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Revisions

This manual describes the Flasher device.

For further information on topics or routines not yet specified, please contact us.

Revision	Date	Ву	Explanation
V4.64a Rev. 0	132602	EL	Chapter "Working with Flasher" * Section "LED status indicators" updated.
V4.63a Rev. 0	130131	EL	Chapter "Remote Control" * Section "ASCII command interface" Chapter "ASCII interface via Telnet" added.
V4.62 Rev. 0	130125	EL	Flasher ARM, Flasher RX and Flasher PPC manual have been combined.

About this document

This document describes the Flasher family (Flasher ARM, Flasher RX and Flasher PPC). It provides an overview about the major features of the Flasher, gives some background information about JTAG and describes Flasher related software packages available from Segger. Finally, the chapter *Support and FAQs* on page 61 helps to troubleshoot common problems.

For simplicity, we will refer to Flasher ARM/RX/PPC as Flasher in this manual.

Typographic conventions

This manual uses the following typographic conventions:

Style	Used for
Body	Body text.
Keyword	Text that you enter at the command-prompt or that appears on the display (that is system functions, file- or pathnames).
Reference	Reference to chapters, tables and figures or other documents.
GUIElement	Buttons, dialog boxes, menu names, menu commands.

Table 1.1: Typographic conventions



SEGGER Microcontroller GmbH & Co. KG develops and distributes software development tools and ANSI C software components (middleware) for embedded systems in several industries such as telecom, medical technology, consumer electronics, automotive industry and industrial automation.

SEGGER's intention is to cut software developmenttime for embedded applications by offering compact flexible and easy to use middleware, allowing developers to concentrate on their application.

Our most popular products are emWin, a universal graphic software package for embedded applications, and embOS, a small yet efficient real-time kernel. emWin, written entirely in ANSI C, can easily be used on any CPU and most any display. It is complemented by the available PC tools: Bitmap Converter, Font Converter, Simulator and Viewer. embOS supports most 8/16/32-bit CPUs. Its small memory footprint makes it suitable for single-chip applications.

Apart from its main focus on software tools, SEGGER develops and produces programming tools for flash microcontrollers, as well as J-Link, a JTAG emulator to assist in development, debugging and production, which has rapidly become the industry standard for debug access to ARM cores.

Corporate Office: http://www.segger.com

EMBEDDED SOFTWARE (Middleware)



emWin

Graphics software and GUI

emWin is designed to provide an efficient, processor- and display controller-independent graphical user interface (GUI) for any application that operates with a graphical display. Starterkits, eval- and trial-versions are available.

embOS

Real Time Operating System

embOS is an RTOS designed to offer the benefits of a complete multitasking system for hard real time applications with minimal resources. The profiling PC tool embOSView is included.

emFile

File system emFile is an embedded file system with

FAT12, FAT16 and FAT32 support. emFile has been optimized for minimum memory consumption in RAM and ROM while maintaining high speed. Various Device drivers, e.g. for NAND and NOR flashes, SD/MMC and CompactFlash cards, are available.

emUSB

USB device stack



A USB stack designed to work on any embedded system with a USB client controller. Bulk communication and most standard device classes are supported.

United States Office:

http://www.segger-us.com

SEGGER TOOLS

Flasher

Flash programmer Flash Programming tool primarily for microcontrollers.

J-Link

JTAG emulator for ARM cores USB driven JTAG interface for ARM cores.

J-Trace

JTAG emulator with trace

USB driven JTAG interface for ARM cores with Trace memory. supporting the ARM ETM (Embedded Trace Macrocell).

J-Link / J-Trace Related Software

Add-on software to be used with SEGGER's industry standard JTAG emulator, this includes flash programming software and flash breakpoints.



Table of Contents

1	Introduction		7
	1.1 1.1.1 1.1.2 1.2 1.2.1 1.2.2 1.2.3	Flasher overview Features of Flasher Working environment Specifications Specifications for Flasher ARM Specifications for Flasher RX Specifications for Flasher PPC	8 8 10 10 12 14
2	Working v	with Flasher	.17
	2.1 2.1.1 2.2 2.2.1 2.2.2 2.2.3 2.4 2.4.1 2.4.2 2.4.3 2.4.4 2.4.5 2.4.6 2.5 2.6 2.6.1 2.7 2.7.1 2.7.2 2.7.1 2.7.2 2.7.3 2.8 2.8.1 2.8.2 2.8.3	Setting up the IP interface Connecting the first time	$\begin{array}{c} 18\\ 19\\ 19\\ 23\\ 24\\ 25\\ 26\\ 27\\ 28\\ 29\\ 31\\ 32\\ 33\\ 33\\ 33\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ \end{array}$
3	Remote c	control	.35
	3.1 3.2 3.3 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.3.6	Overview. Handshake control. ASCII command interface . Introduction. General command and reply message format . Settings for ASCII interface via RS232. Settings for ASCII interface via Telnet . Commands to Flasher. Reply from Flasher.	36 37 38 38 38 38 38 38 39 43
4	Performa	nce	.47
	4.1 4.1.1	Performance of MCUs with internal flash memory Flasher ARM	48 48

