

iMCP HTNB32L-XXX - HTTOOLS USER MANUAL

HTTools firmware flasher for iMCP HTNB32L-XXX System-in-Package

Classification: PUBLIC

Doc. Type: USER MANUAL

Revision: v.02

Date: 05/05/2023

Code: HTNB32L-XXX-UM-0003

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DOCUMENT INFO

This document provides a user manual for HTTools, a firmware flash tool for iMCP HTNB32L-XXX. It is intended mainly to introduce how to operate the software and upgrade the HTNB32L firmware.

1. GENERAL DESCRIPTION

HTTools is a software developed to furnish a complete and user-friendly flash tool for HTNB32L customers. It transmits a binary file to the HTNB32L-XXX device through serial interface, based on UART protocol.

1.1. OPERATING SYSTEM

HTTools is a standalone software, which means that can be run without previous installation. The operating systems currently supported by HTTools are listed below:

- Windows 10: 32 or 64 bits.
- Windows 11: 32 or 64 bits.

2. ABOUT HTTOOLS

HTTools owned by HT Micron Semicondutores is shown in Figure 1:

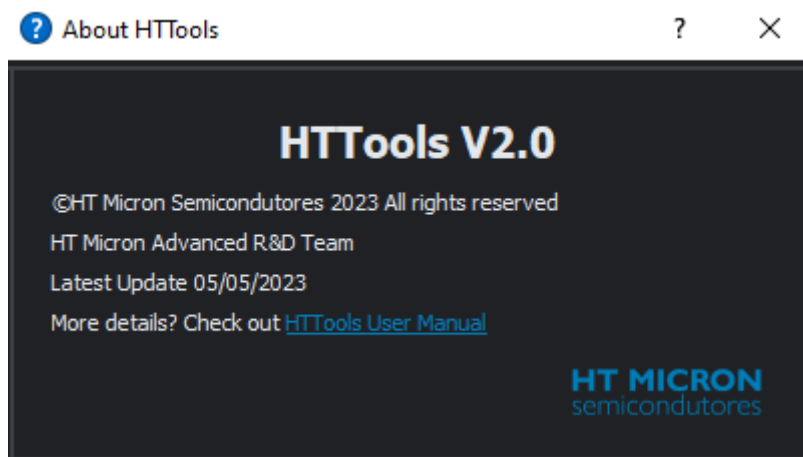


Figure 1: About HTTools.

3. DOWNLOAD

HTTools can be downloaded from its official [GitHub Repository](#). Users can clone the whole repository or download the zip file available as latest release.

4. SOFTWARE UPDATE

In order to keep the HTTools updated, go to “Help > Check for Updates” to search for a new software release, as is shown in Figure 2:

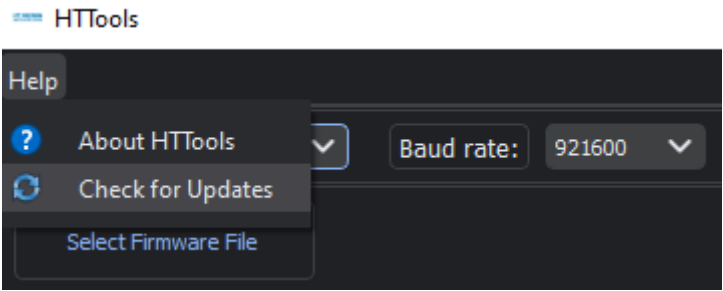


Figure 2: Check for updates option.

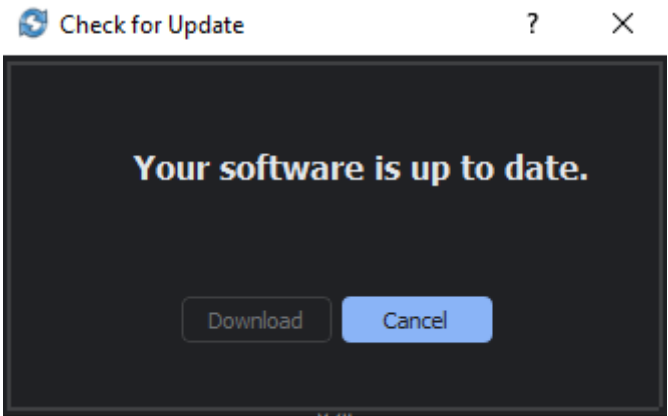


Figure 3: Check for Update window view.

