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.

PGA programming: ".bit or ".mcs	file				
PGA SPI Flash writing progress				Select *.bit or	Program FPGA:
PGA bitstream file path	FPGA SPI Flash bitstream path	name	or enter file path	write SPI Flash	
renz Electronic Reference	No, Custom project not base				
licroBlaze soft processor	TE Reference based: Yes/No	Major Version	Minor Version	Release Version	Build Version
ISB Cypress FX2 microcontroller	EEPROM programming: *.iic file	e			
C EEPROM write progress				Select *.iic file or	Program USB:
SB Firmware file path	USB Cypress FX2 microcontro	ller IIC EEPROM firmv	vare pathname	enter file path	EEPROM
atest firmware version flashed n 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 before every new programm	below, 🔲 Verbose	e 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 alr	eady inserted when OpenFut st	art to run			
NFO: The Trenz Electronic modu	le starts as a Trenz Electronic I	Device: this happens	when EEPROM switch	is set to ON when the Ti	E module is
NFO: Trenz Electronic TE_USB NFO: You can write a new firmwa	heraily when the TE module is p FX2 driver used for normal work are inside the EEPROM (if EEP) bitstream inside SPI Flash.	k with Trenz Electroni ROM switch is set to (c module ON)		E
NFO: The Trenz Electronic modu ttached to USB port (or more ge NFO: Trenz Electronic TE_USB_ NFO: You can write a new firmwr	le starts as a Trenz Electronic I nerally when the TE module is p FX2 driver used for normal worl are inside the EEPROM (# EEP), bitstream inside SPI Flash.	Device: this happens powered on with EEP k with Trenz Electroni ROM switch is set to (when EEPROM switch ROM switch ON). c module DN)	is set to ON when the Ti	E module is

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 Firmwar	e Upgrade Tool .NET v1.02	2 Beta			8 23			
FPGA programming: *.bit or *.mcs file								
FPGA SPI Flash writing progress	PGA SPI Flash writing progress							
FPGA bitstream file path	stream file path FPGA SPI Flash bitstream pathname or enter file path							
Trenz Electronic Reference Architecture based on	Not yet retrieved	Not yet retrieved	Not yet retrieved	Not yet retrieved	Not yet retrieved			
MicroBlaze soft processor	TE Reference based: Yes/No	Major Version	Minor Version	Release Version	Build Version			
USB Cypress FX2 microcontroller	EEPROM programming: *.iic f	ile						
IIC EEPROM write progress				Select *.iic file or	Program USB: write IIC			
USB Firmware file path	USB Firmware file path USB Cypress FX2 microcontroller IIC EEPROM firmware pathname enter file path EEP							
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 Flash ID retrieved: Yes/No Flash ID retrieved: Yes/No								
A DEWESoft device is already	inserted when OpenFut starts t	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: TOU 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			Select *.bit or *.mcs file.	Program FPGA:				
FPGA bitstream file path	C:\BITandMCSfileUsed\refer	enceTE0320\TE0320	_1800.bit	or enter file path	Write SPI Hash			
Trenz Electronic Reference Architecture based on	TE Beforence based: Yes (No	Major Vomion	Minor Verrien	Polozoo Verrieo	Puild Varrian			
MICIODIAZE SUL PIOCESSU	TE Neletence based. Tes/140		MINOR VEISION	TREASE VEISION	Duid Version			
USB Cypress FX2 microcontroller	EEPROM programming: *.iic fi	le						
IIC EEPROM write progress				Select *.iic file or	Program USB: write IIC			
USB Firmware file path	USB Firmware file path USB Cypress FX2 microcontroller IIC EEPROM firmware pathname enter file path							
Latest firmware version flashed on FX2 microcontroller EEPROM	TE FX2 Firmware Gen3	3	2	VID 0x0BD0	PID 0x0300			
	Туре	Major Version	Minor Version	Trenz Electronic USE	3 FX2			
Clear the log text, in the box below, before every new programming operation Flash ID retrieved: Yes/No Flash ID retrieved: Yes/No								
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.								
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.