6

	4.1.2 4.1.3	Flasher RX Flasher PPC	48 48
5	Hardware		.49
	5.1 5.1.1 5.1.2 5.1.3 5.2 5.2.1 5.3 5.4 5.4.1 5.4.2 5.5 5.5.1 5.5.2 5.5.2 5.6	Flasher ARM 20-pin JTAG/SWD Connector Pinout JTAG Pinout SWD Target power supply Flasher RX 14-pin connector Target power supply Flasher PPC 14-pin connector Target board design Pull-up/pull-down resistors RESET, nTRST Adapters JTAG Isolator J-Link Needle Adapter How to determine the hardware version	50 50 51 53 55 56 56 56 56 57 57 58 59
6	Support a	nd FAQs	.61
	6.1 6.2	Contacting support Frequently Asked Questions	62 63
7 Background information		.65	
	7.1 7.1.1 7.1.2 7.1.3	Flash programming How does flash programming via Flasher work ? Data download to RAM Available options for flash programming	66 66 66 66
8	Glossary.		.67
9	Literature	and references	.71

Chapter 1 Introduction

This chapter gives a short overview about the different models of the Flasher family and their features.

1.1 Flasher overview

Flasher is a programming tool for microcontrollers with on-chip or external flash memory. Flasher is designed for programming flash targets with the J-Flash software or stand-alone. In addition to that Flasher can also be used as a regular J-Link. For more information about J-Link in general, please refer to the *J-Link / J-Trace User Guide* which can be downloaded at *http://www.segger.com*.

Flasher connects to a PC using the USB/Ethernet/RS232 interface, running Microsoft Windows 2000, Windows XP, Windows 2003, Windows Vista, Windows 7 or Windows 8. In stand-alone mode, Flasher can be driven by the start/stop button, or via the RS232 interface (handshake control or ASCII interface). Flasher always has a 20-pin connector, which target interfaces are supported depends on the Flasher model:

- For Flasher ARM: JTAG and SWD are supported.
- For Flasher RX: JTAG is supported. Flasher comes with additional 14-pin RX adapter
- For Flasher PPC: JTAG is supported. Flasher comes with additional 14-pin PPC adapter.

1.1.1 Features of Flasher

- Three boot modes: J-Link mode, stand-alone mode, MSD mode
- Stand-alone JTAG/SWD programmer (Once set up, Flasher can be controlled without the use of PC program)
- No power supply required, powered through USB
- Supports internal and external flash devices
- 64 MB memory for storage of target program
- Can be used as J-Link (emulator) with a download speed of up to 720 Kbytes/ second
- Serial in target programming supported
- Data files can updated via USB/Ethernet (using the J-Flash software), via RS232 or via the MSD functionality of Flasher

Flasher model	Supported cores	Supported target interfaces	Flash programming speed (depending on target hardware)
Flasher ARM	ARM7/ARM9/Cortex-M	JTAG, SWD	between 30-300 Kbytes/ second
Flasher RX	Renesas RX610, RX621, RX62N, RX62T	JTAG	between 170 and 300 Kbytes/second
Flasher PPC	Power PC e200z0	JTAG	up to 138 Kbytes/second

1.1.2 Working environment

General

Flasher can operate from a PC with an appropriate software like J-Flash or in standalone mode.

Host System

IBM PC/AT or compatible CPU: 486 (or better) with at least 128MB of RAM, running Microsoft Windows 2000, Windows XP, Windows 2003, Windows Vista, Windows 7 or Windows 8. It needs to have a USB, Ethernet or RS232 interface available for communication with Flasher.

Power supply

Flasher requires 5V DC, min. 100mA via USB connector. If USB is not connected, the USB connector is used to power the device. Supply voltage is the same in this case. Please avoid excess voltage.

Installing Flasher PC-software J-Flash

The latest version of the J-Flash software, which is part of the J-Link software and documentation package, can always be downloaded from our website: *http://www.segger.com/download_jlink.html*. For more information about using J-Flash please refer to UM08007_FlasherARM.pdf (J-Flash user guide) which is also available for download on our website.

1.2 Specifications

1.2.1 Specifications for Flasher ARM

General			
Supported OS Operating Temperature Storago Temporaturo	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 Microsoft Windows 8 Microsoft Windows 8 Microsoft Windows 8 x64 +5 °C +60 °C		
Relative Humidity (non-condensing)	<90% rH		
Mech	anical		
Size (without cables) Weight (without cables)	121mm x 66mm x 30mm 119g		
Available	Interfaces		
CSB Host Interface Ethernet Host interface RS232 Host interface	0SB 2.0, full speed 10/100 MBit RS232 9-pin		
Target interface	JTAG 20-pin (14-pin adapter available)		
JTAG Interfa	ce, Electrical		
Power Supply Target interface voltage (VIF)	USB powered, 100mA for Flasher ARM. 500 mA if target is powered by Flasher ARM 1.2 5V		
Target supply voltage	get 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})	$V_{OL} \le 10\%$ of V_{IF}		
For the whole target voltage range (1.8V <= V _{IF} <= 5V)			
LOW level input voltage (V _{IL})	$V_{IL} \le 40\%$ of V_{IF}		
HIGH level input voltage (V_{IH})	$V_{IH} >= 60\%$ of V_{IF}		
For 1.8V <= V _{IF} <= 3.6V			
LOW level output voltage (V_{OL}) with a load of 10 kOhm	V_{OL} <= 10% of V_{IF}		
HIGH level output voltage (V _{OH}) with a load of 10 kOhm	$V_{OH} >= 90\%$ of V_{IF}		
For 3.6 <= V _{IF} <= 5V			
LOW level output voltage (V _{OL}) with a load of 10 kOhm	V_{OL} <= 20% of V_{IF}		