5. SETUP

Figure 4 shows a possible flashing setup, using a FTDI as USB-serial converter, and Table 1 describes its connections. More details about the flashing setup can be found at *HTNB32L-XXX-UM-0001-Getting Started*.

Table 1: HTNB32L-XXX and FTDI connection description.

HTNB32L-XXX Pin	FTDI Pin	Description
UART1_TX (GPIO12)	RX	HTNB32L-XXX UART transmitter connected to the FTDI UART receiver.
UART1_RX (GPIO13)	TX	HTNB32L-XXX UART receiver connected to the FTDI UART transmitter.
GND	GND	Ground of both sides equalized.
3V3	-	HTNB32L-XXX power supplier in 3.3V.
GPIO1	-	HTNB32L-XXX boot pin. Starts the flashing process if the device is booted with this pin at a low logic level. Should be connected to a pull-up resistor.
RST	-	Reset pin. Resets the device when at low logic level. Should be connected to a pull-up resistor.

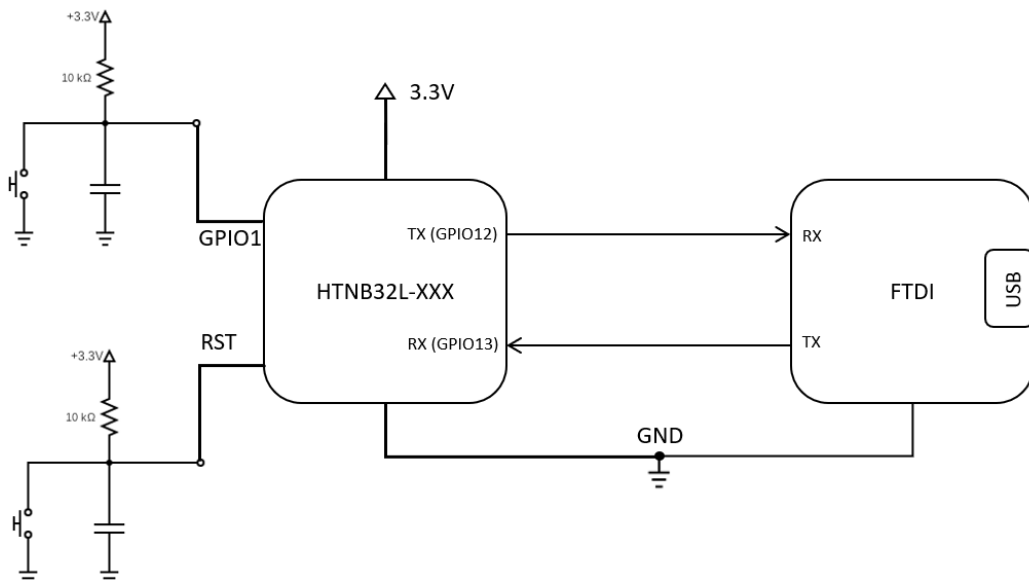


Figure 4: Possible flashing setup.

NOTE

Any other USB-serial converter able to transmit up to 921600 bps (baud rate) can be chosen for this task.

6. FIRMWARE UPGRADE

The HTNB32L-XXX firmware is upgraded through UART interface, using its internal bootloader to receive the data coming from serial and storing it to the program memory. This section describes the steps that must be followed in order to successfully upgrade HTNB32L-XXX firmware using HTTools software.

