1 x 22-pin MIPI DSI (4 lane) supports up to FHD
Memory Size	Dual-CH LPDDR4 4GB (SYSTEM) + LPDDR3 2GB (NPU)
Storage	16GB eMMC Micro SD(TF) card slot (push/pull)
Connectivity	RTL8211F-CG Gb LAN M.2 - 802.11 a/b/g/n/ac wireless & BT 5.0 (2T2R)
Expansions	1 x Mini PCIe slot (Full-Length, nano-SIM socket, for 4G/LTE)
Audio	1 x 3.5mm audio jack (with Mic) * **Supports audio jack plug-in detection**
USB	3 x USB 3.2 Gen 1 Type-A 1 x USB 3.2 Gen 1 Type-C™ OTG
Camera Interface	1 x 22-pin MIPI CSI-2 (4 lane) 1 x 22-pin MIPI CSI-2/DSI (4 lane)
Internal Headers	1 x 40-pin headers includes: - up to 28 x GPIO pins - up to 2 x SPI bus - up to 2 x I2C bus - up to 2 x UART - up to 3 x PWM - up to 1 x PCM/I2S - up to 1 x S/PDIF TX - 2 x 5V power pins - 2 x 3.3V power pins - 8 x ground pins 1 x 2-pin Recovery header 1 x 2-pin Power-on header 1 x 2-pin Reset header 1 x 2-pin DC Fan header 1 x 2-pin RTC Battery header 1 x 2-pin NPU UART header
Power Connector (up to 65W)	1 x 12~19V DC Power Input 1 x 12~19V 4-pin DC Power Input Header
OS Support	Debian 9 / Anroid 8.1
Dimension	3.9" x 2.8" (100 x 72 mm)

Getting Started

Requirements

- 1 x USB Type-C® cable with data transfer function (to connect your PC to the board's data port)
- 1 x 12~19V Power supply*
- 1 x Monitor with HDMI™ cable or USB Type-C® (DP) cable
- 1 x Keyboard and Mouse set

* The Power Supply is purchased separately.

Before you begin the flashing procedure, please ensure of the following:

- The board is completely powered off, and the power cord and cables connecting the board to your computer are all disconnected.
- Make sure the driver is installed if the host computer is equipped with Windows.

For Windows, you can find the DriverAssitant zip package in this directory. Please unzip it and execute DriverInstall.exe to install the driver.

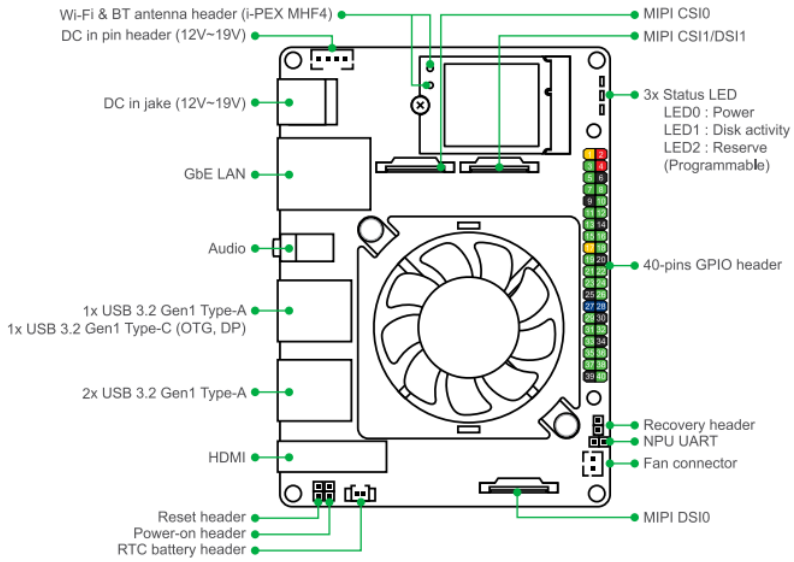
Initiating Recovery Mode

1. Connect the USB Type-C cable to the USB Type-C ports on the Tinker Edge R and your host computer.
2. Use a metal object or a jumper cap to short-circuit the Recovery header (J3), and keep it shorted until the Tinker Edge R is powered on.
   Please refer to the Top View illustration for the location of the Recovery header (J3).
3. Power on the board, and you should automatically be booted into the MASKROM mode for download.
    1. Please note that you will only be booted into MASKROM mode when booting up the Tinker Edge R whilst the Recovery header is being shorted. Please refer to steps 2 and 3 mentioned above.
    2. Please refer to the readme file in the unzipped folder for more details.

