Insert Code Guide (Windows)

Put the newest THARVIN firmware (the robot's code) on its brain, the ESP32-S3 board. It takes about 3 minutes and you only click one button.

You need	
A Windows 10 or 11 PC	with the THARVIN apps (step 1)
A USB **data** cable	USB-C to the PC. Many phone-charging cables have no data wires - if the PC sees nothing, try another cable.
THARVIN's brain board	in the robot's head or loose on the table. Switch THARVIN off and lay it down: the USB cable powers the brain.

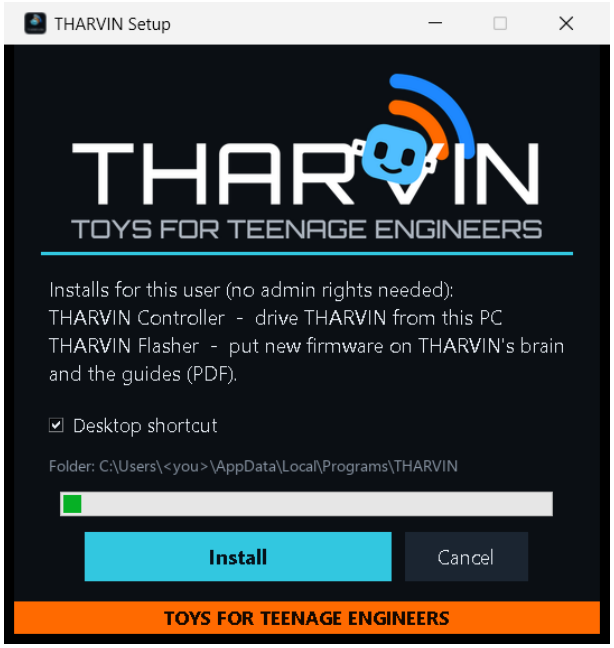
STEP 1 Install the THARVIN apps (once)

Double-click **THARVIN_Windows_Setup.exe** and press **Install**. No administrator rights are needed.

Windows may show **Windows protected your PC** (the programs are new and not code-signed): click **More info** > **Run anyway**.

No installer? Right-click **THARVIN_Windows_Setup.zip** > **Extract All** and use the THARVIN folder directly.

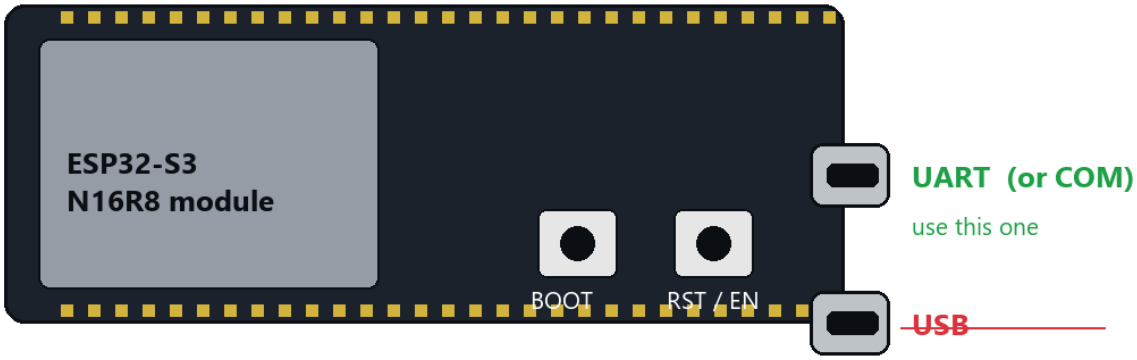
Afterwards: **Start menu > THARVIN** has THARVIN Controller, THARVIN Flasher, the guides and Uninstall.



The THARVIN Setup window

STEP 2 Connect THARVIN's brain to the PC

Plug the cable into the port marked UART (or COM).
The order of the two ports differs between boards: read the small print next to them.