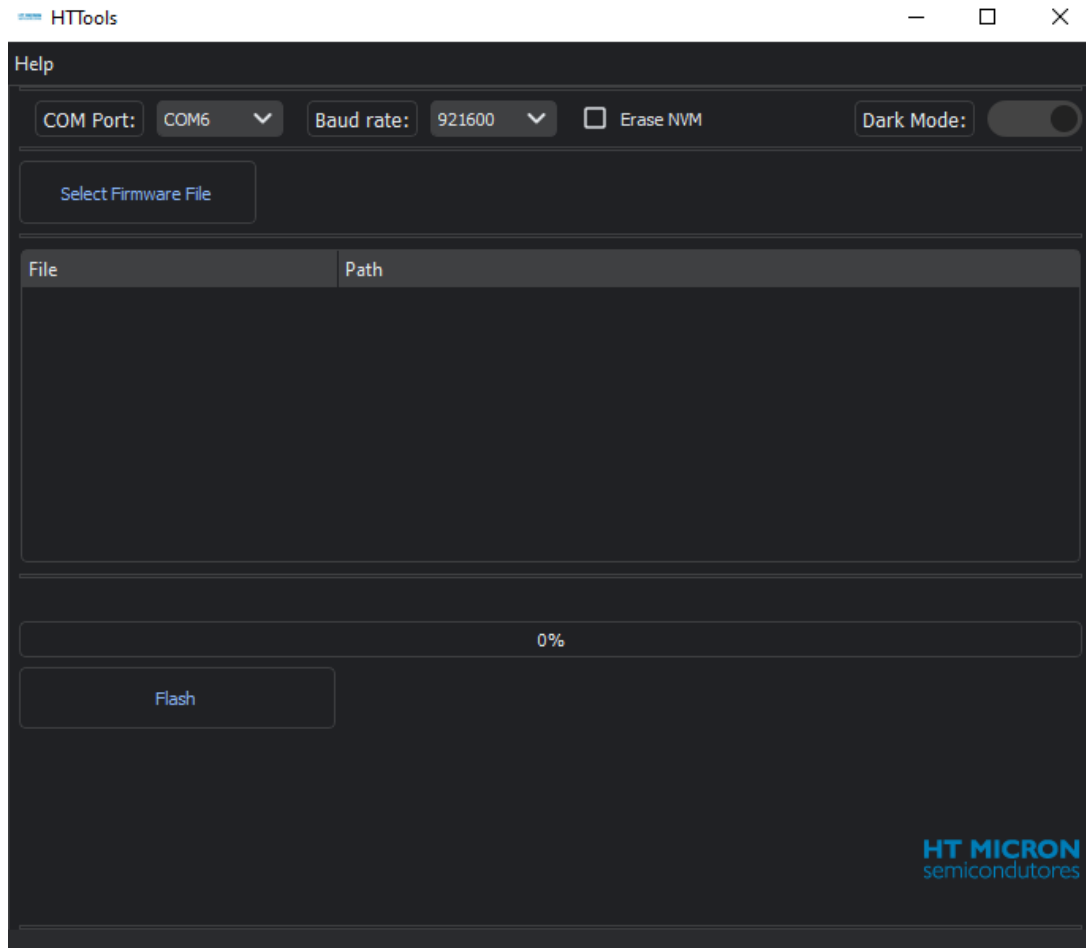


Figure 5: HTTools main window.

6.1. COM PORT CONFIGURATION

Select the COM port where the serial interface (a FTDI or any USB-serial converter) connected to the HTNB32L-XXX device is located. If you do not know the right COM port, check out the Windows Device Manager to see where your interface is connected.

