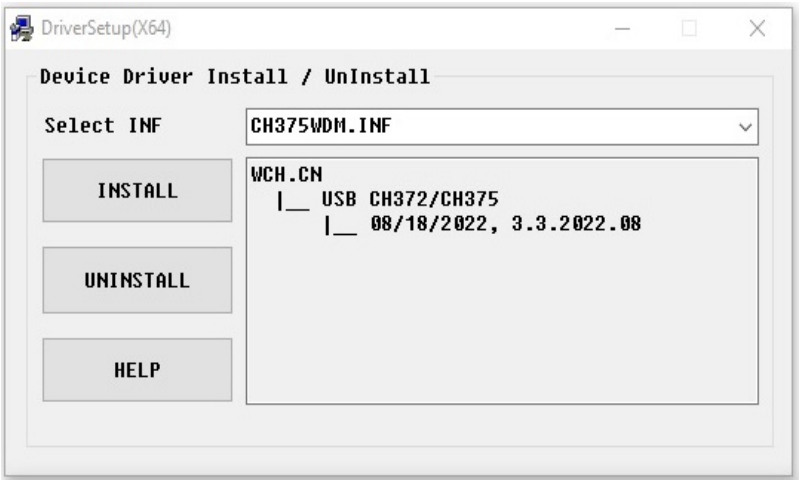
Guide for stand-alone programming with WCH-MCU-DL-5V

Step-by-step instructions under Windows programming Olimex RVPC (CH32V003 chip).

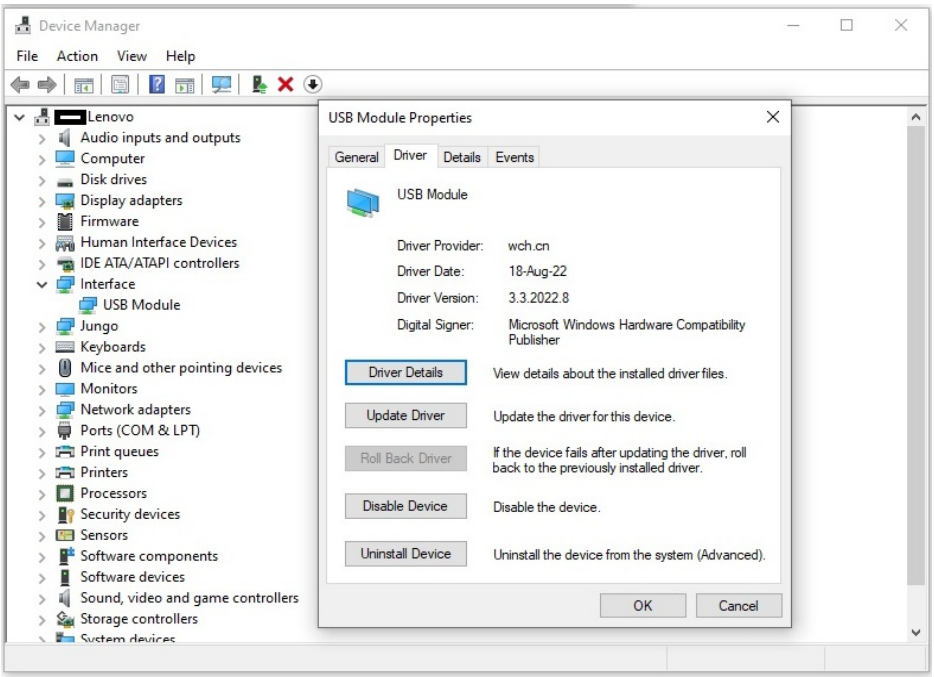
1. Getting the USB drivers. Download and install driver for WCH-MCU-DL-5V.

https://img.wch.cn/uploads/file/20231221/1703146044182847.zip

Click install and wait. The picture below shows how the driver installer looks like:



2. Confirm the drivers. After installation close the installer software and plug the WCH-MCU-DL-5V to the computer via the UBS type C cable (included). Navigate to Windows Device Manager to confirm that you see the unit, it should be under "Interface", called "USB module". Refer to the picture below:



3. Prepare the binary you want to store on the programmer. You need one bin or hex file. You can also use the ready bin files for Olimex RVPC in the GitHub in the sub-folder of each demo:

https://github.com/OLIMEX/RVPC/tree/main/SOFTWARE

I will use RVPC-RVMON.bin – this is the default demo for RVPC (the binary we download to each CH32V003 chip).