FPGA programming: *bit or *mcs file Leve FPGA sprigramming: *bit or *mcs file Select *bit or *mcs file, or enter file path Program FPGA: write SPI Rash FPGA bitstream file path C:\BITandMCSfileUsed/veference TE0320\TE0320_1800.bit or enter file path Program FPGA: write SPI Rash Trenz Bectonic Reference Architecture based on Minor Version Minor Version Build Version USB Cypress FX2 microcontroller EEPROM programming: *lic file Select *lic file or enter file path Program USB: write IIC USB Firmware file path USB Cypress FX2 microcontroller IIC EEPROM firmware pathname Select *lic file or enter file path Program USB: write IIC Latest firmware version flashed on FX2 microcontroller IIC EEPROM firmware pathname VID 0x0BD0 PID 0x0300 Type Major Version Minor Version Trenz Bectronic 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, from about FPGA and FX2 INFO: Trenz Bectronic TE_USB_FX2 driver used for normal work with Trenz Bectronic module Information about FPGA and FX2 INFO: Trenz Bectronic TE_USB_FX2 driver used for normal work with Trenz Bectronic module FPGA and FX2 INFO: Trenz Bectronic TE_USB_FX2 driver used for normal work with Tren	😢 OpenFutNet: Open Firmware Upgrade Tool .NET v1.02 Beta								
FPGA SPI Rash writing progress Select * bt or *mos file, or enter file path Program FPGA: write SPI Rash FPGA bitstream file path C\BITandMCSfileUsed\veference TE0320\TE0320_1800.bit or enter file path Program FPGA: write SPI Rash Trenz Bectronic Reference Architecture based on MicroBlaze soft processor TE Reference based: Yes/No Major Version Release Version Build Version USB Cypress FX2 microcontroller EEPROM programming: * iic file Select * iic file or enter file path Program USB: write IIC EEPROM write programs Program USB: write IIC EEPROM USB Firmware file path USB Cypress FX2 microcontroller IIC EEPROM firmware pathname Select * iic 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 0x08D0 PID 0x0300 Trenz Electronic USB FX2 Image: Verbose log text: Yes/No Image: Verbose log text: Yes/No Clear the log text. In the box below. Refresh Information about FIGA and FX2 INFO: Trenz Electronic TE_USB_FX2 driver used for normal work with Trenz Electronic module Inthe box below Show Help FIGA and FX2 INFO: Trenz Electronic TE_USB_FX2 driver used for normal work with Trenz Electronic module Inthe box below Show Help FIGA and	FPGA programming: *.bit or *.mcs file								
FPGA bitstream file path C:\BITandMCSfileUsed/veference TE0320\TE0320_1800.bit or enter file path Immed Sin Files in the set on Build Version 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 Immed Sin File path Program USB: write IIC USB File path USB Cypress FX2 microcontroller IIC EEPROM filmware pathname Select * Jic file or enter file path Program USB: write IIC USB File path USB Cypress FX2 microcontroller IIC EEPROM filmware pathname 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 Clear the log text in the box below FPGA and FX2 INFO: Trenz Electronic TE_USB_FX2 driver used for normal work with Trenz Electronic module Inthe box below FPGA and FX2 INFO: Trenz Electronic TE_USB_FX2 driver used for normal work with Trenz Electronic module Inthe box below Immation about FPGA and FX2 SPI Flash erasing: START STAPT STAPT	FPGA SPI Flash writing progress			Select *.bit or *.mcs file,	Program FPGA:				
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 Rypress FX2 microcontroller IIC EEPROM firmware pathname VID 0x08D0 PID 0x0300 Type Major Version Minor Version Trenz Electronic USB FX2 Ocear the log text, in the box below. Verbose log text: Yes/No Clear the log text, in the box below. Refresh information about FPGA and FX2 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 (# 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 : START	FPGA bitstream file path C:\E	BITandMCSfileUsed\referer	or enter file path	Wile Stillast					