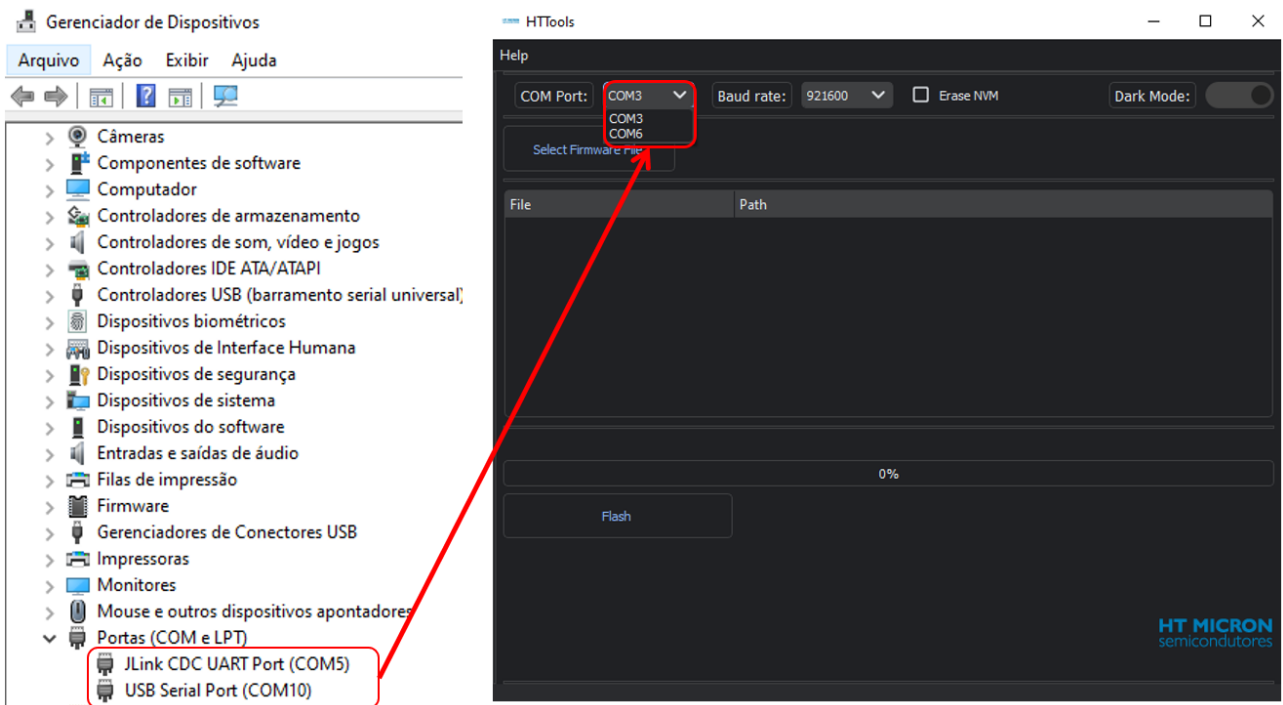


Figure 6: COM port selection.

If HTTools software was opened before connecting the serial cable to USB, users can refresh the COM Port list by clicking on the “COM Port” label as is shown in Figure 7 and Figure 8:

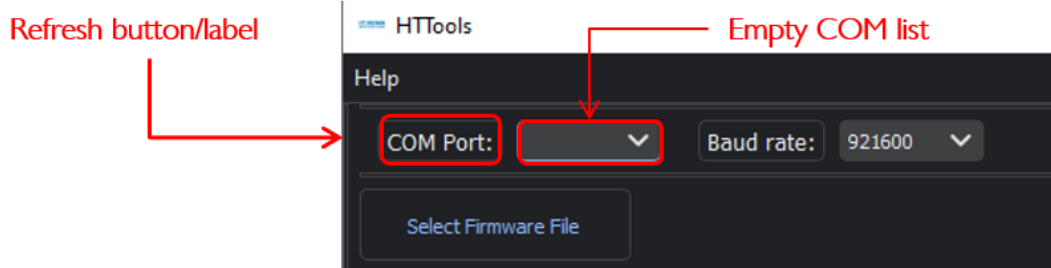


Figure 7: Empty COM list.

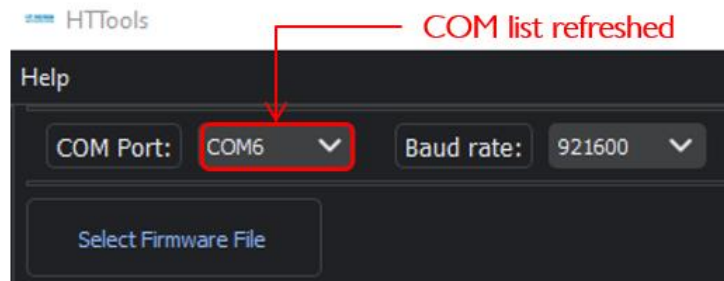


Figure 8: COM list refreshed after clicking on “COM Port” label.

6.2. BAUD RATE

The default baud rate is 921600 bps, which is also the fastest option. All other available baud rate options are listed in the Baud Rate field as is should in Figure 9:

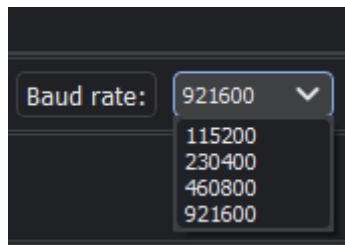


Figure 9: Baud rate options.