- Alternatively, you can also prepare a binary with software development tools, which is the proper way if you decide to build own project. For RVPC here we use Visual Stuido Code + PlatformIO + CH32V-Platform, refer to the software section of RVPC for more info about the software setup:

https://github.com/OLIMEX/RVPC/blob/main/DOCUMENTS/RVPC-user-manual.pdf

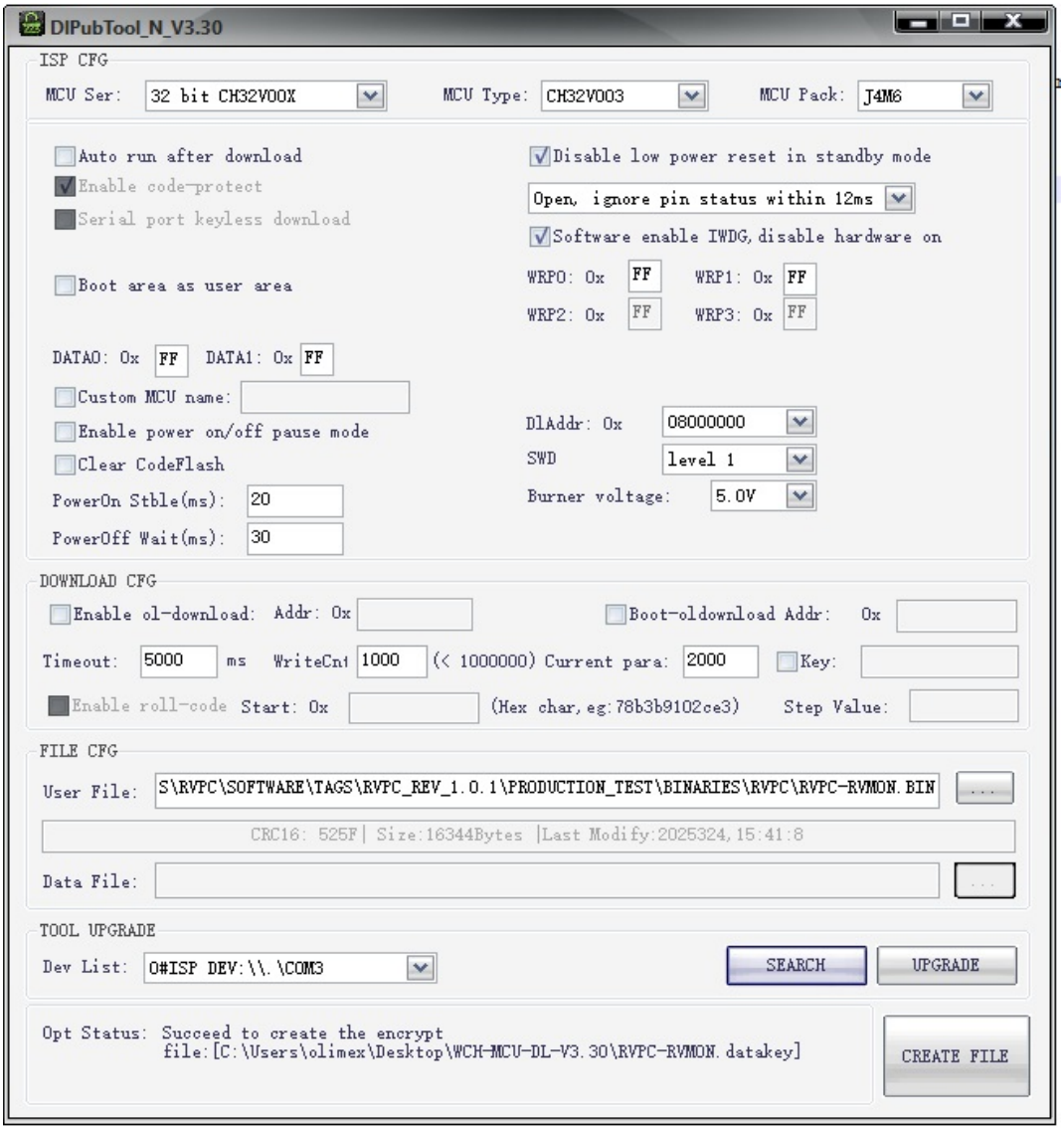
Maybe you can also use Keil uVision or MounRiver Studio.

4. Prepare the meta file of settings and binary. Download and launch DlPubTool_N_V3.30 tool – this tool is used for additional settings and to convert the binary to format that includes the meta data of the settings and the binary. You can download it from here:

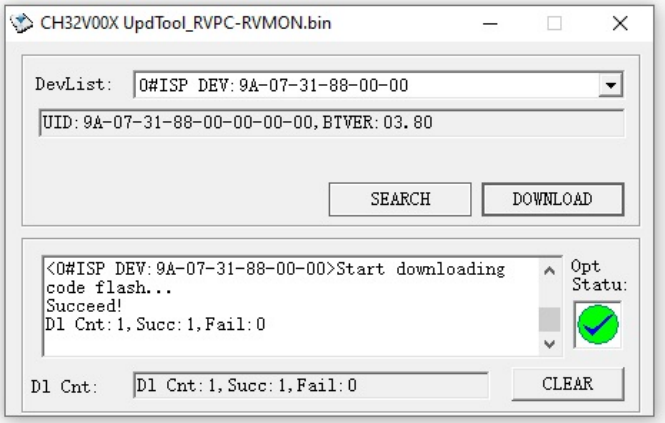
https://img.wch.cn/uploads/file/20240821/1724228266111374.zip

Start the DlPubTool_N_V3.30.exe and in the software select the proper target (CH32V003 in RVPC's case), select 5V burner voltage (since Olimex RVPC is 5V). Then select the binary from "User file", in my case the file is RVPC-RVMON.bin.