USB Cypress FX2 microcontroller EEPROM programming: * iic file IIC EEPROM write progress USB Firmware file path USB Cypress FX2 microcontroller IIC EEPROM firmware pathname Select * iic file or enter 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 Trenz Electronic USB FX2 Clear the log text, in the box below, before every new programming operation 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 greenew with Trenz Electronic module INFO: You can write a new FPGA bitstream inside SPI Flash FI Flash programming : START	Trenz Electronic Reference Architecture based on MicroBlaze soft processor TE F	Reference based: Yes/No	Major Version	Minor Version	Release Version	Build Version			
IIC EEPROM write progress Select * lic file or enter file path Program USB: write IIC EEPROM filmware pathname USB Filmware version flashed on FX2 microcontroller IIC EEPROM filmware pathname VID 0x0BD0 PID 0x0300 Type Major Version Minor Version Trenz Electronic USB FX2 Program USB: write IIC EEPROM 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 Refresh information about FPGA and FX2 INFO: Trenz Electronic TE_USB_FX2 driver used for normal work with Trenz Electronic module FPGA and FX2 PROGRAM Switch is set to ON) NINFO: You can write a new FIGA bitstream inside SPI Flash. Image: START	USB Cypress FX2 microcontroller EEP	PROM programming: *.iic file	,						
USB Firmware file path USB Cypress FX2 microcontroller IIC EEPROM firmware pathname enter file path EEPROM Latest firmware version flashed on FX2 microcontroller EEPROM TE FX2 Firmware Gen3 3 2 VID 0x08D0 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 Clear the log text in the box below Refresh information about FPGA and FX2 INFO: Trenz Electronic TE_USB_FX2 driver used for normal work with Trenz Electronic module Nov Help Refresh information about FPGA and FX2 INFO: You can write a new firmware inside the EEPROM (if EEPROM switch is set to ON) NINFO: You can write a new FPGA bitstream inside SPI Rash. E SPI Rash programming : START	IIC EEPROM write progress				Select *.iic file or	Program USB:			
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 Clear the log text in the box below Show Help Refresh information about FPGA and FX2 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) No No INFO: You can write a new FPGA bitstream inside SPI Flash. SPI Flash erasing: START STOP. SUCCESS: SPI Flash erased SPI Flash programming : START START	USB Firmware file path USB	B Cypress FX2 microcontrol	er IIC EEPROM firmw	are pathname	enter file path	EEPROM			
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 Clear the log text in the box below Show Help Refresh information about FPGA and FX2 INFO: Trenz Electronic TE_USB_FX2 driver used for normal work with Trenz Electronic module NFO: You can write a new firmware inside the EEPROM (if EEPROM switch is set to ON) NFO: You can write a new FPGA bitstream inside SPI Flash. Image: STARTSTOP. SUCCESS: SPI Flash erased SPI Flash programming : START Start	Latest firmware version flashed on FX2 microcontroller EEPROM	FX2 Firmware Gen3	3	2	VID 0x0BD0	PID 0x0300			
Clear the log text, in the box below, before every new programming operation Image: Verbose log text: Yes/No Clear the log text in the box below Show Help Refresh information about FPGA and FX2 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 Rash. Image: START STOP. SUCCESS: SPI Rash erased SPI Rash erased SPI Rash programming : START (image: START)	Ту	Type Major Version Minor Version Trenz Electronic USB FX2							
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.	Clear the log text, in the box below. before every new programming operation Flash ID retrieved: Yes/No Refresh information about FPGA and FX2								
SPI Flash erasing: START STOP. SUCCESS: SPI Flash erased SPI Flash programming : START	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.								
	SPI Rash erasing: START STOP. SUCCESS: SPI Rash erased SPI Rash programming : START								
SPI Flash programming	SPI Flash programming								

