

FPGA Configuration (SPI Flash and FPGA)



The (generation 3) [TE USB FX2 driver](#) should be already [installed](#) and a Generation 3 firmware should be already programmed in USB FX2 microcontroller's EEPROM and RAM.

Insert the TE USB FX2 module with the USB EEPROM enabled (when TE USB FX2 module is powered on).

- A) [TE USB FX2 module is seen under Device Driver as a Trenz Electronic Device](#).
- B) [TE USB FX2 module is seen under Device Driver as a DEWESoft Device](#). In this case, you should start a [Recovery boot procedure](#).

Open a USB Firmware Upgrade Tool (double click OpenFutNet.exe).

- A) TE USB FX2 module is seen under Device Driver as a Trenz Electronic Device.

OpenFutNet: Open Firmware Upgrade Tool .NET v1.0

FPGA programming: *.bit or *.mcs file

FPGA SPI Flash writing progress: [Progress Bar]

FPGA bitstream file path: FPGA SPI Flash bitstream pathname

Trenz Electronic Reference Architecture based on MicroBlaze soft processor: No, Custom project not base

TE Reference based: Yes/No Major Version Minor Version Release Version Build Version

USB Cypress FX2 microcontroller EEPROM programming: *.jic file

IIC EEPROM write progress: [Progress Bar]

USB Firmware file path: USB Cypress FX2 microcontroller IIC EEPROM firmware pathname

Latest firmware version flashed on FX2 microcontroller EEPROM: TE FX2 Firmware Gen3 3 2 VID 0x0BD0 PID 0x0300

Type Major Version Minor Version Trenez Electronic USB FX2

☐ Clear the log text, in the box below, before every new programming operation ☐ Verbose log text: Yes/No

Clear the log text in the box below Show Help Refresh information about FPGA and FX2

--A Trenz Electronic device is already inserted when OpenFut start to run--

INFO: The Trenz Electronic module starts as a Trenz Electronic Device: this happens when EEPROM switch is set to ON when the TE module is attached to USB port (or more generally when the TE module is powered on with EEPROM switch ON).

INFO: Trenz Electronic TE_USB_FX2 driver used for normal work with Trenz Electronic module

INFO: You can write a new firmware inside the EEPROM (if EEPROM switch is set to ON)

INFO: You can write a new FPGA bitstream inside SPI Flash.

OpenFutNet starts: Trenz Electronic device already inserted

- B) TE USB FX2 module is seen under Device Driver as a DEWESoft Device. You should start a [Recovery Boot](#); you are not able to go any further in FPGA Programming.

OpenFutNet: Open Firmware Upgrade Tool .NET v1.02 Beta

FPGA programming: *.bit or *.mcs file

FPGA SPI Flash writing progress

FPGA bitstream file path

Select *.bit or *.mcs file, or enter file path

Program FPGA: write SPI Flash

Trenz Electronic Reference Architecture based on MicroBlaze soft processor

Not yet retrieved Not yet retrieved Not yet retrieved Not yet retrieved Not yet retrieved

TE Reference based: Yes/No Major Version Minor Version Release Version Build Version

USB Cypress FX2 microcontroller EEPROM programming: *.iic file

IIC EEPROM write progress

USB Firmware file path

Select *.iic file or enter file path

Program USB: write IIC EEPROM

Latest firmware version flashed on FX2 microcontroller EEPROM

Trenz Electronic Gen2 Not yet retrieved Not yet retrieved VID 0x0547 PID 0x1002

Type Major Version Minor Version DEWESoft device

☐ Clear the log text, in the box below, before every new programming operation

☐ Verbose log text: Yes/No

☐ Flash ID retrieved: Yes/No

—A DEWESoft device is already inserted when OpenFut starts to run—

INFO: The Trenz Electronic module starts as a DEWESoft Device: this happens when EEPROM switch is set to ON when the TE module is attached to USB port (or more generally when the TE module is powered on with EEPROM switch ON).

INFO: The Trenz Electronic module runs the 2nd generation firmware (TE_USB_FX2 Gen 2)

INFO: You can't write a new firmware inside the EEPROM (even if EEPROM switch is set to ON)

INFO: DEWESoft : you can't write a new FPGA bitstream inside SPI Flash.