Table 1.1: Flasher ARM specifications

HIGH level output voltage (V _{OH}) with a load of 10 kOhm	$V_{OH} >= 80\%$ of V_{IF}
JTAG Inter	face, Timing
Max. JTAG speed	up to 12MHz
Data input rise time (T _{rdi})	T _{rdi} <= 20ns
Data input fall time (T _{fdi})	T _{fdi} <= 20ns
Data output rise time (T _{rdo})	T _{rdo} <= 10ns
Data output fall time (T _{fdo})	T _{fdo} <= 10ns
Clock rise time (T _{rc})	T _{rc} <= 10ns
Clock fall time (T _{fc})	T _{fc} <= 10ns

Table 1.1: Flasher ARM specifications

1.2.1.1 Flasher ARM download speed

The following table lists Flasher ARM performance values (Kbytes/second) for writing to memory (RAM) via the JTAG interface:

Hardware	ARM7 memory download	
Flasher ARM	720 Kbytes/s (12MHz JTAG)	
Table 1.2: Download speed of Flasher ARM		

Note: The actual speed depends on various factors, such as JTAG, clock speed, host CPU core etc.

1.2.2 Specifications for Flasher RX

General			
Supported OS Operating Temperature Storage Temperature Relative Humidity (non-condensing) Mech	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 Microsoft Windows 8 Microsoft Windows 8 Microsoft Windows 8 x64 +5 °C +60 °C -20 °C +60 °C <90% rH anical		
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 RX)		
JTAG Interfa	ce, Electrical		
Power Supply	USB powered, 100mA for Flasher ARM. 500 mA if target is powered by Flasher ARM		
Target interface voltage (VIF)	1.2 5V		
Target supply voltage	4.5V5V (on the 14-pin adapter the tar- get 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})	$V_{OL} <= 10\%$ of V_{IF}		
For the whole target voltage range (1.8V <= V_{IF} <= 5V)			
LOW level input voltage (V_{IL})	$V_{IL} \le 40\%$ of V_{IF}		
HIGH level input voltage (V _{IH})	$V_{IH} >= 60\%$ of V_{IF}		
For 1.8V <= Vic <= 3.6V			
LOW level output voltage (V _{OL}) with a load of 10 kOhm HIGH level output voltage (V _{OH}) with a	$V_{OL} \le 10\% \text{ of } V_{IF}$		
load of 10 kOhm			
For 3.6 <=	= V _{IF} <= 5V		
LOW level output voltage (V _{OL}) with a load of 10 kOhm	V_{OL} <= 20% of V_{IF}		
HIGH level output voltage (V _{OH}) with a load of 10 kOhm	$V_{OH} >= 80\%$ of V_{IF}		

Table 1.3: Flasher RX specifications

JTAG Interface, Timing		
Max. JTAG speed	up to 12MHz	
Data input rise time (T _{rdi})	T _{rdi} <= 20ns	
Data input fall time (T _{fdi})	T _{fdi} <= 20ns	
Data output rise time (T _{rdo})	T _{rdo} <= 10ns	
Data output fall time (T _{fdo})	T _{fdo} <= 10ns	
Clock rise time (T _{rc})	T _{rc} <= 10ns	
Clock fall time (T _{fc})	T _{fc} <= 10ns	

Table 1.3: Flasher RX specifications

1.2.2.1 Flasher RX download speed

The following table lists Flasher RX performance values (Kbytes/second) for writing to memory (RAM) via the JTAG interface:

Hardware	Flasher RX600 series memory download	
Flasher RX	720 Kbytes/s (12MHz JTAG)	
Table 1.4: Download speed of Flasher RX		

Note: The actual speed depends on various factors, such as JTAG, clock speed, host CPU core etc.

1.2.3 Specifications for Flasher PPC

General			
Supported OS Operating Temperature Storage Temperature Relative Humidity (non-condensing)	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 Microsoft Windows 8 Microsoft Windows 8 x64 +5 °C +60 °C -20 °C +60 °C <90% rH		
Size (without cables)	121mm x 66mm x 30mm		
Weight (without cables)	119q		
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 Interfa	ce, Electrical		
Power Supply	USB powered, 100mA for Flasher ARM. 500 mA if target is powered by Flasher ARM		
Target interface voltage (VIF)	1.2 5V		
Target supply voltage	4.5V5V (on the 14-pin adapter the tar- get 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} <= 10% of V_{IF}		
For the whole target voltage range (1.8V <= V _{IF} <= 5V)			
LOW level input voltage (V_{IL})	$V_{IL} \le 40\%$ of V_{IF}		
HIGH level input voltage (V_{IH})	$V_{IH} >= 60\%$ of V_{IF}		
For 1.8V <= V _{IF} <= 3.6V			
LOW level output voltage (V _{OL}) with a load of 10 kOhm	$V_{OL} \le 10\%$ of V_{IF}		
HIGH level output voltage (V _{OH}) with a load of 10 kOhm	$V_{OH} >= 90\%$ of V_{IF}		
For 3.6 <= V _{IF} <= 5V			
LOW level output voltage (V _{OL}) with a load of 10 kOhm	$V_{OL} \le 20\%$ of V_{IF}		
HIGH level output voltage (V _{OH}) with a load of 10 kOhm	$V_{OH} >= 80\%$ of V_{IF}		