6.3. SELECT FIRMWARE FILE BUTTON

HTTools only accept binary files. Select the binary file that will be flashed on the device by clicking on “Select Firmware File” button.

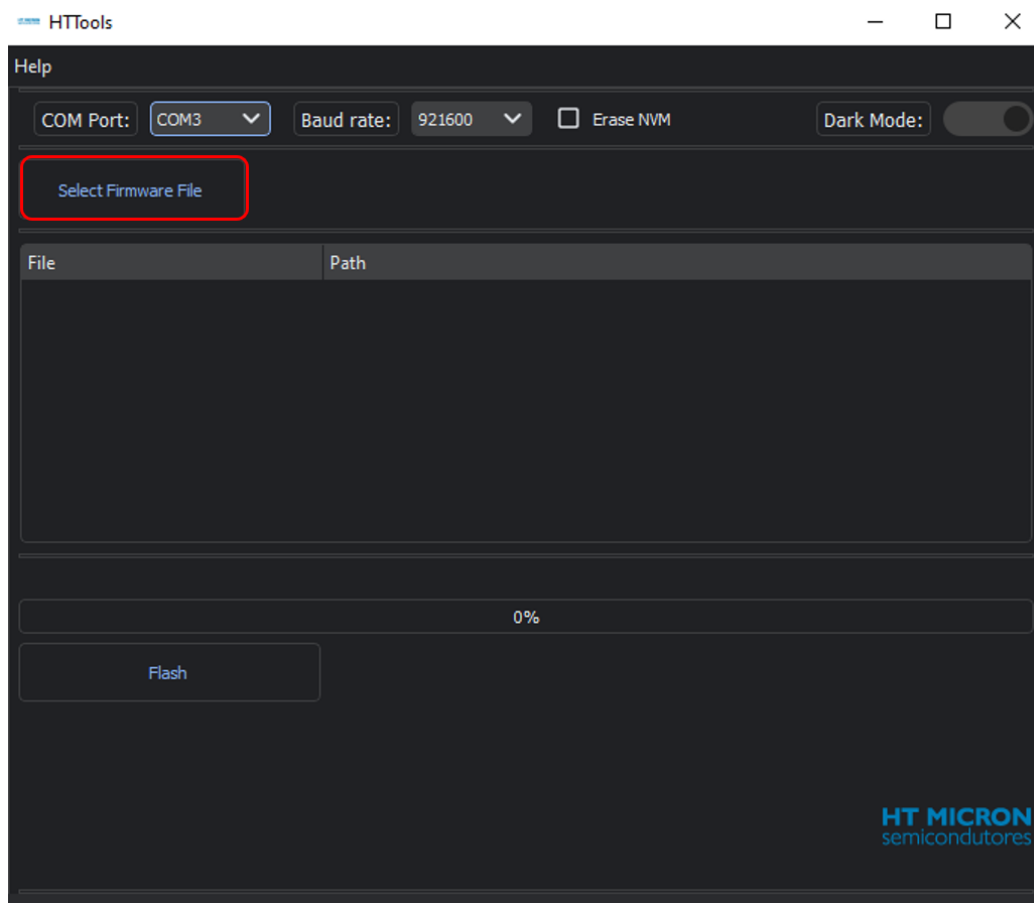


Figure 10: Select Firmware File button.

NOTE

HTTools only accept binary files and paths **without spaces!**

6.4. BOOTLOADER ACTIVATION

To run the HTNB32L-XXX internal bootloader, the GPIO1 pin (BOOT pin) must be connected to GND (low-logic level) during the reset. Considering the GPIO1 circuit presented in Figure 4, where a button was connected to the BOOT pin, the procedure would be as follows:

1. Press and hold GPIO1 button.
2. Press the RST button.
3. Release the RST button.
4. Release the GPIO1 button.

6.5. ERASE NVM CHECKBOX

To erase the NVM, from address 0x20000 to 0x36EE80, select the “Erase NVM” checkbox before starting the flashing procedure.