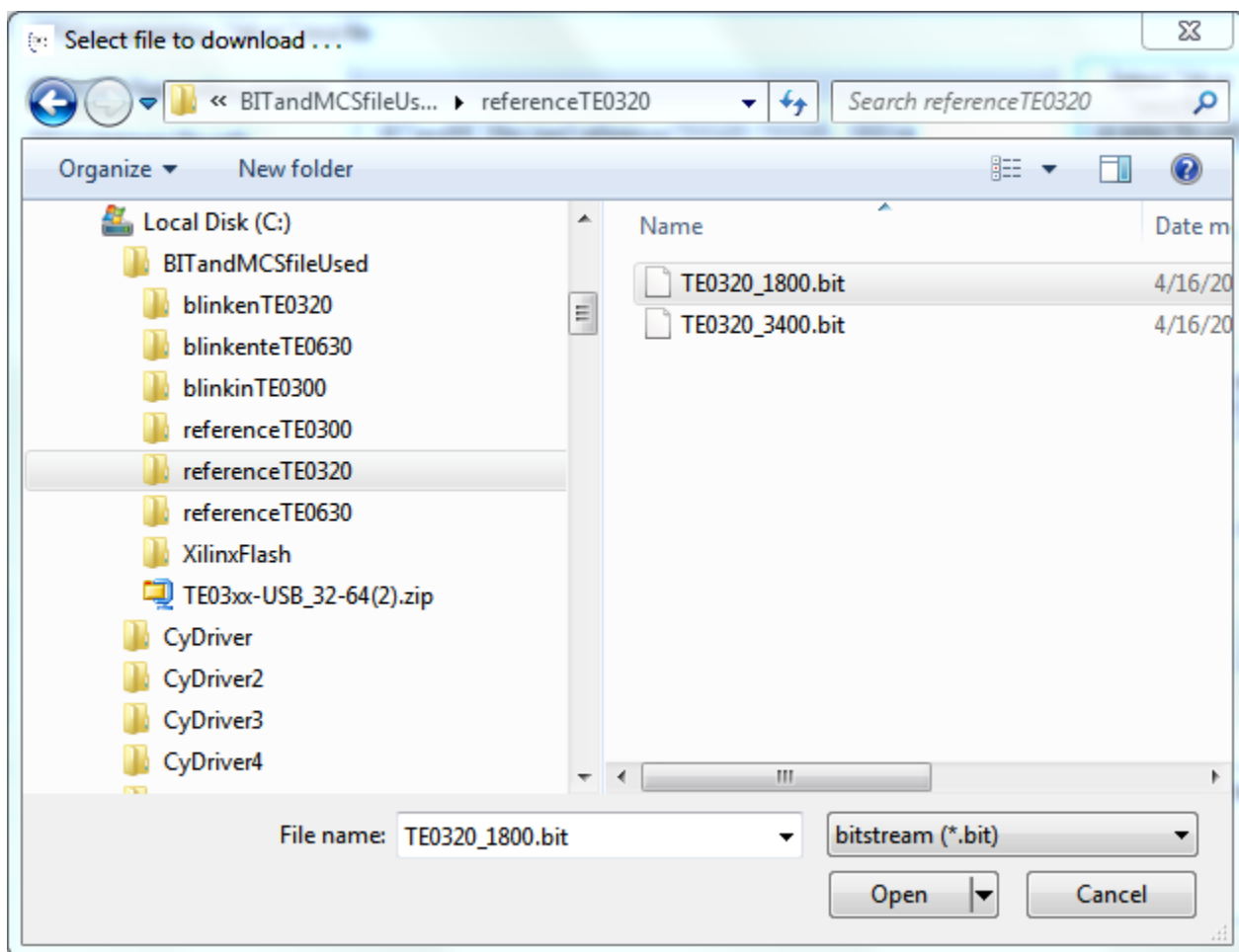
INFO: You should start a Recovery Procedure to change the firmware of FX2 microcontroller

Status

OpenFutNet starts: DEWESoft device already inserted

Press the "Select *.bit or *.mcs file, or enter file path" button corresponding to the FPGA bitstream file pathname selection.

Select a suitable *.bit or *.mcs FPGA bitstream file.