Table 1.5: Flasher PPC specifications

JTAG Interface, Timing									
Max. JTAG speed	up to 12MHz								
Data input rise time (T _{rdi})	T _{rdi} <= 20ns								
Data input fall time (T _{fdi})	T _{fdi} <= 20ns								
Data output rise time (T _{rdo})	T _{rdo} <= 10ns								
Data output fall time (T _{fdo})	T _{fdo} <= 10ns								
Clock rise time (T _{rc})	T _{rc} <= 10ns								
Clock fall time (T _{fc})	T _{fc} <= 10ns								

Table 1.5: Flasher PPC specifications

1.2.3.1 Flasher PPC download speed

The following table lists Flasher PPC performance values (Kbytes/second) for writing to memory (RAM) via the JTAG interface:

Hardware	Memory download									
Flasher PPC	530 Kbytes/s (8 MHz JTAG)									
Table 1.6: Download speed of Flasher PPC										

Note: The actual speed depends on various factors, such as JTAG, clock speed, host CPU core etc.

Chapter 2 Working with Flasher

This chapter describes functionality and how to use Flasher.

2.1 Setting up the IP interface

Since hardware version 3 Flasher family comes with an additional Ethernet interface to communicate with the host system. These Flashers also come with a built-in webserver which allows some basic setup of the emulator, e.g. configuring a default gateway which allows using it even in large intranets.

2.1.1 Connecting the first time

When connecting Flasher the first time, it attempts to acquire an IP address via DHCP. The recommended way for finding out which IP address has been assigned to Flasher is, to use the J-Link Configurator. The J-Link Configurator is a small GUI-based utility which shows a list of all emulator that are connected to the host PC via USB and Ethernet. For more information about the J-Link Configurator, please refer to *UM08001_JLinkARM.pdf* (J-Link / J-Trace user guide), chapter *Setup*, section *J-Link Configurator*. The setup of the IP interface of Flasher is the same as for other emulators of the J-Link family. For more information about how to setup the IP interface of Flasher, please refer to *UM08001, J-Link / J-Trace User Guide*, chapter *Setup*, section *Setting up the IP interface*. For more information about how to use Flasher via Ethernet or prepare Flasher via Ethernet for stand-alone mode, please refer to *Operating modes* on page 19.

2.2 Operating modes

Flasher is able to boot in 3 different modes:

- J-Link mode
- Stand-alone mode
- MSD (Mass storage device) mode

If Flasher can establish an Ethernet uplink or can enumerate on the USB port, it boots in "J-Link mode". In this mode, Flasher can be used as a J-Link. When supply power is enabled and Flasher can not establish a connection with the host, the "stand-alone mode" is started. In this mode Flasher can be used as a stand-alone flash programmer. When the Start/Stop button is pressed when power supply is enabled, Flasher boots in "MSD mode". In this mode, Flasher boots as a mass storage device.

2.2.1 J-Link mode

If you want to use Flasher for the first time you need to install the J-Link software and documentation package. After installation, connect Flasher to the host PC via USB or Ethernet. For more information about how to install the J-Link software and documentation package please refer to the *J-Link / J-Trace User Guide, chapter Setup* which can be downloaded from *http://www.segger.com*/download_jlink.html.

2.2.1.1 Connecting the target system

Power-on sequence

In general, Flasher should be powered on before connecting it with the target device. That means you should first connect Flasher with the host system via USB / Ethernet and then connect Flasher with the target device via JTAG or SWD. Power-on the device after you connected Flasher to it. Flasher will boot in "J-Link mode".

Verifying target device connection with J-Link.exe

If the USB driver is working properly and your Flasher is connected with the host system, you may connect Flasher to your target hardware. Then start the J-Link command line tool JLink.exe, which should now display the normal Flasher related information and in addition to that it should report that it found a JTAG target and the targets core ID. The screenshot below shows the output of JLink.exe.



2.2.1.2 Setting up Flasher for stand-alone mode

In order to set up Flasher for the stand-alone mode it needs to be configured once using the J-Flash software. For more information about J-Flash, please refer to the *J*-*Flash User Guide*.

CHAPTER 2

After starting J-Flash, open the appropriate J-Flash project for the target Flasher shall be configured for, by selecting **File** -> **Open Project**. If J-Flash does not come with an appropriate sample project for the desired hardware, a new project needs to be created by selecting **File** -> **New Project**.

After the appropriate project has been opened / created, the data file which shall be programmed needs to be loaded, by selecting **File** -> **Open**. After this J-Flash should look like in the screenshot below.