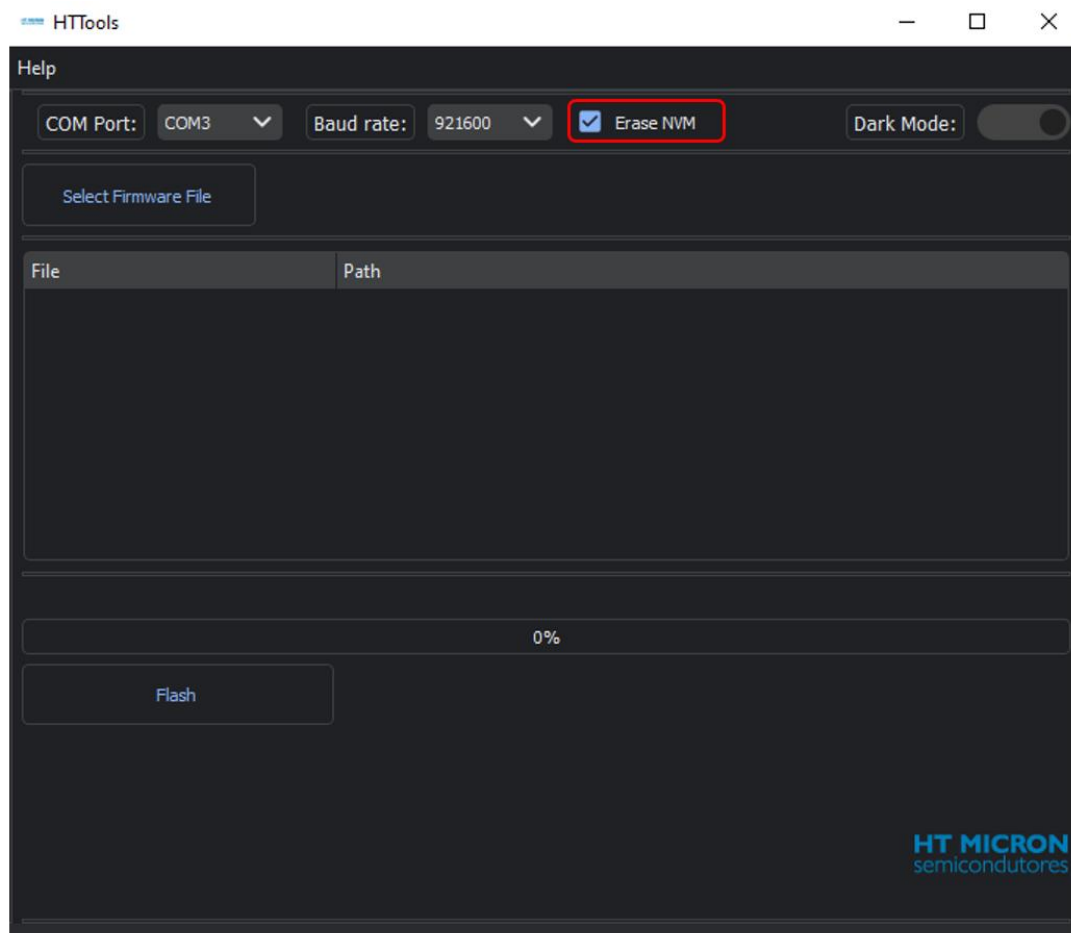


Figure 11: Erase NVM checkbox.

6.6. FLASH BUTTON

After configuring the serial COM port, selecting the baud rate, selecting the right binary file, and activating the bootloader, now the flashing procedure can be triggered by clicking on the “Flash” button. Figure 12 shows the flashing process finished with success.

