



Flasher PPC

Flash Programmer for PowerPC cores

Flasher PPC is a programming tool for PowerPC based microcontrollers with on-chip or external flash memory. Flasher PPC is designed for programming flash targets with the J-Flash software or stand-alone. It connects via Ethernet, USB or RS232 interface to a PC, running Microsoft Windows 2000, Windows XP, Windows 2003, Windows Vista or Windows 7.

Flasher PPC itself has a built-in 20-pin JTAG connector but is shipped with an 14-pin adapter for PowerPC devices.

Features

- Stand-alone JTAG programmer (Once set up, Flasher can be controlled without the use of PC program)
- Support for PowerPC cores
- Supports programming of internal and external flash memory
- 64 MB memory for storage of target program
- Host interfaces: Ethernet, USB, RS232
- Serial in target programming supported
- Data files can be updated via Ethernet/USB using J-Flash, via RS232 or via the mass storage functionality of Flasher PPC
- Target interface: JTAG
- No power supply required, powered through USB
- Programming speed up to 138 Kbytes/second depending on target hardware

Supported Devices

Currently, programming of the internal flash memory of the following devices is supported by Flasher PPC:

Device	CPU core	Flash size [kBytes]
ST SPC560B40	e200z0 (PowerPC)	320 (256 KB Code flash + 64 KB Data flash)
ST SPC560B44	e200z0 (PowerPC)	448 (384 KB Code flash + 64 KB Data flash)
ST SPC560B50	e200z0 (PowerPC)	576 (512 KB Code flash + 64 KB Data flash)
ST SPC560C40	e200z0 (PowerPC)	320 (256 KB Code flash + 64 KB Data flash)
ST SPC560C44	e200z0 (PowerPC)	448 (384 KB Code flash + 64 KB Data flash)
ST SPC560C50	e200z0 (PowerPC)	576 (512 KB Code flash + 64 KB Data flash)
ST SPC560P40	e200z0 (PowerPC)	320 (256 KB Code flash + 64 KB Data flash)
ST SPC560P44	e200z0 (PowerPC)	448 (384 KB Code flash + 64 KB Data flash)
ST SPC560P50	e200z0 (PowerPC)	576 (512 KB Code flash + 64 KB Data flash)

Specifications

General	
Supported OS	Microsoft Windows 2000 Microsoft Windows XP Microsoft Windows XP x64 Microsoft Windows 2003 Microsoft Windows 2003 x64 Microsoft Windows Vista Microsoft Windows Vista x64 Microsoft Windows 7 Microsoft Windows 7 x64
Operating Temperature	+ 5 °C ... + 60 °C
Storage Temperature	- 20 °C ... + 65 °C
Relative Humidity (non-condensing)	< 90% rH
Mechanical	
Size (without cables)	121mm x 66mm x 30mm
Weight (without cables)	119g

Available interfaces	
USB Host Interface	USB 2.0, full speed
Ethernet Host Interface	10/100 MBit
RS232 Host Interface	RS232 9-pin
Target Interface	JTAG 20-pin (shipped with 14-pin adapter for Renesas PPC)
JTAG Interface, Electrical	
Power Supply	USB powered, 100mA for Flasher PPC. 500 mA if target is powered by Flasher PPC
Target interface voltage (V_{IF})	1.2 ... 5V
Target supply voltage	4.5V ... 5V (on the 14-pin adapter the target supply voltage can be switched between 3.3V and 5V)
Target supply current	max. 400mA
Reset Type	Open drain. Can be pulled low or tristated
Reset low level output voltage (V_{OL})	$V_{OL} \leq 10\%$ of V_{IF}
For the whole target voltage range (1.8V $\leq V_{IF} \leq 5V$)	
LOW level input voltage (V_{IL})	$V_{IL} \leq 40\%$ of V_{IF}
HIGH level input voltage (V_{IH})	$V_{IH} \geq 60\%$ of V_{IF}
For 1.8V $\leq V_{IF} \leq 3.6V$	
LOW level output voltage (V_{OL}) with a load of 10 kOhm	$V_{OL} \leq 10\%$ of V_{IF}
HIGH level output voltage (V_{OH}) with a load of 10 kOhm	$V_{OH} \geq 90\%$ of V_{IF}
For 3.6V $\leq V_{IF} \leq 5V$	
LOW level output voltage (V_{OL}) with a load of 10 kOhm	$V_{OL} \leq 20\%$ of V_{IF}
HIGH level output voltage (V_{OH}) with a load of 10 kOhm	$V_{OH} \geq 80\%$ of V_{IF}
JTAG Interface, Timing	
Max. JTAG speed	up to 12MHz
Data input rise time (T_{rdi})	$T_{rdi} \leq 20ns$
Data input fall time (T_{fdi})	$T_{fdi} \leq 20ns$
Data output rise time (T_{rdo})	$T_{rdo} \leq 10ns$
Data output fall time (T_{fdo})	$T_{fdo} \leq 10ns$
Clock rise time (T_{rc})	$T_{rc} \leq 10ns$
Clock fall time (T_{fc})	$T_{fc} \leq 10ns$

JTAG interface connection (14-pin)

Pin	Signal	Type	Description
1	TDI	Output	JTAG clock signal to target CPU. It is recommended that this pin is pulled to a defined state on the target board. Typically connected to TCK on target CPU.
3	TDO	Input	JTAG data output from target CPU. Typically connected to TDO on target CPU.
5	TCK	Output	JTAG clock signal to target CPU. It is recommended that this pin is pulled to a defined state on the target board. Typically connected to TCK on target CPU.
7	---	NC	This pin is not connected to Flasher PPC.
8	---	NC	This pin is not connected to Flasher PPC.
9	nRES	I/O	Target CPU reset signal. Typically connected to the RESET pin of the target CPU, which is typically called "nRST", "nRESET" or "RESET".
10	TMS	Output	JTAG mode set input of target CPU. This pin should be pulled up on the target. Typically connected to TMS on target CPU.
11	VDDE7	Input	This is the target reference voltage. It is used to check if the target has power, to create the logic-level reference for the input comparators and to control the output logic levels to the target. It is normally fed from Vdd of the target board and must not have a series resistor.
13	nRDY	Input	Nexus ready output. Indicates to the development tools that the data is ready to be read from or written to the Nexus read/write access registers.
14	JCOMP	Output	JTAG TAP Controller Enable / JTAG Compliancy (JCOMP). JCOMP is used to enable the TAP controller for communication to the JTAG state machine for boundary scan and for debug access. This pin is set to HIGH by Flasher PPC (in order to enable the JTAG TAP controller on the target device).

Notes:

- All pins marked NC are not connected to Flasher PPC. Any signal can be applied here; Flasher PPC will simply ignore such a signal.
- Pins 2, 4, 6, 12 are GND pins connected to GND in Flasher PPC. They should also be connected to GND in the target system.

Performance of MCUs with internal flash memory

The following table lists program and erase performance values for different controllers.

Microcontroller	Size [kByte]	Erase time [sec]	Program time [sec]	Verify time [sec]	Total time [sec]
ST SPC560B50	576	4.747	4.159	1.929	10.917

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