🔜 SEGGER J-Flash ARM V4.58a - [C:\Program Files (x86)\SEGGER\JLinkARM_V458a\Samples\JFlash\ProjectFiles\AT91SAM7X256.jflash] 📃 📧						x																
File Edit View Target Options Window Help																						
Project - AT9	1 🗆 🖾	Test data	(gen	erated	l by J-F	lash) *														- (•	
Name	Value	A determined Date	00000	_	Let u	ا سا ا د																
Connection	LISB [Device []]	Agaress: jux	00000		INT N	<u> ×4</u>																
Larget interface	JITAG	Address	0	1	2 3	3 4	5	6	7	8	9	A	B	C	D	Ε	F	ASCI	I			
raigerintenace	o i i i di	100000	36	00	00 E	A FE	FF	FF	EA	FE	FF	FF	EA	FE	FF	FF	EA					
Init JTAG speed	200 kHz	100010	FE	FF	FF E	A Ø6	00	00	94	FE	FF	FF	EA	FE	FF	FF	EA					
JTAG speed	12000 kHz	100020	00	60	AØ E	3 01	70	87	E2	01	60	86	E2	FD	FF	FF	EA	.`	.p	.`		
TAP number	<not used=""></not>	100030	ØC	00	00 0	0 OD	00	00	00	ØE	00	00	00	ØF	00	00	00					
IRPre	<not used=""></not>	100040	10	00	00 0	0 11	00	00	00	12	00	00	00	13	00	00	00					
		100050	14	00	00 0	015	00	00	00	16	00	00	00	17	00	00	00					
MCU	Atmel AT91SAM7X256	100060	18	00	00 0	0 19	00	00	00	1A	00	00	00	1B	00	00	00					
Clock speed	47923200 Hz	100070	10	00	00 0	0 1D	00	00	00	1E	00	00	00	1F	00	00	00					
Endian	Little	100080	20	00	00 0	0 21	00	00	00	22	00	00	00	23	00	00	00		!	"#	·	
Check core Id	Yes	100090	24	00	00 0	0 25	00	00	00	26	00	00	00	27	00	00	00	\$:	×	8'		
Core Id	0x3F0F0F0F	1000A0	28	00	00 O	029	00	00	00	2A	00	00	00	2B	00	00	00	<	>	*+	••••	
Use target RAM	Yes	1000B0	2C	00	00 0	Ø 2D	00	00	00	2E	00	00	00	2F	00	00	00			/	·	
RAM address	0x200000	1000C0	30	00	00 0	0 31	00	00	00	32	00	00	00	33	00	00	00	0	1	23		
RAM size	64 KB	1000D0	34	00	00 0	0 35	00	00	00	36	00	00	00	37	00	00	00	4	5	67	'	
		1000E0	38	00	00 0	0 39	00	00	00	3A	00	00	00	3B	00	00	00	8	9	· · · · ·		
Flash memory	AT91SAM7X256 inter	1000F0	3C	NN	00 0	M 3D	00	NN	NN	3E	NN	NN	00	3F	NN	NN	NN	<		<u>}?</u>		
Manufacturer	Atmel	100100	40	00	00 0	0 41	00	00	00	42	00	00	00	43	00	00	00	e	A	BC		
Size	256 KB	100110	44	00	00 0	0 45	00	00	00	46	00	00	00	47	00	00	90	D	E	FG		
Flash Id	0x0	100120	48	90	00 0	0 47	90	90	90	41	00	00	90	48	00	90	90	H	1	JK		
Check flash Id	No	100130	40	99	00 0	10 4U 10 F1	90	90	90	4E	99	99	90	41	90	90	99	L	n	NU		
Base address	0x100000	100140	50	90	00 0	0 EE	90	90	00	54	00	00	99	53	00	99	90	P	4	кa и и		
Organization	32 bits x 1 chip	100150	54	00 00	00 0	0 55 0 59	00	00	00 00	56 5A	00 00	00 00	00 00	57 5B	00 00	00	00 00	X	V Y	Z[
•	4	100170	5C	00	00 0	Ø 5D	00	00	00	5E	00	00	00	5F	00	00	00	<u>}</u>	1	<u>^</u>		┚
LOG																			Γ		= ΓΣ	
- List of MCLI devic	es read successfully (1964	Devices)																				
Creating new project	ct file [C:\Program Files (x86	6)\SEGGER\JLin	karm	_V458	Ba\Defa	ult.jflash	ı]															
Close project creat	eu successiully																					
Liber project																						
Opening project file (C:\Program Files & 86)\SEGGER\JLinkARM V458a\Samples\JFlash\ProjectFiles\AT91SAM7X256.flash]																						
- Project opened successfully																						
Generating test data																						
- 1024 of 1024 sectors selected, 1 range, 0x100000 - 0x13FFFF																						
- Test data generated successfully. (262144 bytes, 1 range) - Completed after 0.261 sec																						
																						T
																					•	H.
Ready																						
-																						

Before downloading the configuration (project) and program data (data file) to Flasher, the connection type (USB/IP) needs to be selected in the project. These settings are also saved on a per-project basis, so this also only needs to be setup once per J-Flash project. The connection dialog is opened by clicking **Options -> Project settings -> General**.

