Canonical

Quick start guide to RZ/G3E and RZ/G3S with classic Ubuntu images

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1. Prerequisites

1.1. Hardware

- Laptop with Ubuntu, recommended version - 24.04 (noble) or later
    - For a Windows workstation please see Windows remark
- The EVKIT, one of the following:
    - RZ/G3E [link] or RZ/G3S [link]
- USB Type-C power supply 5V (for the Renesas board)
- microUSB cable for UART (serial console of the Renesas board)
- microHDMI <> HDMI cable (optional)
- microHDMI connector board (optional)
- an HDMI-compatible monitor (optional)

2. Quick start guide for Ubuntu Classic

2.1. How to flash using Windows

If you use windows as your workstation, please refer to the Renesas RZ/G3S Quick start guide. The commands in principle are very similar, the difference being the files (see next chapter) and the flashing addresses.

2.2. Get the files

Download the files for Ubuntu Classic from https://ubuntu.com/download/renesas-iot.

The contents should look something like this, depending on if you downloaded desktop or server (equivalent list of files provided in the desktop download):

```
bootassets-rzg3s.tar.gz
bootassets-rzg3e.tar.gz
iot-renesas-rz-classic-server-2604-release-20260423-filesystem-manifest.txt
iot-renesas-rz-classic-server-2604-release-20260423.img.xz
SHA256SUMS
```

You can verify the data integrity by running

```
$ sha256sum -c SHA256SUMS
```

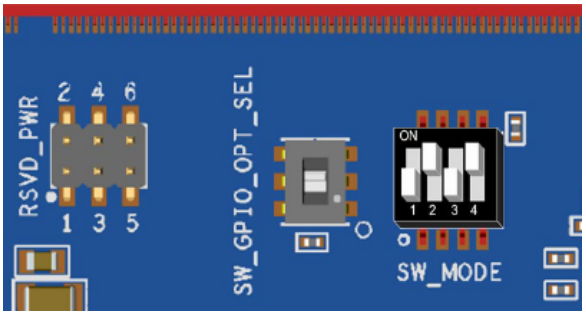
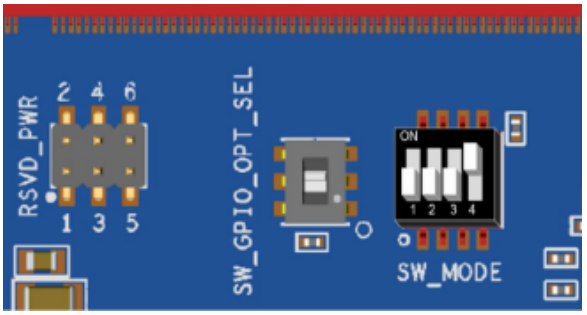
2.3. Flash the boot assets

Bootassets contain the FSBL, TF-A, u-boot and other firmware that are written into the SPI-connected flash memory of the device.

Connect the power supply to the board (USB-C) and the RZ board with the microUSB cable to your host PC. Please follow the steps below to flash the bootloader to the device:

- Configure DIP Switch “SW_MODE” for SCIF Download mode (see Tab. 2.3.1)
- Power on the device and press the red button for ~2 seconds power on the device

- You will notice that serial port will appear under /dev/ttyUSB* within your computer.
- Open a terminal window and create a serial port session with 115200 baud rate.
- Unarchive the bootassets-rzgXX.tar.gz.
- Bootassets are board-specific, make sure you're using the correct ones!

SCIF Download mode	SPI Boot mode
	

Tab 2.3.1 - RZ/G3S and RZ/G3E SW_MODE setting

- Although the filenames for each board are slightly different, they all have the same prefix: **Flash_Writer_***, **bl2_b_*** and **fip_***. We're using the G3E full filenames for reference, make sure to use the files specific to your board instead.
- Send the resulting from previous step Flash Writer program to the device with:

```
$ sudo su
$ cat Flash_Writer_SCIF_RZG3E_EVK_LPDDR4X.mot > dev/ttyUSBx
```

- Once the flash writer is sent through the serial interface, you can see it using the terminal. Then, you would need to interact with the Flash Writer to write bootloader images.
- Before writing the bootloader files, you would need to change baud rate from 115200 to 921600 with "SUP" command. Please note that you are running this command from the serial terminal. It is a command of the Flash Writer tool.

```
$ SUP
```

- As a next step, you would need to send/flash two bootloader files. Re-initiate the serial terminal with 921600 as baud-rate configuration.
- XLS2 command will be used to write the files to the SPI flash.

```
$ XLS2
```

- You would need to pass the address of the files to be written to the SPI flash. Please see the exact addresses for your board in the following tables Tab. 2.3.2 and Tab. 2.3.3
- Now, it is time to send the bootloader file `bl2_bp_spi-smarc-rzg3e.srec`.

```
$ sudo su
$ cat bl2_bp_spi-smarc-rzg3e.srec > dev/ttyUSBx
```

- We will repeat the same process for the `fip-smarc-rzg3e.srec` binary as well.
- Just type XLS2 in the terminal and enter the values from the tables 2.3.2 or 2.3.3. Finally you can transfer the file.
- Power off the device, set the bitrate back to 115200, change DIP Switches to SPI boot mode and now you can power on and see the boot logs in the terminal.