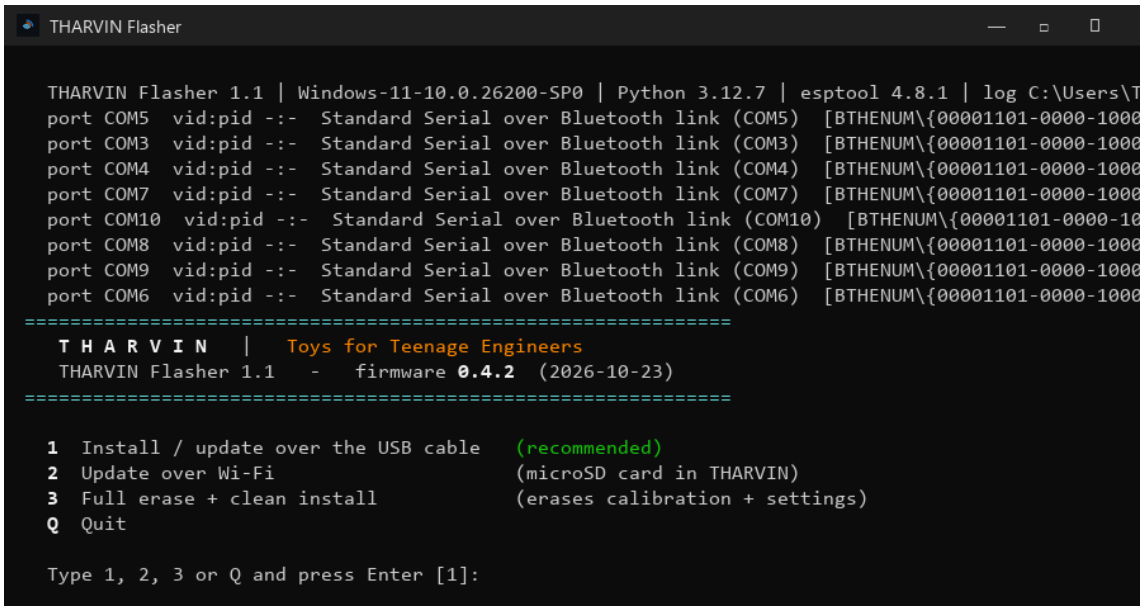
ESP32-S3-DevKitC-1 type board, seen from the top (drawing, not to scale)

The board has two USB-C ports. Use the one marked **UART** (on some boards **COM**).

Why not the other port? On THARVIN the native **USB** port's pins are used by the power button circuit, so it is not the flashing port.

STEP 3 Start the THARVIN Flasher, press 1, Enter

Start menu > THARVIN > THARVIN Flasher (insert code) - or double-click **FLASH_THARVIN.bat** in the THARVIN folder. A black window opens:

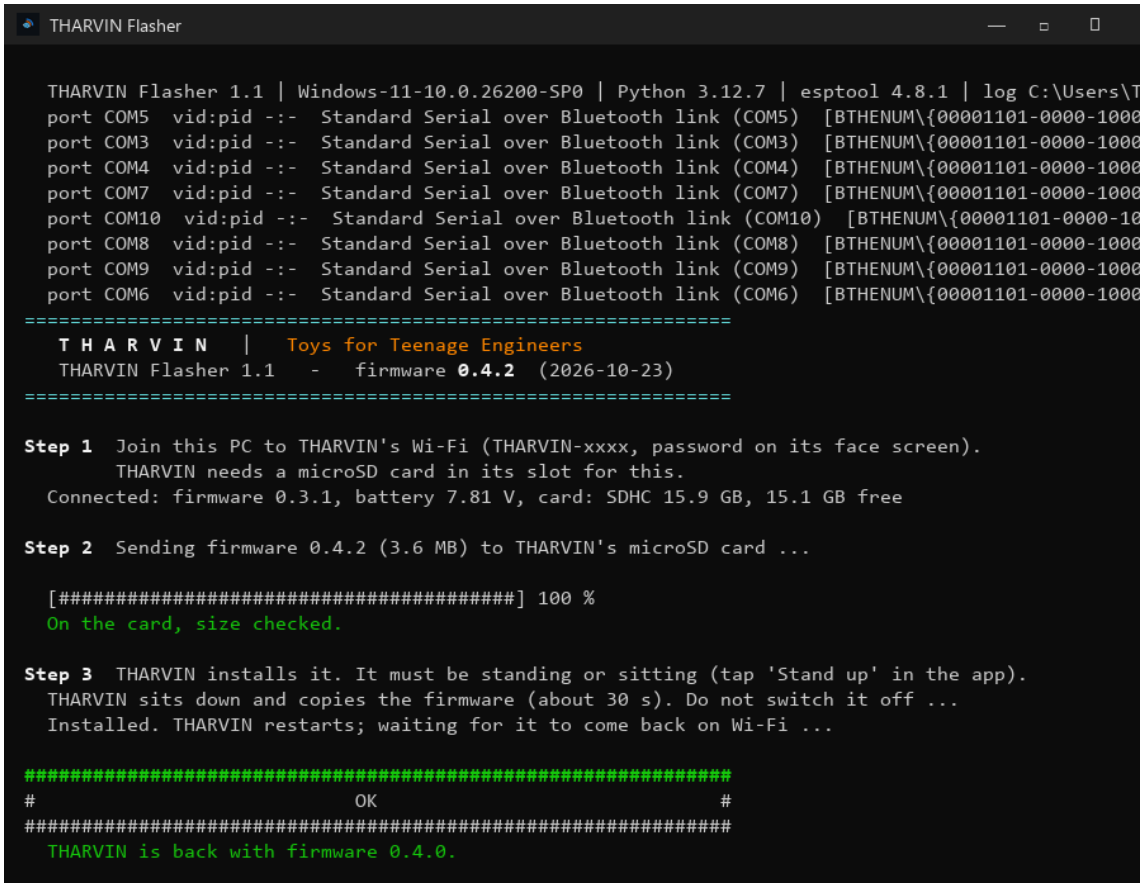


The Flasher menu. Type 1 and press Enter (Enter alone also picks 1).

STEP 4 Wait for the big green OK

The Flasher now works by itself:

- **finds the board** - it shows the COM port it uses (for example COM5);
- **checks the board** - THARVIN already on it = **quick update** (about 1 minute, keeps THARVIN's servo calibration and settings); a new board = **full install** (about 2-3 minutes);
- **writes** the firmware: lines like `Writing at 0x00110000... (37 %)` count up to 100 %. **Do not unplug the cable now.**

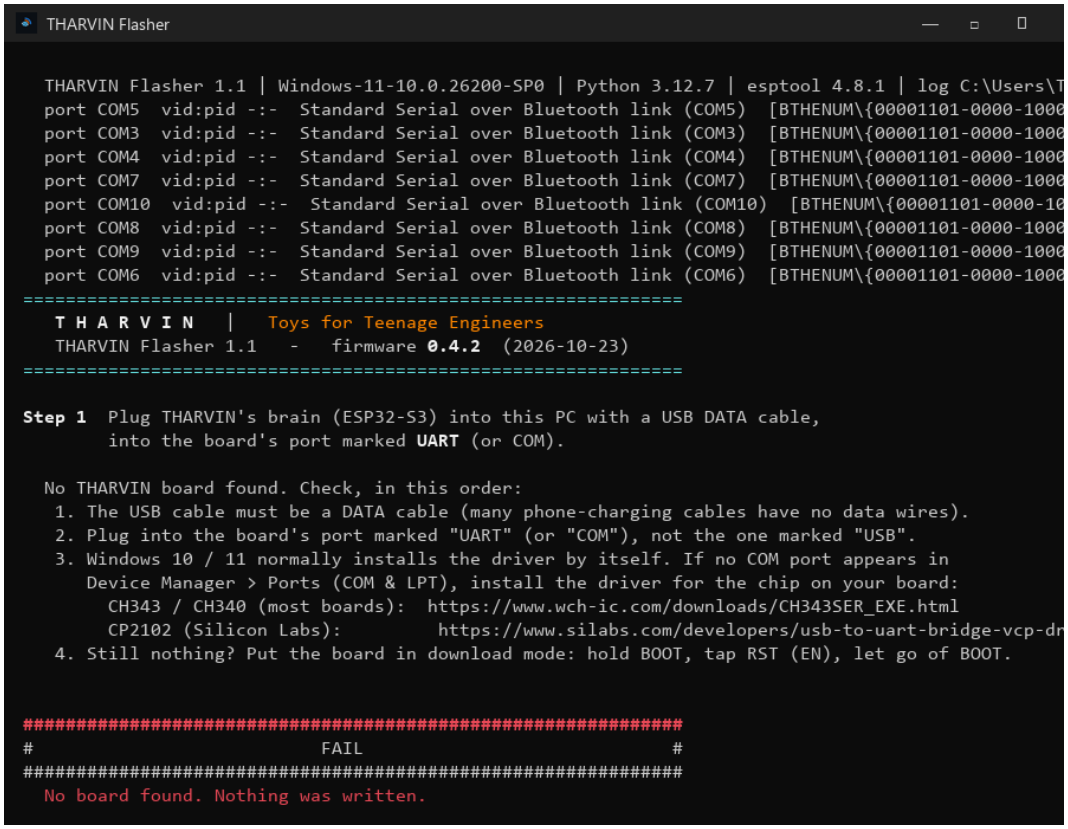


The end of a successful update looks like this (this picture: the Wi-Fi update of step 6; the USB update ends with the same green OK).