Project settings	? 💌								
General Target Interface CPU	Flash Production								
÷ tirk	J-Flash-ARM is a software for J-Link ARM. It requires a license, which can be obtained from SEGGER (www.segger.com). This software is capable of programming the flash memory of several ARM micros, as well as external Flash connected to ARM cores.								
User interface mode Image: Comparison of the setup Image: Comparison of the setup									
C Simplified (Less options, typically used for production)									
	OK Cancel Apply								

The connection dialog allows the user to select how to connect to Flasher. When connecting to a Flasher via TCP/IP it is not mandatory to enter an IP address. If the field is left blank and **File->Download to programmer** is selected, an emulator selection dialog pops up which shows all Flasher which have been found on the network. The user then can simply select the Flash he wants to download the configuration to.

SEGGER J-Link V4.58a - Emulate	or selection				X
11	No emulators connected over US select the emulator you want to c	B. If you want to onnect to:	connect over	TCP/IP instead, pl	ease
	# Product	Nickname	SN	IP address	
	0 Flasher ARM V3.00		163000100	192.168.11.41	
	1 J-Link ARM-Pro V3.00		173001049	192.168.6.4	
ar 10	2 J-Link ARM-Pro V3.00		173001050	192.168.6.1	=
<u> </u>	3 J-Link ARM-Pro V3.00		173001042	192.168.8.6	
1. m	4 J-Link ARM-Pro V3.00		173001041	192.168.8.7	
jilink	5 J-Link ARM-Pro V3.00		173001044	192.168.8.3	
	6 J-Link ARM-Pro V3.00		173001055	192.168.7.6	
	7 J-Link ARM-Pro V3.00		173001056	192.168.7.2	
	8 J-Link ARM-Pro V3.00		173001051	192.168.7.5	
	9 J-Link ARM-Pro V3.00		173001053	192.168.7.3	-
· ·	10 J-Link AHM-Pro V3.00		173001043	192.168.8.2	
] • [<i>*</i>
And a second sec			OK	Cance	8
1					

CHAPTER 2

In order to download the configuration and program data to the Flasher, simply select File -> Download config & data file to Flasher.

SEGGER J-Flash ARM V4.58	a - [C:\Program	Files (x86)\SEG	GER\JLi	nkARI	V1_V458	a\Sam	ples\.	lFlash	\Proje	ectFil	es\AT	91SAI	V17X25	i6.jflas	:h]				• ×
<u>File Edit View Target</u>	<u>O</u> ptions <u>W</u> indo	w <u>H</u> elp																	
<u>O</u> pen data file		Ctrl+O	nerated	l by J-	Flash)	*													
<u>M</u> erge data file			10	L.	سا اص	1													
Save data file		Ctrl+S		<u> ×1</u>	<u>×</u>				0	0	•	n				100X			
Save data file <u>a</u> s			500	2	EA F	E FF	<u>Б</u> FF	EA	8 FE	FF	H FF I	EA F	E FI	F FF	EA	ASCI			🗎
New project			E FF 0 60	FF AØ	EA Ø E3 Ø	6 00 1 70	00 87	94 E2	FE 01	FF 60	FF 1 86 1	EAF E2F	'E FI 'D FI	F FF F FF	EA Ea	::::		:::::	
Op <u>e</u> n project			C 00	00 00	00 0	D 00	00 00	00 00	0E	00 00	00	00 0 00 1	F 00	3 00	00				
Sa <u>v</u> e project			1 00	00	00 1	5 00	00	00	16	00	00	00 1	7 0	00	00				
Save project as			3 00 : 00	00 Ал	00 1 00 1	9 00 N 00	00 АА	00 Ал	1A 1 F	00 Ал	00 I 00 I	00 1 00 1	В Ø(F Ø)	3 00 3 00	00 Ал		• • • •		
<u>C</u> lose project			3 00 4 00	00 00	00 2 00 2	100 500	00 00	00 00	22 26	00 00	00	00 2 00 2	3 00	00 00 00	00 00	\$		"#. 8	
Save Flasher config file.	•		3 00	00 00	00 2	9 00 D 00	00 00	00 00	2A 2E	00 00	00	00 2 00 2	B 00	00 G	00 00	<	>	*+.	
Save Flasher data file			00	00	00 3	1 00	00	00	32	00	00	00 3	3 0	00	00	ó:	ι	23.	
Download config & dat	a file to Flasher		100 100	00 Ал	00 3 00 3	5 00 9 00	00 00	00 Ал	36 3A	00 Ал	00 00	00 з ИЛ з	700 B01	00 0 0 0 0	00 Ал	4!	5! 9	67. 	
Download serial numbe	r file to Flasher		00	00	00 3	D 00	00	00	3E	00	00	00 3	F 0	00	00	č		>?.	
Export setup file			9 00 4 00 3 00	00 00 00	00 4 00 4 00 4	1 00 5 00 9 00	00 00	00 00 00	42 46 40	00 00	00 00 00	00 9 00 9 00 4	3 01 7 01 8 01	9 00 9 00 9 00	00 00 00	е D н	H E: T	вС. FG. J к	
Recent <u>F</u> iles		•	C 00	00	00 4	D 00	00	00	4E	00	00	00 4	F Ø	00	00	L	M	N0.	
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- List of MCU devices read succ Creating new project file [C:\Pro - New project created successf	gram Files (x86)\SE ullv	GGER\JLinkAR	M_V45	Ba\Def	ault.jfla	sh]													^
Close project																			
Opening project file [C:\Program	Files (x86)\SEGGE	ER\JLinkARM_V	458a\S	amples	s∖JFlash	\Projec	tFiles\	AT91	SAM7	X256,	jflash]								
- Project opened successfully Generating test data																			Ξ
 1024 of 1024 sectors selected Test data generated successfi 	l, 1 range, 0x10000 ullv: (262144 bytes	0 - 0x13FFFF	leted af	er 0.2	61 sec														
. cer data generates adocesan	any . (202144 Dytos)	, angoy - oomp	.otou di		0,000														Ŧ
<																			▶
Download current configuration	on to programme	er																	