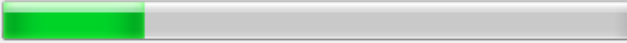
Select the bitstream file to download

Press the "Program FPGA: write SPI Flash" button if you want the *.bit or *.mcs file to be written into the SPI Flash.

The OpenFutNet tool will then attempt to erase the SPI Flash memory.

OpenFutNet: Open Firmware Upgrade Tool .NET v1.02 Beta

FPGA programming: *.bit or *.mcs file

FPGA SPI Flash erasing progress 

FPGA bitstream file path

Select *.bit or *.mcs file, or enter file path

Program FPGA: write SPI Flash

Trenz Electronic Reference Architecture based on MicroBlaze soft processor

TE Reference based: Yes/No

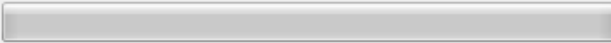
Major Version

Minor Version

Release Version

Build Version

USB Cypress FX2 microcontroller EEPROM programming: *.iic file

IIC EEPROM write progress 

Select *.iic file or enter file path

Program USB: write IIC EEPROM

USB Firmware file path

Latest firmware version flashed on FX2 microcontroller EEPROM

TE FX2 Firmware Gen3

Type Major Version Minor Version

VID PID

Trenz Electronic USB FX2

☐ Clear the log text, in the box below, before every new programming operation

☐ Verbose log text: Yes/No

☐ Flash ID retrieved: Yes/No

Clear the log text in the box below

Show Help

Refresh information about FPGA and FX2

attached to USB port (or more generally when the TE module is powered on with EEPROM switch ON).
 INFO: Trenez Electronic TE_USB_FX2 driver used for normal work with Trenez Electronic module
 INFO: You can write a new firmware inside the EEPROM (if EEPROM switch is set to ON)
 INFO: You can write a new FPGA bitstream inside SPI Flash.

SPI Flash erasing: START.....|

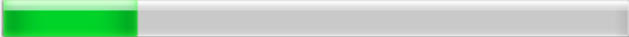
SPI Flash erasing

SPI Flash memory erasing

If the SPI Flash memory erasing is successful, the OpenFutNet tool will then attempt to write the SPI Flash memory, if the corresponding box has been selected.

