

# Implicit Two-Step Recovery Boot

## Implicit Two-Step Recovery Boot: the Operative Procedures

A *recovery boot* (aka TE USB FX2 firmware recovery) is a multi-step boot operation:

- follow the same procedure of [Cypress Generic USB Device Installation](#);

- check that EEPROM connection is enabled (EEPROM switch is set in a way to enable EEPROM connection to USB FX2 microcontroller);

 EEPROM connection shall always be enabled during EEPROM programming.

- [Cypress firmware update tools](#) and [OpenFutNet](#) can read and write the EEPROM:
  - a. for example using [CyControl \(Cypress USB Control Center\)](#);
  - b. for example using [CyConsole \(Cypress USB Console\)](#);
  - c. for example using [OpenFutNet recovery boot](#).

See also [Cypress USB Control Center recovery boot](#) and [Cypress USB Console recovery boot](#) videos for further information about the procedures to follow.

 See the section below and "[Recovery Boot](#)" if the user need further information.

## Implicit Two-Step Recovery Boot: a longer description

### Second step (bootloader Vend\_ax in RAM) is hidden

The 2nd stage loader firmware is loaded automatically without the explicit intervention of the user. At this time, it is only possible with Windows OS.

In an implicit two-step recovery boot, the user should (the necessary device driver is assumed already installed ([Cypress Generic USB Device Installation](#)))

- isolate the FX2 microcontroller's external EEPROM disabling the [EEPROM switch](#);
- use a [reset](#) if the the running SW tool is not able to recognize the TE USB FX2 module as a supported device;
- reconnect the FX2 microcontroller's external EEPROM enabling the [EEPROM switch](#);
- give the command to load the desired good firmware into FX2 microcontroller's external EEPROM using CyControl, CyConsole, OpenFutNet (Windows OS, all SW tools using CyAPI.lib or CyUSB.dll) ;

 The CyConsole's "Lg EEPROM" button, CyControl's "64KB EEPROM" button and OpenFutNet's "Program USB: write IIC EEPROM" button call the loadEEPROM() function. This function is used to program 64-Kbyte EEPROMs. When the button (CyConsole's Lg EEPROM button, CyControl's EEPROM button or OpenFutNet's IIC button) is clicked, the user is prompted to select a (.iic) file to load into the EEPROM. This button first downloads the Vend\_Ax.bix file, then sends the 0xA9 vendor request to program the EEPROM.

The CyConsole/CyControl/OpenFutNet program will load

1. **(hidden/implicit 1)** an intermediate good firmware supporting EEPROM programming (normally the 2nd stage bootloader Vend\_Ax.hex) in RAM;
  2. **(explicit step 2)** the desired good firmware into FX2 microcontroller's external EEPROM using the the intermediate good firmware (2nd stage bootloader Vend\_Ax.hex) in RAM.
- use a [reset](#) or write the desired good firmware into FX2 microcontroller's RAM using CyControl (Windows OS). If OpenFutNet is used in the step before, the desired good firmware is already written into FX2 microcontroller's RAM.

 The CyConsole's "S EEPROM" button is used to program 256-byte EEPROMs. When this button is clicked, the user is prompted to select a (.iic) file to load into the EEPROM. This button first downloads the Vend\_Ax.bix file, then sends the 0xA2 vendor request to program the EEPROM. **This button should not be used.**