STEP 5 Done - check it

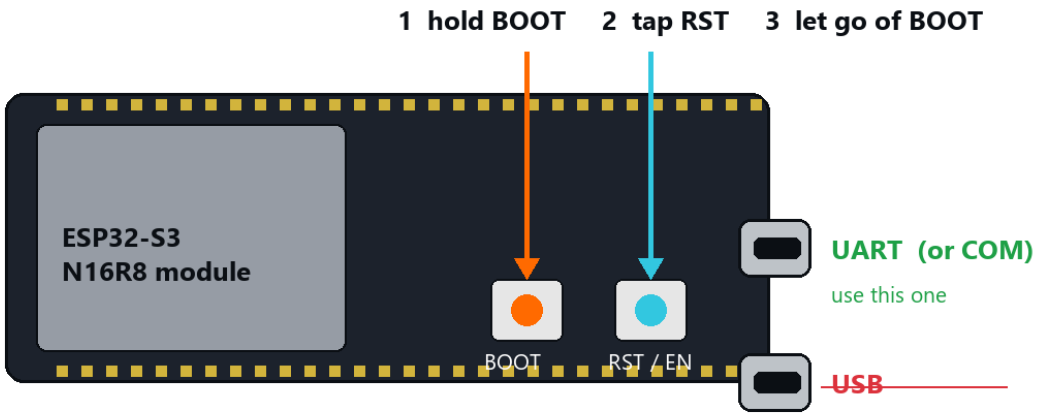
- THARVIN's brain restarts by itself. Unplug the cable.
- Switch THARVIN on: its face screen shows **READY** and its Wi-Fi name **THARVIN-xxxx** with the password.
- In THARVIN Controller the status line shows the robot is live; the firmware version is in **? > MORE > CLASSIC CONTROLLER** (fw 0.4.3).

If something goes wrong



No board found: nothing was written. Work through the list it shows.

What you see	What to do
No THARVIN board found	Data cable (not charge-only)? Port marked UART / COM? Still nothing: install the driver for the USB chip on your board - **CH343 / CH340**: wch-ic.com/downloads/CH343SER_EXE.html, **CP2102**: silabs.com (USB to UART bridge VCP drivers). Windows 10 / 11 usually needs none.
The board did not answer / FAIL	Put it into download mode (picture below) and run the Flasher again. Close Arduino IDE or any serial monitor - only one program can use the COM port.
FAIL again	Try option **3** (full erase + clean install). The board cannot be damaged by a failed flash: its start-up code is in the chip and always works. Option 3 erases the calibration - do the servo calibration again afterwards (manual).
Windows protected your PC	**More info** > **Run anyway**.



ESP32-S3-DevKitC-1 type board, seen from the top (drawing, not to scale)

Download mode: hold BOOT, tap RST (EN), let go of BOOT, then run the Flasher again.

Every run writes a log file **FLASH_LOG.txt** next to the Flasher (it lists the COM ports and every step): send it if you need help.

STEP 6 Update over Wi-Fi (no cable)

THARVIN can also take new firmware over its own Wi-Fi. It needs a **microSD card** in THARVIN's card slot.

- Charge the battery. Switch THARVIN on and stand it up (or let it sit).
- Join this PC to THARVIN's Wi-Fi **THARVIN-xxxx** (password on its face screen).
- Start the Flasher, type **2**, Enter. It sends the firmware to the card, checks it, then THARVIN sits down, copies it into its spare memory and restarts (about 1 minute). Do not switch THARVIN off meanwhile.
- If anything fails, THARVIN keeps its old firmware - nothing breaks.

For advanced users

The firmware folder holds the separate files and one merged image. Flash map (ESP32-S3, 16 MB, DIO, 80 MHz):

Offset	File	What
0x0	THARVIN_fw_0.4.3_merged_16MB.bin	everything in one file (erases calibration)
0x0 / 0x8000 / 0xe000	bootloader.bin / partitions.bin / boot_app0.bin	start-up, memory map, update data
0x10000	firmware.bin	THARVIN's code (a quick update = this + boot_app0.bin)
0x810000 / 0xd10000	srmodels.bin / littlefs.bin	voice model / voice replies + app icons

```
esptool --chip esp32s3 --baud 921600 write_flash -z 0x0 THARVIN_fw_0.4.3_merged_16MB.bin
```