SPI Flash programming

If the SPI Flash memory programming is succesful, 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.

· OpenFutNet: Open Firmware	e Upgrade Tool .NET v1.02	Beta	2		S X	
FPGA programming: *.bit or *.mcs	file					
FPGA SPI Flash writing progress				Select *.bit or *.mcs file.	Program FPGA:	
FPGA bitstream file path	C:\BITandMCSfileUsed\refere	enceTE0320\TE0320	_1800.bit	or enter file path	write SPI Hash	
Trenz Electronic Reference Architecture based on						
MicroBlaze soft processor	I E Reference based: Yes/No	Major Version	Minor Version	Release Version	Build Version	
USB Cypress FX2 microcontroller	EEPROM programming: *.iic fil	le				
IIC EEPROM write progress				Select *.iic file or	Program USB: write IIC	
USB Firmware file path	USB Cypress FX2 microcontro	oller IIC EEPROM firms	vare pathname	enter file path	EEPROM	
Latest firmware version flashed on FX2 microcontroller EEPROM	TE FX2 Firmware Gen3	3	2	VID 0x0BD0	PID 0x0300	
	Туре	Major Version	Minor Version	Trenz Electronic US	3 FX2	
Clear the log text, in the box before every new programm	below, ing operation	e log text: Yes/No D retrieved: Yes/No	Clear the log text in the box below	Show Help	Refresh information about FPGA and FX2	
INFO: Trenz Electronic TE_USB INFO: You can write a new firmwa INFO: You can write a new FPGA	FX2 driver used for normal wor are inside the EEPROM (if EEP .bitstream inside SPI Flash.	k with Trenz Electroni 'ROM switch is set to (c module DN)		•	
SPI Flash erasing: START STOP. SUCCESS: SPI Flash erased						
SPI Flash programming : START					Ψ.	
					1	

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	PGA SPI Flash writing progress C:\BITandMCSfileUsed\referenceTE0320\TE0320_1800.bit						
Trenz Electronic Reference Architecture based on MicroBlaze soft processor	Yes TE Reference based: Yes/No	8 Maior Version	2 Minor Version	0 Release Version	0 Build Version		
USB Cypress FX2 microcontroller	I E Reference based: Tes/INO Major Version Minor Version Release Version Build Version						
IIC EEPROM write progress USB Firmware file path	USB Cypress FX2 microcontroller IIC EEPROM firmware pathname			Select *.iic 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			FX2			
Clear the log text, in the box below, before every new programming operation Image: Verbose log text: Yes/No Clear the log text in the box below Show Help Refresh information about FPGA and FX2							
SPI Bash erasing: START STOP SUCCESS: SPI Bash erased							
SPI Rash programming : START STOP. SUCCESS: SPI Rash programmed. INFO: DONE pin is High (SUCCESS: SPI Rash 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	B			Select *.bit or *.mcs file,	Program FPGA:		
FPGA bitstream file path	C:\BITandMCSfileUsed\refer	enceTE0320\TE0320	_3400.bit	or enter file path	write SP1 Hash		
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 f	ile]				
IIC EEPROM write progress				Select *.iic file or	Program USB: write IIC		
USB Firmware file path	USB Cypress FX2 microcontr	oller IIC EEPROM firmv	vare pathname	enter file path	EEPROM		
Latest firmware version flashed on FX2 microcontroller EEPROM	TE FX2 Firmware Gen3	3	2	VID 0x0BD0	PID 0x0300		
	Туре	Major Version	Minor Version	Trenz Electronic USE	FX2		
Clear the log text, in the box below, before every new programming operation Image: Verbose log text: Yes/No Clear the log text in the box below Refresh information about promotion about promotion Image: Plash ID retrieved: Yes/No Image: Plash ID retrieved: Yes/No Clear the log text in the box below Show Help Refresh information about promotion							
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 programm	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.