Executing the flash script

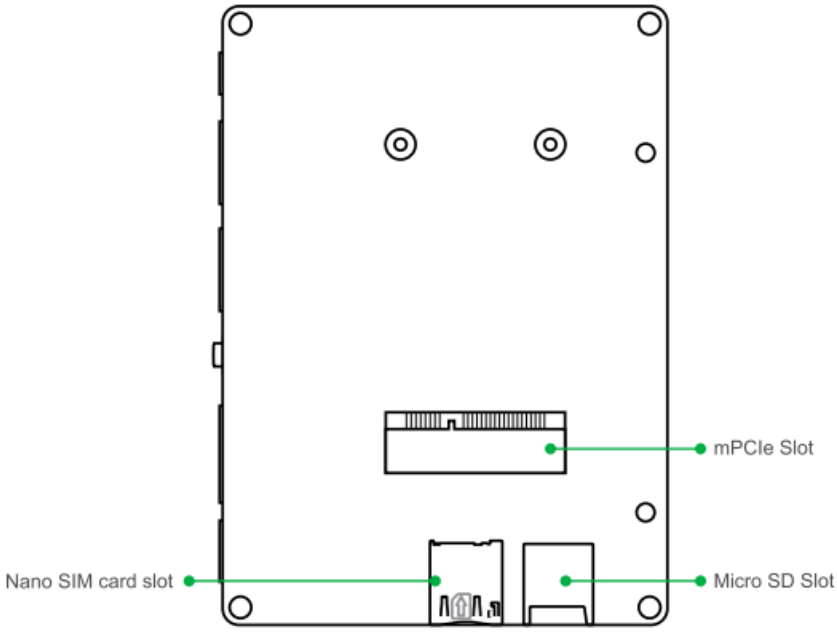
1. Download the OS image from the Tinker Edge R website, then unzip the image files.
2. Make sure Recovery header (J3) is no longer being shorted.
3. Run the flash script flash.cmd for Windows or flash.sh for Linux to start the flash process. The flash process should take a few minutes. Once the flash is completed, you can reboot the Tinker Edge R and you should be booted to the OS.

Top view



1	VCC3.3V_IO	2	VCC5V
3	GPIO2_B1/I2C6_SDA	4	VCC5V
5	GPIO2_B2/I2C6_SCL	6	GND
7	GPIO2_D1/CLKOUT	8	GPIO2_C1/UART0_TX
9	GND	10	GPIO2_C0/UART0_RX
11	GPIO2_C3/UART0_RTSN	12	GPIO3_D0/I2S0_SCLK
13	GPIO2_C5/SPI5_TXD	14	GND
15	GPIO2_C4/SPI5_RXD	16	GPIO2_C6/SPI5_CLK
17	VCC3.3_IO	18	GPIO2_C7/SPI5_CSN0
19	GPIO1_B0/SPI1_TXD/UART4_TX	20	GND
21	GPIO1_A7/SPI1_RXD/UART4_RX	22	GPIO3_D4/I2S0_SDI1SDO3
23	GPIO1_B1/SPI1_CLK	24	GPIO1_B2/SPI1_CSN0
25	GND	26	GPIO0_A6/PWM3A_IR
27	GPIO2_A7/I2C7_SDA	28	GPIO2_B0/I2C7_SCL
29	GPIO3_D6/I2S0_SDI3SDO1	30	GND
31	GPIO3_D5/I2S0_SDI2SDO2	32	GPIO4_C2/PWM0
33	GPIO4_C6/PWM1	34	GND
35	GPIO3_D1/I2S0_LRCK	36	GPIO2_C2/UART0_CTSN
37	GPIO4_C5/SPDIF_TX	38	GPIO3_D3/I2S0_SDI0
39	GND	40	GPIO3_D7/I2S0_SDO0

Bottom view



Notices

Federal Communications Commission Interference Statement
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the grantee of this device could void the user’s authority to operate the equipment.

RF exposure warning
This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

End Product Labeling
This transmitter module is authorized only for use in device where the antenna may be installed such that 20cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following:
Contains FCC ID: TX2-RTL8822CE and Contains IC: 6317A-RTL8822CE

Regional notice for Singapore

Complies with
IMDA Standards
DB103778
This ASUS product complies with IMDA Standards.

Compliance Statement of Innovation, Science and Economic Development Canada (ISED)
This device complies with Innovation, Science and Economic Development Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1. this device may not cause interference, and
2. this device must accept any interference, including interference that may cause undesired operation of the device. CAN ICES-3(B)/NMB-3(B)

Radio Frequency (RF) Exposure Information
The radiated output power of the Wireless Device is below the Industry Canada (IC) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized. This device has also been evaluated and shown compliant with the IC RF Exposure limits under mobile exposure conditions. (antennas are greater than 20cm from a person's body).

Maximum Radio-Frequency Output Table

Function	Frequency	Maximum Output Power (EIRP)
WiFi	2412 - 2472 MHz	19 dBm
	5150 - 5350 MHz	21 dBm
	5470 - 5725 MHz	22 dBm
Bluetooth	2402 - 2480 MHz	8 dBm

Simplified EU Declaration of Conformity
ASUSTek Computer Inc. hereby declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. Full text of EU declaration of conformity is available at **https://www.asus.com/support/**

FCC COMPLIANCE INFORMATION
Per FCC Part 2 Section 2.1077

- Responsible Party: Asus Computer International
- Address: 48720 Kato Rd, Fremont, CA 94538
- Phone/Fax No: (510)739-3777/(510)608-4555

hereby declares that the product

- Product Name: MOTHERBOARD
- Model Number: TINKER EDGE R

compliance statement:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

Documents / Resources

	ASUS Tinker Edge R Single Board Computer [pdf] User Guide Tinker Edge R Single Board Computer, Tinker Edge R, Single Board Computer, Board Computer, Computer

References

- Official Support | ASUS Global
- Félicitations ! Votre domaine a bien été créé chez OVHcloud !
- Manual-Hub.com - Free PDF manuals!
- Official Support | ASUS Global
- User Manual