File name	Address to load to RAM	Address to save to ROM
bl2_bp_spi-smarc-rzg3e.srec	H'8003600	H'00000
fip-smarc-rzg3e.srec	H'00000	H'60000

Tab. 2.3.2 - RZ/G3E firmware addresses

File name	Address to load to RAM	Address to save to ROM
bl2_bp_spi-smarc-rzg3s.srec	H'A1E00	H'00000
fip-split1.srec	H'00000	H'60000
fip-split2.srec	H'00000	H'141000

Tab. 2.3.3 - RZ/G3S firmware addresses

! G3S has a 2-part fip.srec due to a hardware limitation. Please follow the instructions of the XLS2 command and input the values from Tab. 2.3.3.

For more details see chapters 2.1.2 - 2.1.3 from the Renesas RZ/G3S Quick start guide (need to have an account at renesas.com). Similar detailed instructions for RZ/G3E are available in the RZ/G3E Board support package, "Linux Startup guide".

2.4. Flash the image

Write the .img file on a microSD card. The easiest way to do it is with rpi-imager.

```
$ sudo snap install rpi-imager
$ unxz <image_name>.img.xz
$ sudo rpi-imager --cli --disable-verify ./<image_name>.img /dev/sdX
```

Alternatively you can just dd it:

```
$ xzcat <image_name>.img.xz | sudo dd of=/dev/to-sdcard bs=32M;sync
```

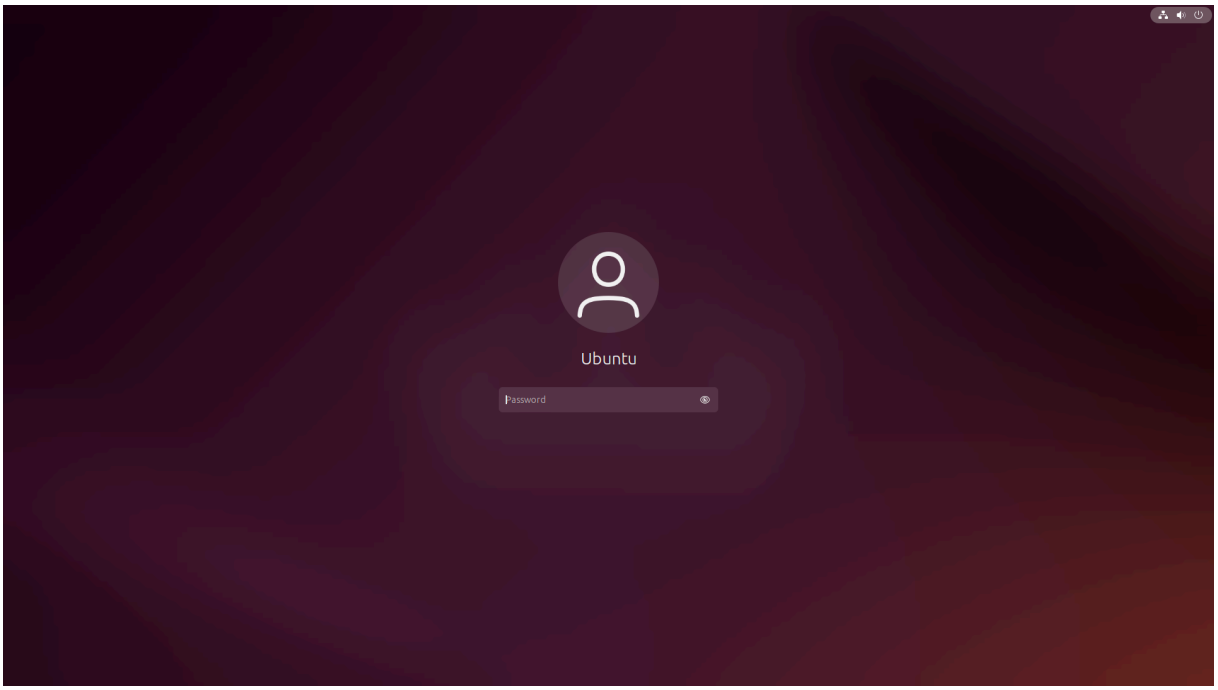
Make sure the Boot Mode is SPI boot (see Fig. 2.3.1).

Power on the board: press the “Power on” button for at least 2s. The default username/password is ubuntu/ubuntu. You will be prompted to change the password on the first boot.

You should see something like this on the HDMI monitor connected to the board:

```
Ubuntu 26.04 LTS ubuntu ttySC3

ubuntu login: ubuntu
Password:
Welcome to Ubuntu 26.04 LTS (GNU/Linux 7.0.0-9000-renesas aarch64)

 * Documentation:  https://docs.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

 System information as of Wed May 20 16:17:10 UTC 2026

  System load:  3.62              Temperature:           37.5 C
  Usage of /:   77.9% of 2.51GB   Processes:             230
  Memory usage: 9%                Users logged in:       0
  Swap usage:   0%                IPv4 address for end1: 10.42.0.103

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.

   https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

3 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status
```

Successful boot of Ubuntu Classic Server



Successful boot of Ubuntu Classic Desktop

3. Tips

3.1. Setting the MAC address

The MAC address on the EVK board cannot be read from EEPROM and will be generated by uboot on each boot anew. If this presents a problem, you can set and save the mac address in u-boot console on the first boot like so:

```
=> setenv ethaddr f6:9b:96:51:d9:ce      # for first ethernet port
=> setenv eth1addr f6:9b:96:51:d9:cd   # for the second one
=> saveenv                                        # to persist across reboots
```