

Rover Firmware Flashing Guide

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Flashing the Rover Firmware

The Rover flashing process can be done in two ways: flashing from scratch or flashing over CAN. Flashing over CAN is only available for firmware version v0.9.0 and later. To upgrade to v0.9.0 or later, flash the Rover from scratch.

Flashing from scratch

Prerequisites:

- [STLink-V3SET programmer](#)
- [STM32CubeProgrammer software](#)
- Kvaser CAN interface, for example [Kvaser Leaf](#)
- [Kvaser CANlib and Kvaser Drivers](#)
- Python v3.7 or later

Steps:

1. Download the Rover binaries from the CanEduDev github repository and unzip it. In the unzipped folder, there should be a 'binaries' folder. Link: [\[CanEduDev Rover Releases\]](#)
2. Connect the STLINK-V3SET to your computer using a USB cable.
3. Start STM32CubeProgrammer.
4. Power on the Rover by connecting the battery. LEDs on the boards should light up.
5. For the next steps, consult the [figures](#) for help.
 - a. Use the 10-pin flat JTAG cable of the STLINK and connect it to the servo module, which is connected to the steering servo. Press connect in STM32CubeProgrammer. Select the "servo-with-bootloader.bin" binary file, check the box "Verify programming" and click start programming.
 - b. Repeat for the motor module (motor-with-bootloader.bin), power module (battery-monitor-with-bootloader.bin) and RC module (sbus-receiver-with-bootloader.bin).
6. Flash the configuration files over CAN using a Kvaser interface: connect the Kvaser interface to the Rover's D-SUB port, then use the `fw_update.py` program by running `python3 fw_update.py system --config config/system.json` from the release folder. This will write configuration files for all boards in the system.
7. Restart the Rover by turning it off, waiting 5 seconds then turning it on again. Now, you should have a working Rover.

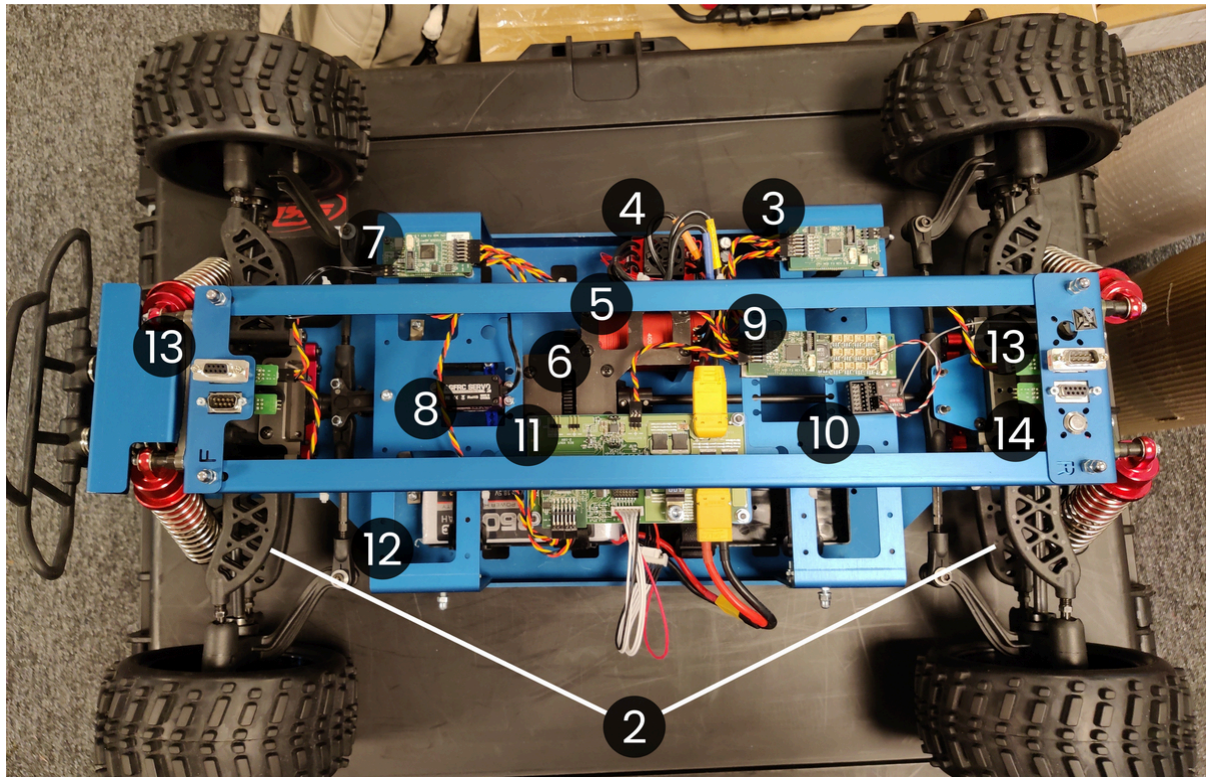
Flashing over CAN

Prerequisites:

- Kvaser CAN interface, for example [Kvaser Leaf](#)
 - [Kvaser CANlib and Kvaser Drivers](#)
 - Python v3.7 or later
1. Download the Rover binaries from the CanEduDev github repository and unzip it. In the unzipped folder, there should be a 'binaries' folder. Link: [\[CanEduDev Rover Releases\]](#)
 2. Power on the Rover by connecting the battery. LEDs on the boards should light up.
 3. Flash the firmware and configuration files over CAN using a Kvaser interface: connect the Kvaser interface to the Rover's D-SUB port, then use the `fw_update.py` program by running `python3 fw_update.py` from the release folder. This will flash binaries and write configuration files for all boards in the system.
 4. Restart the Rover by turning it off, waiting 5 seconds then turning it on again. Now, you should have a working Rover.

Images

Figure 1: Numbered Rover components



- | | |
|--------------------------------------|------------------------------------|
| 1. Chassis | 7. Servo Module |
| 2. Front and Rear Suspension | 8. Steering Servo |
| 3. Motor Module | 9. Radio Control (RC) Module |
| 4. Electronic Speed Controller (ESC) | 10. Radio Receiver |
| 5. Motor | 11. Power Module |
| 6. Gearbox | 12. Lithium Polymer (LiPo) Battery |
| | 13. D-SUB Connectors |
| | 14. Main Power Switch |

Figure 2: JTAG port on module



Figure 3: connecting to the board in STM32CubeProgrammer

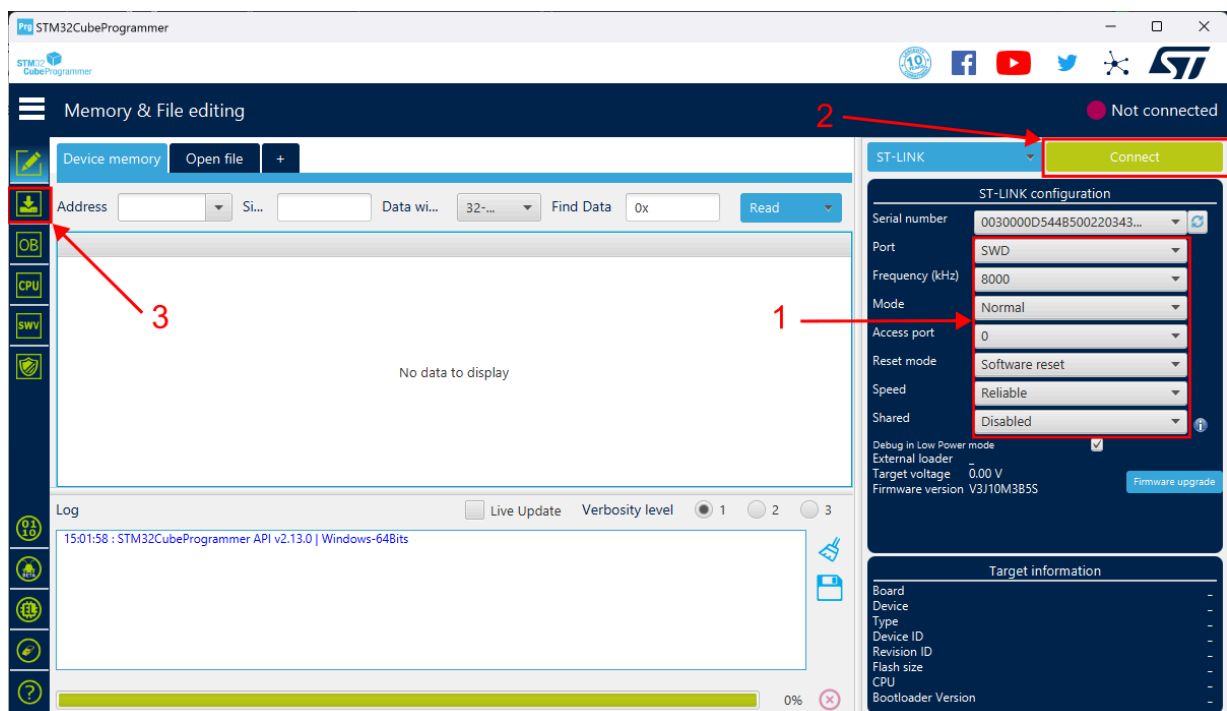


Figure 4: flashing the firmware in STM32CubeProgrammer