SEGGER J-Flash	🛿 SEGGER J-Flash ARM V4.58a - [C:\Program Files (x86)\SEGGER\JLinkARM_V458a\Samples\JFlash\ProjectFiles\AT91SAM7X256.jflash *]																	
<u>File E</u> dit <u>V</u> iew	ile <u>E</u> dit <u>V</u> iew <u>I</u> arget <u>O</u> ptions <u>W</u> indow <u>H</u> elp																	
Project - AT9	91 🗖 🖾	Test data	(gener	ated by J	l-Flash)	*												.
Name	Value	Address: 0v1	0000		v2 v4	1												
Connection	USB [Device 0]	Hadroos: John		1.07		- L												
Target interface	SWD	Address	0	1 2	3 4	l 5	6	7	8 9	9 A	B	C	D	E	F	ASCII		▲
-		100000	136 (00 00	EA F	E FF	FF	EA	FE F	F FF	EA	FE	FF	FF	EA			=
Init JTAG speed	200 kHz	100010	FE	FF FF	EA Ø	6 00	00	94	FE F	F FF	EA	FE	FF	FF	EA			
JTAG speed	12000 kHz	100020	00	60 A0	E3 Ø	1 70	87	E2	Ø1 6	086	E2	FD	FF	FF	EA	·`p.	`	
TAP number	<not used=""></not>	100030	0C (00 00	00 0	D 00	00	00	0E 0	0 00	00	ØF	00	00	00			
IRPre	<not used=""></not>	100040	10	00 00	00 1	1 00	00	00	12 0	0 00	00	13	00	00	00			••
		100050	14	00 00	00 1	5 00	00	00	16 Ø	0 00	00	17	00	NN	00			
MCU	Atmel AT91SAM7X256	100060	18	00 00	00 1	9 00	00	00	1A U	0 00	00	18	00	00	00			
Clock speed	47923200 Hz	100070		99 90	00 1	N 100	90	00	1E Ø	0 00	90	1F	90	90	90			
Endian	Little	100080	20	00 00	00 2	1 00	00	00	22 10	0 00	00	23	00	00	00	····!··	· · " · · · # ·	••
Check core Id	Yes	100090	24	99 99	00 Z	5 99	00	99	26 19	0 00	99	27	99	99	99	ş		
Core Id	0x3F0F0F0F	1000000	28	00 00	00 2	7 00	99	99	2H 10 9T 10	00 00	99	28	00	99	99	····/··		
Use target RAM	Yes	100060	20	88 88	00 2	1 00	90	00	2E 0 22 0	10 00 10 00	99	21	00	00	00	,	·····/·	
HAM address	0x200000	100000	24	00 00	00 3	L 00	00	00	36 B 36 B	0 00	00	33	00	00	00	01 4 E	· · ∠ · · · 3 ·	
HAM size	64 KB	100000	20	00 00	00 3	0 00	00	00	30 Ø	0 00	00	37	00	00	00	9		
	A TOTO AN (7) (050) A	1000E0	30	00 00	00 3	7 00 N 00	00	00	3H 0 3C 0	0 00	00	30	00	00	00	0	······	
Flash memory	AT91SAM7X256 inter	100100	40	00 00	00 3	1 00	00	00	3E 0 49 0	0 00	00	31	00	00	00	Q Q	P C	
Manufacturer	Atmel	100100	44	00 00	00 1	5 00	00	00	46 0	0 00	00	47	00	00	00	D F	F C	
Size	206 NB	100120	48	00 00	00 4	9 00	00	00	40 0	0 00	00	48	ØЙ	00	ЙЙ	и т	. л. к	
Flash Id	UXU Na	100130	40	00 00	00 4	ĥЙЙ	ЙЙ	ЙЙ	4F Ø	0 00	ЙЙ	4F	ЙЙ	ЙЙ	ЙЙ	L M	N 0	
Dece address	NU 0-100000	100140	50	00 00	00 5	1 00	ดด	ดด	52 Ø	0 00	ЙЙ	53	ЙЙ	ñЙ	ดด	P Q	R S	
Dase address	22 bits u 1 ohip	100150	54	A A A A	00 5	5 00	ดด	ЙЙ	56 Ø	ю о о	ЙЙ	57	йй	ดด	йй	T		
organization	32 bits x 1 chip	100160	58	A A A A	00 5	9 00	ดด	ЙЙ	50 0	ю о о	ЙЙ	5 B	йй	ñЙ	йй	XY.		
•	4 III	100170	5C (00 00	00 5	D 00	00	00	5E Ø	0 00	00	5F	00	00	00	····1.	·.^	💽
106																		8
Project opened or	ussestully																	
- Froject opened st	uccessiully																	^
- 1024 of 1024 sec	ctors selected 1 range 0x1	00000 - 0x13EEEE																
- Test data general	ited successfully (262144 h	wtes_1_range) - Co	omplete	d after 0.	261 sec													
Downloading files to	o emulator																	
Downloading files to	Downloading files to emulator																	
- Downloading "Fla	- Downloading "Flasher.cfg" (2048 bytes)																	
- File downloaded successfully																		
- Uownioading 'Hasher.dat'' (2bb240 bytes)																		
- nic downloaded	- hie downioaded successfully																	
·																		P
Ready																		