Finally, click the big button "CREATE FILE" in the bottom-right corner.



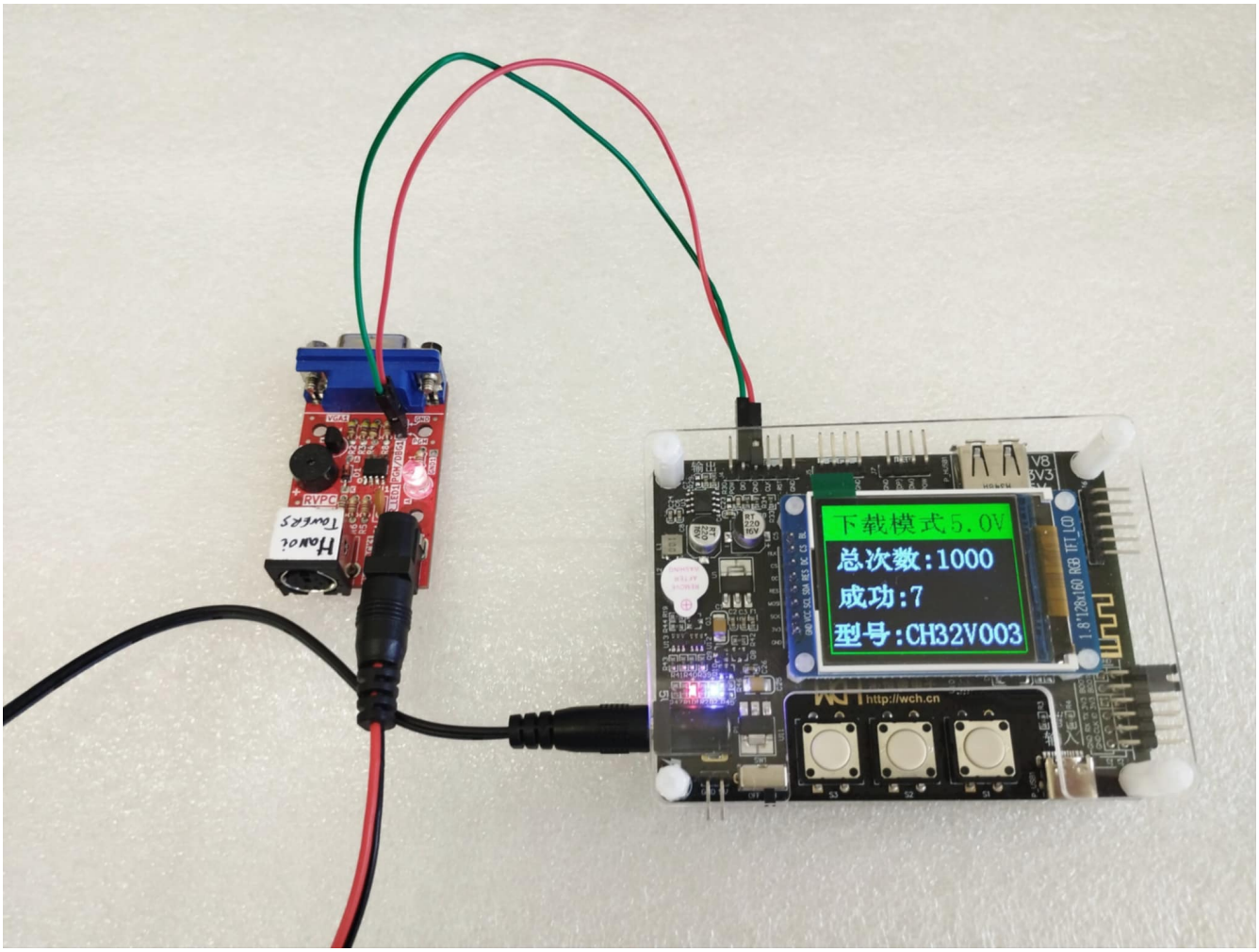
5. Download the file created in previous step to the on-board memory. Launch McuUpdTool.exe and click “SEARCH” and "DOWNLOAD" interface buttons. Wait until it succeeds. Now your binary is stored and can be programmed via one button press. If successful it should look like this:



6. Establish hardware connection to target. In the case of Olimex RVPC connect PGM to DIO of J4 connector and GND to GND (of the same J4 connector). I use a couple female-female jumper wires. Like the ones we sell at our web-shop:

https://www.olimex.com/Products/Breadboarding/JUMPER-WIRES/JW-200x10-FF/

7. Powering the programmer and the target. Disconnect USB type C cable and power WCH-MCU-DL-5V from the power jack using the 5V DC adapter that is included (it won't work when powered from the USB). Then use switch SW1 to turn it on. Remember to also power Olimex RVPC from its PWR_JACK1 connector. Here it looks like this:



8. Programming the target via the button. Press and release button S3 (left most), then wait. This will download the code to the target board. There is info about the voltage, the programming goal (1000 times), a counter about how many times you've downloaded the binary successfully to your target/targets, and the target. Here is a video how programming goes:

https://youtu.be/mp5O2-3Krls