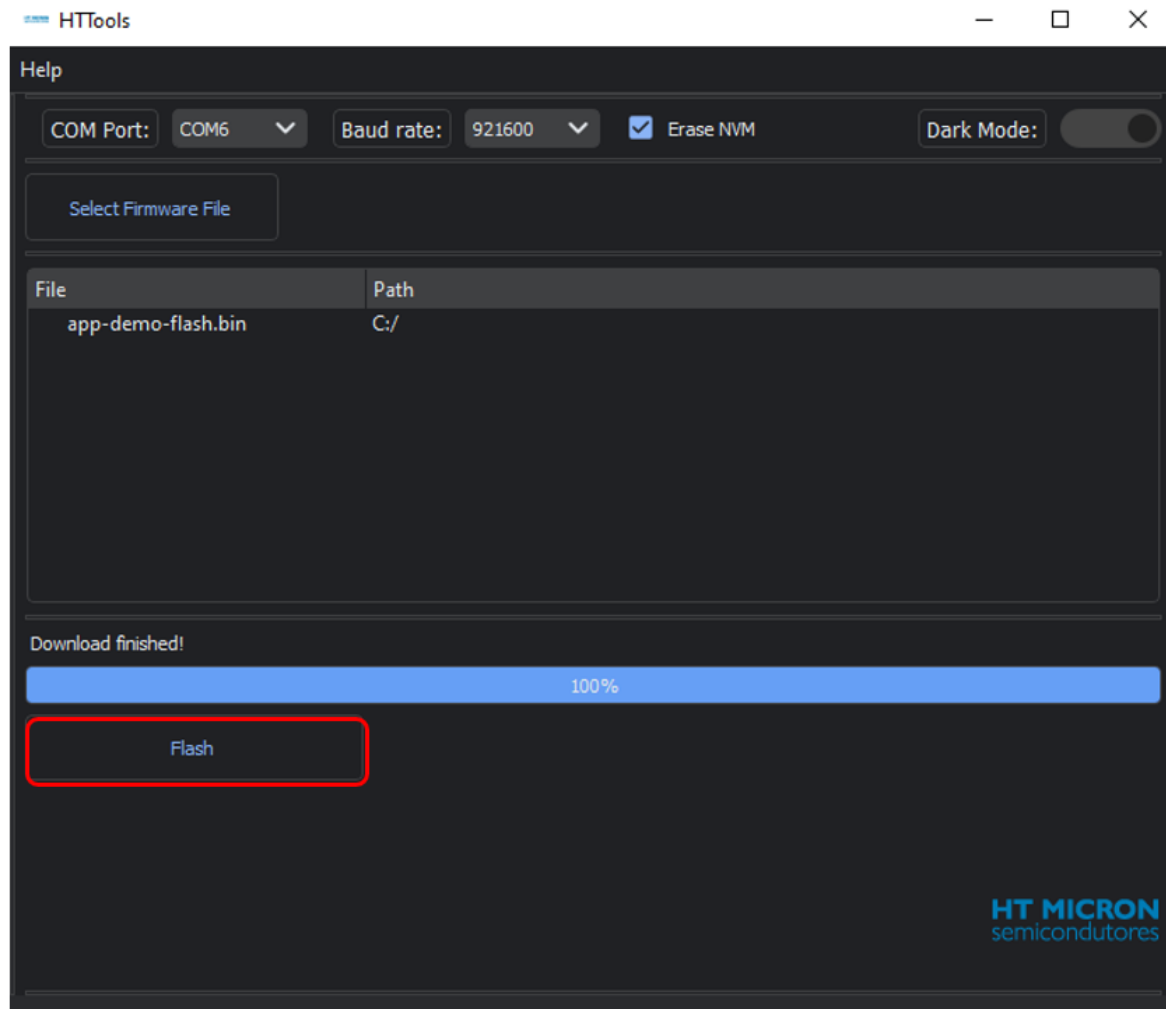


Figure 12: HTTools after flashing process.

6.7. TUTORIAL SUMMARY

The flashing steps previously mentioned are summarized and listed below:

1. Select the right COM Port.
2. Select the baud rate.
3. Select the firmware binary file.
4. Activate the HTNB32L-XXX bootloader.
5. To erase the NVM, select the “Erase NVM” checkbox.
6. And press the “Flash” button to start the flashing procedure.

ABBREVIATIONS

Table 2: Abbreviations

Acronym	Description
GPIO	General Purpose Input Output
COM	Communication
UART	Universal Asynchronous Receiver-Transmitter
ROM	Read-only Memory
RST	Reset
BPS	Bits Per Seconds
USB	Universal Serial Bus
GND	Ground
PC	Personal Computer
NVM	Non-volatile Memory

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REVISION HISTORY

Version	Date	Changes	Authors
00	05/05/2023	- Initial draft	HBG

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DOCUMENT INFORMATION

Document Title: iMCP HTNB32L-XXX - HTTools User Manual
Document Subtitle: HTTools firmware flasher for iMCP HTNB32L-XXX System-in-Package
Classification: PUBLIC
Doc. Type: USER MANUAL
Revision: v.02
Date: 05/05/2023
Code: HTNB32L-XXX-UM-0003

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