# SPI Direct In-System Programming (ISP))

Direct SPI configuration is supported only up to Xilinx iMPACT version 11.x. See Xilinx AR#36156. Available only for TE0300 (through J3 SPI interface) and TE0320 (through B2B connection).

For further information about direct (pure SPI) in-system programming of SPI Flash memories, please see Xilinx Application Note XAPP951 "Configuring Xilinx FPGAs with SPI Serial Flash".

#### You must follow the procedure below.

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Make sure that reset swith is enabled:

- S2 is switched to "Reset" (OFF) during programming (TE0300 module);
  - S1D is switched to "Reset" (ON) during programming (TE0320 module).

Connect the host computer to the micromodule through both the SPI flying leads cable and the USB cable.

Start Xilinx ISE iMPACT. The following example shows the case of iMPACT 9.2. If the "iMPACT Project" window pops up, press the "Cancel" button.

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	Load most recent project file when iMPACT starts	
default.ipf	Browse	
<u>0</u> K	<u>C</u> ancel	
	default.ipf	default.ipf       ● Browse         □ Load most recent project file when iMPACT starts         default.ipf       ● Browse

"iMPACT Project" window pops up

Double click the "Direct SPI Configuration" option in the "Modes" panel.





Right click the "Direct SPI Configuration" panel to add a device and select "Add SPI Device".





Right click the "Direct SPI Configuration" panel to add a device and select "Add SPI Device"

You can now select the file corresponding to your device. In the following example, we will show how to select the micromodule reference device "blinking. mcs" in the "TE0300" folder.

Add Device					? 🔀
<u>S</u> uchen in:	🛅 TE0300	-	- 🔶 🔁	r	
Zuletzt verwendete D Desktop	<mark>₪ blinkin.mcs</mark> ₪ blink1600.mcs ┌ <mark>┐</mark> 1st_program				
Eigene Dateien					
Arbeitsplatz					
Netzwerkumgeb	Dateiname: blink	in.mcs		•	Ŭ <u>f</u> fnen
ung	Dateityp: All D	esign Files (*.mcs *.exo)			bbrechen

select the micromodule reference device "blinking.mcs" in the "TE0300" folder

Select the part name corresponding to the SPI flash present on the module (STMicroelectronics M25P32, a 32 Mbit (4M x 8) Serial Flash memory).

😻 Select Device Par	t Name	X
Select PROM		
Part Name:	M25P32	
<u>Q</u> K	<u>C</u> ancel Help	

Select the part name corresponding to the SPI flash present on the module

iMPACT should now look like this.

😵 iMPACT - [Direct SPI Configurati	on]		
🕵 Eile Edit View Operations Options 🤉	<u>O</u> utput Debu <u>q W</u> indow <u>H</u> elp		
: 🖻 🖥 👗 🖬 🌾 🗱 🗱			
Flows × Compared and any Scan Compared and any Scan Compared and any Scan Compared and any Scan Flows Compared any Scan Compared any Scan	MPACT Processes     ×       Available Operations are:     →       → Program     →       → Verify     →       → Erase     →       → Blank Check     →       → Readback	SCLK MOSI PROM SS_n m25p32 blinkin.mcs	
Modes	Operations	WISO WISO WISO WISO WISO WISO WISO WISO	
<pre>X Welcome to iMPACT // *** BATCH CMD : setM // *** BATCH CMD : setM Selected part: M25P32 INF0:iMPACT:S01 - '1': </pre>	Node -spi Node -spi Added Device M25P32 succes  TEO300/blinkin.mcs' ime = 0 sec. uttribute -position 1 -attr	sfully.  packageNamevalue ""	
		<u>&gt;</u>	
		No Cable Connection	

iMPACT Direct SPI Configuration

Right click the SPI PROM device and select the "Program" operation.



Select the "Program" operation

In the "Programming Properties" window, just leave the default settings and press the "OK" button.

# Programming Properties

## <u>C</u>ategory

Programming Properties
 Advanced PROM Programming Properties
 Revision Properties

Venty	
General CPLD And PROM Properties	
Erase Before Programming     Read Protect	
PROM/CoolRunner-II Usercode (8 Hex Digits)	
CPLD Specific Properties	
Write Protect Functional Test On-The-Fly Program	n
XPLA UES Enter up to 13 characters	
PROM Specific Properties	
Load FPGA Parallel Mode Use D4 for CF	
Spartan3AN Programming Properties	
🗌 Data Protect 📃 Data Lockdown	
FPGA Device Specific Programming Properties	
Pulse PROG Program Key	
Assert Cable INIT, during programming.	

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### "Programming Properties" window

iMPACT will first erase the SPI Flash memory (notice the mismatch between the two progress indicators)

Progress Dialog [61%]	? 🔀
Executing command	
0%	
	Cancel

Erase the SPI Flash memory

and then write the bitsream in the SPI Flash Memory (notice the match between the two progress indicators).

😵 Progress Dialog [10%]	? 🛛
Executing command	
10%	
	Cancel

Write the bitsream in the SPI Flash Memory

After successful programming, you should read the message "Program Succeeded" popping up for a few seconds in the "Direct SPI Configuration" panel.



Move Master Reset switch back to the "Run" position. Make sure that reset swith is disabled:

• S2 is switched to "Run" (ON) after programming (TE0300 module);

• S1D is switched to "Rin" (OFF) after programming (TE0320 module).

In case you uploaded the test design, you should see the on-board led blinking at 0.5 Hz.