OpenFutNet: Open Firmware Upgrade Tool .NET v1.02 Beta

FPGA programming: *.bit or *.mcs file

FPGA SPI Flash writing progress 

FPGA bitstream file path

Select *.bit or *.mcs file, or enter file path

Program FPGA: write SPI Flash

Trenz Electronic Reference Architecture based on MicroBlaze soft processor

TE Reference based: Yes/No

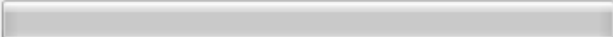
Major Version

Minor Version

Release Version

Build Version

USB Cypress FX2 microcontroller EEPROM programming: *.jic file

IIC EEPROM write progress 

USB Firmware file path

Select *.jic file or enter file path

Program USB: write IIC EEPROM

Latest firmware version flashed on FX2 microcontroller EEPROM

TE FX2 Firmware Gen3

3

2

VID 0x0BD0

PID 0x0300

Type

Major Version

Minor Version

Trenz Electronic USB FX2

☐ Clear the log text, in the box below, before every new programming operation

☐ Verbose log text: Yes/No

☒ Flash ID retrieved: Yes/No

Clear the log text in the box below

Show Help

Refresh information about FPGA and FX2

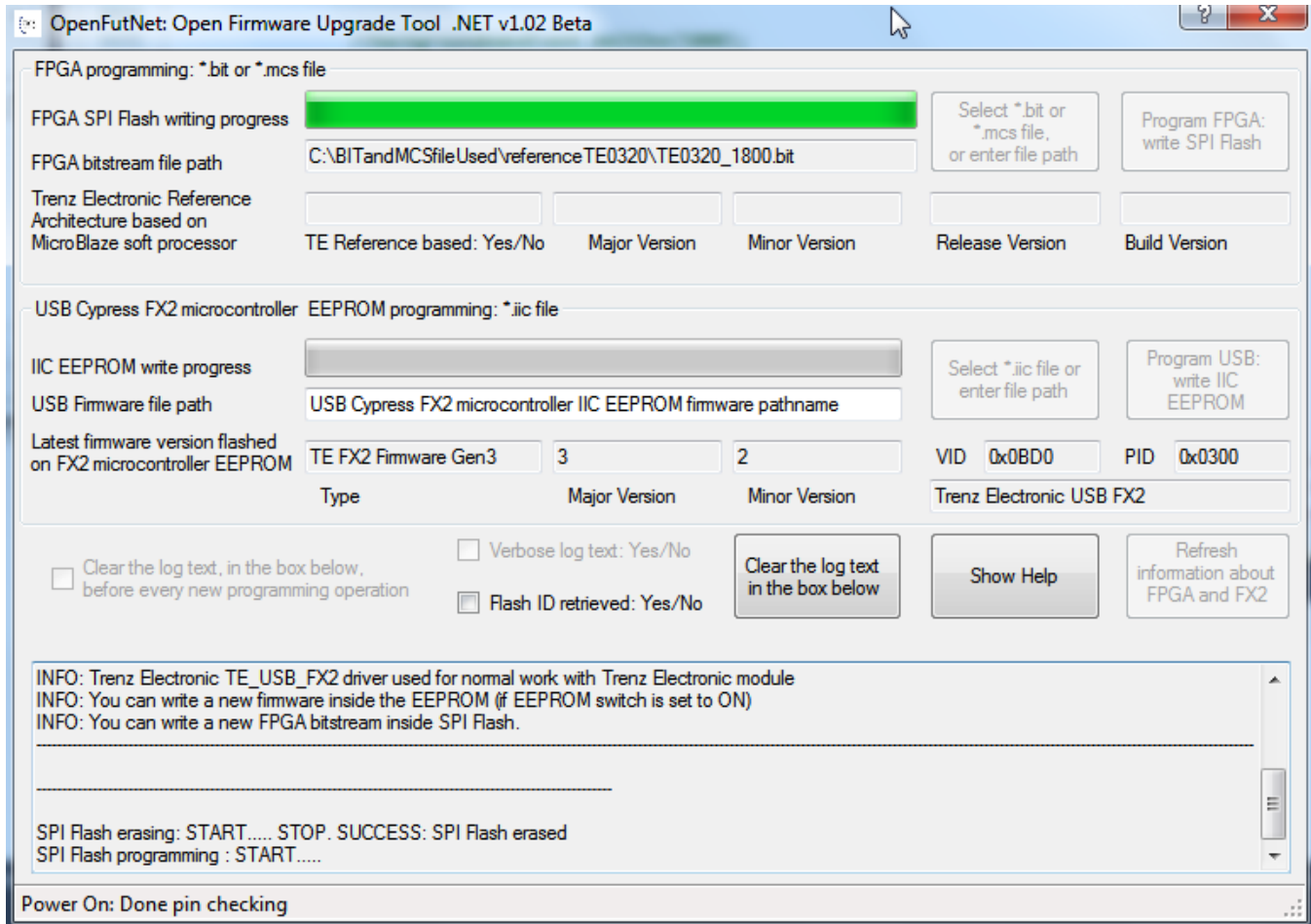
INFO: Trenez Electronic TE_USB_FX2 driver used for normal work with Trenez Electronic module
INFO: You can write a new firmware inside the EEPROM (if EEPROM switch is set to ON)
INFO: You can write a new FPGA bitstream inside SPI Flash.

SPI Flash erasing: START..... STOP. SUCCESS: SPI Flash erased
SPI Flash programming : START.....]

SPI Flash programming

SPI Flash programming

If the SPI Flash memory programming is successful, FPGA will try to configure from SPI Flash memory. This step take the name of "DONE PIN Checking". SPI Flash programming can be ended successfully, but the "DONE PIN Checking" can end successfully or with a failure. When the configuration process successfully completes, the FPGA either actively drives the DONE pin High (DriveDone) or allows the DONE pin to float High using either an internal or external pull-up resistor, controlled by the DonePin bitstream generator option.