The J-Flash log window indicates that the download to the emulator was successful.

From now on, Flasher can be used in stand-alone mode (without host PC interaction) for stand-alone programming.

2.2.2 Stand-alone mode

In order to use Flasher in "stand-alone mode", it has to be configured first, as described in *Setting up Flasher for stand-alone mode* on page 19. To boot Flasher in the "stand-alone mode", only the power supply to Flasher has to be enabled (Flasher should not be connected to a PC). In the "stand-alone mode" Flasher can be used as a stand-alone flash programmer.

Note: Flasher can only program the target device it was configured for. In order to program another target device, you have to repeat the steps described in *Setting up Flasher for stand-alone mode* on page 19.

2.2.2.1 LED status indicators

Progress and result of an operation is indicated by Flasher's LEDs:

#	Status of LED	Meaning							
0	GREEN high frequency blinking (On/Off time: 50ms => 10Hz)	Flasher ARM is waiting for USB enumeration or ethernet link. As soon as USB has been enumer- ated or ethernet link has been established, the green LED stops flashing and is switched to con- stant green. In stand-alone-mode, Flasher remains in the high frequency blinking state until state #1 is reached. Flasher goes to state #1 as soon as a #START command has been received via the ASCII inter- face or the Start button has been pushed.							
1	GREEN constant	Connect to target and perform init sequence.							
2	GREEN slow blinking	 Flashing operation in progress: 1. Erasing (slow blinking on/off time: 80 ms => 6.25 HZ) 2. Programming (slow blinking on/off time: 300ms => ~1.67 Hz) 3. Verifying (slow blinking, on/off time: 100ms => 5 Hz) 							
3	GREEN constant	Operation successful. Goes back to state #0 automatically.							
4	RED constant	Operation failed. Goes back to state #0 automat- ically but red LED remains on until state #1 (next programming cycle) is entered again.							

Table 2.1: Flasher LEDs

2.2.3 MSD mode

When pressing the Start/Stop button of Flasher while connecting it to the PC, Flasher will boot in the "MSD mode". This mode can be used to downdate a Flasher firmware version if a firmware update did not work properly and it can be used to configure Flasher for the "stand-alone mode", without using J-Flash.

If Flasher has been configured for "stand-alone mode" as described in the section above, there will be four files on the MSD, FLASHER.CFG, FLASHER.DAT, FLASHER.LOG, SERIAL.TXT.

FLASHER.CFG

FLASHER.CFG contains the configuration settings for programming the target device and FLASHER.DAT contains the data to be programmed. FLASHER.LOG contains all logging information about the commands, performed in stand-alone mode. The SERIAL.TXT contains the serial number, which will be programmed next. J-Flash supports to configure Flasher for automated serial number programming. For further information about how to configure

Currently, J-Flash does not support to configure Flasher for automated serial number programming.

If you want to configure multiple Flasher for the same target you do not have to use J-Flash all the time. It is also possible to copy the <code>FLASHER.CFG</code> and the <code>FLASHER.DAT</code> files from a configured Flasher to another one. To copy these files boot Flasher in "MSD mode".

2.3 Multiple File Support

It is also possible to have multiple data files and config files on Flasher, to make Flasher more easy to use in production environment. To choose the correct configuration file and data file pair, a FLASHER.INI file is used. This init file contains a [FILES] section which describes which configuration file and which data file should be used for programming. A sample content of a FLASHER.INI file is shown below:

[FILES]
DataFile = "Flasher1.dat"
ConfigFile = "Flasher1.cfg"

Using this method all configuration files and data files which are used in the production only have to be downloaded once. From there on a configuration file / data file pair can be switched by simply replacing the FLASHER.INI by a new one, which contains the new descriptions for the configuration file and data file. The FLASHER.INI can be replaced in two ways:

- 1. Boot Flasher in MSD mode in order to replace the FLASHER.INI
- 2. If Flasher is already integrated into the production line, runs in stand-alone mode and can not be booted in other mode: Use the file I/O commands provided by the ASCII interface of Flasher, to replace the FLASHER.INI. For more information about the file I/O commands, please refer to *File I/O commands* on page 42.