DONE PIN Checking

Two results are possible:

- Status: SUCCESS ("DONE PIN Checking: SUCCESS")
- Status: WARNING ("DONE PIN Checking: FAILURE")

Status: SUCCESS ("DONE PIN Checking: SUCCESS")

If the bitstream (*.bit or *.mcs) of correct FPGA is selected (for example: TE0320 for TE0320 but also Spartan3A 1800 for Spartan3A 1800 FPGA, not Spartan3A 3400 for Spartan3A 1800) and the switches are correctly setted, the "DONE PIN Checking" should end successfully and the FPGA should be ready to work.

OpenFutNet: Open Firmware Upgrade Tool .NET v1.02 Beta

FPGA programming: *.bit or *.mcs file

FPGA SPI Flash writing progress

FPGA bitstream file path

Select *.bit or *.mcs file, or enter file path

Program FPGA: write SPI Flash

Trenz Electronic Reference Architecture based on MicroBlaze soft processor

TE Reference based: Yes/No Major Version Minor Version Release Version Build Version

USB Cypress FX2 microcontroller EEPROM programming: *.iic file

IIC EEPROM write progress

USB Firmware file path

Select *.iic file or enter file path

Program USB: write IIC EEPROM

Latest firmware version flashed on FX2 microcontroller EEPROM

TE FX2 Firmware Gen3 Major Version Minor Version VID PID

Type

☐ Clear the log text, in the box below, before every new programming operation

☐ Verbose log text: Yes/No

☐ Flash ID retrieved: Yes/No

Clear the log text in the box below

Show Help

Refresh information about FPGA and FX2

SPI Flash erasing: START..... STOP. SUCCESS: SPI Flash erased
 SPI Flash programming : START..... STOP. SUCCESS: SPI Flash programmed.
 INFO: DONE pin is High (SUCCESS: SPI Flash has been correctly readback by FPGA).

SUCCESS: SPI Flash programmed and checked using DONE pin.

DONE PIN check: Success

Status. WARNING ("DONE PIN Checking: FAILURE")

SPI Flash programming can be ended successfully, but the "DONE PIN Checking" can fails. This may happens if the bitstream of wrong FPGA is selected (TE0300 for TE0320, Spartan3E for Spartan3A FPGA, Spartan3A 3400 for Spartan3A 1800) or if the switches are not correctly set.

OpenFutNet: Open Firmware Upgrade Tool .NET v1.02 Beta

FPGA programming: *.bit or *.mcs file

FPGA SPI Flash writing progress 

FPGA bitstream file path

Select *.bit or *.mcs file, or enter file path

Program FPGA: write SPI Flash

Trenz Electronic Reference Architecture based on MicroBlaze soft processor

TE Reference based: Yes/No

Major Version

Minor Version

Release Version

Build Version

USB Cypress FX2 microcontroller EEPROM programming: *.iic file

IIC EEPROM write progress 

USB Firmware file path

Select *.iic file or enter file path

Program USB: write IIC EEPROM

Latest firmware version flashed on FX2 microcontroller EEPROM

TE FX2 Firmware Gen3 Major Version Minor Version

VID PID

Trenz Electronic USB FX2

☐ Clear the log text, in the box below, before every new programming operation

☐ Verbose log text: Yes/No

☐ Flash ID retrieved: Yes/No

Clear the log text in the box below

Show Help

Refresh information about FPGA and FX2

SPI Flash erasing: START..... STOP. SUCCESS: SPI Flash erased

SPI Flash programming : START..... STOP. WARNING: SPI Flash programmed succesfully but DONE pin is not High

WARNING: SPI Flash programmed succesfully but the FPGA seems to have uncorrectly readback the bitstream stored inside SPI Flash.

INFO: A power off/on cycle of the TE module is advised. After this, the TE module should start correctly. Otherwise (but unlikely), you should rewrite the SPI Flash.

INFO: If the power off/on cycle doesn't work, the *.bit or *.mcs file selected could be wrong; they could be prepared for a different FPGA device.

WARNING: SPI Flash programmed succesfully but DONE pin is not High

DONE PIN check: failure

In the case of "DONE PIN Checking: SUCCESS" the FPGA Configuration Procedure is ended.
 Otherwise ("DONE PIN Checking: FAILURE") you could try a power off/on cycle (turn the module off and on **with the correct switches setting**). If this solution doesn't work, you have almost certainly programmed the wrong bitstream in the SPI Flash memory.