

BootLoader Recovery Application Note

GE863-PRO³

80000nt10012a Rev. 0 - 10/03/08



Making machines talk.



APPLICABILITY TABLE

PRODUCT	PART NUMBER	APPLICABILITY
GE863-PRO ³	3990250691	\checkmark
GE863-PRO ³ with Linux OS	3990250698	√



Reproduction forbidden without Telit Communications S.p.A. written authorization - All Rights Reserved

page 2 of 9



Contents

1	Introduction	4
2	Recovering the Flash Contents	5
3	Document Change Log	9



Reproduction forbidden without Telit Communications S.p.A. written authorization - All Rights Reserved

page 3 of 9



1 Introduction

The GE863-PRO³ boot procedure is composed of different steps, which involve the AT91SAM9260 internal ROM and SRAM, and the embedded flash and SDRAM chips. When you power up your board, the first to be executed is code located in the internal ROM, and after this the flash code will be executed, if present.

It is not possible to alter the contents of the internal ROM, but note that the binary images in the flash of the Telit bootloader and U-Boot can be inadvertently overwritten making your system unusable.

This guide will provide you all necessary info on how to recover the flash contents in case some pieces of software needed for the boot process are lost. In order to follow this procedure, you need a JTAG adapter such as SAM-ICE or J-Link emulator and the following files provided by Telit and Atmel:

- The Software tool AT-91 ISP from ATMEL;
- The custom Telit SAM-BA files including the directory GE863-PRO³, along with all the files beneath it and the file boards.tcl;
- The software package from Telit for GE863-PRO³, including Bootloader and U-boot binaries



Reproduction forbidden without Telit Communications S.p.A. written authorization - All Rights Reserved

page 4 of 9



2 Recovering the Flash Contents

In order to recover the flash contents of your GE863-PRO³ EVK you can use JTAG adapter such as the SAM-ICE or J-Link emulator, together with a tool from Atmel (SAM-BA). The SAM-BA tool is part of the AT91 ISP suite, which can be downloaded from Atmel's web site, following the links **Products** \rightarrow AT91SAM 32-bit ARM-based Microcontrollers \rightarrow Tools & Software \rightarrow AT91 In-system **Programmer (ISP)**.

Once this package has been downloaded and installed you need to add support for the Telit GE863-PRO³ EVK before launching the SAM-BA tool.

In the *SAM-BA v2.6Vib* directory under the installation directory of the ISP suite, there are some definitions and script files required for SAM-BA in order to work with different target boards. The files necessary to interface to the GE863-PRO³ EVK board are:

- **extract** in the directory the GE863-PRO³ folder
- boards.tcl file included in the Telit GE863-PRO3-SAM-BA.files_v1.0.zip, overwriting the existing file.

Note: Windows account with administrator privileges is necessary to run this tool.

The next step is to connect the SAM-ICE to an USB port of your PC and to the JTAG connector of the board, power up the board and launch SAM-BA. The following window should appear:

SAM-BA 2.6			×
Select the connection : Select your board :	COM1 NO_BOARD		•
Connect		Exit	

Select the \jlink\ARM0 connection and the GE863-PRO3 board, and then click on Connect.

💽 SAM-BA 2.6			
Select the connection :	\jlink\ARM0	-	
Select your board :	GE863-PR03	•	
Connect		Exit	



Reproduction forbidden without Telit Communications S.p.A. written authorization - All Rights Reserved

page 5 of 9



After a few seconds, the main SAM-BA window will appear. On that window, under the tab **DataFlash AT45DB/DCB**, select **Enable Dataflash on CS1** from the **Scripts** drop-down list and click on **Execute**.

💌 SAM-BA 2.6 - GE	863-PRO3					
File Script File Li	nk Help					
AT91SAM9260 Memory	v Display					
Start Address : 0x2000 Size in byte(s) : 0x100	00 Refresh	Display format	it 🤆 16-bit 💌 32	Ъit		
0x00200000	OxEA00000D	0xEA000005	0xEA000005	0xEA000005		^
0x00200010	0xEA000005	Ox00000EDC	0xEA000005	0xEA000005		
0x00200020	OxEAFFFFFE	OxEAFFFFFE	OxEAFFFFFE	OxEAFFFFFE		
0x00200030	OxEAFFFFFE	OxEAFFFFFE	OXEAFFFFFE	OxE59FDOAC		
0x00200040	OxE59F00AC	0xE5901000	0xE3A02001	0xE0111002		
0v00200050	0v13000009	0785980090	0783301901	0783902001		~
Send File Name : Receive File Name :				₩ ₩	Send File Receive File	
Send File Name :				≌∣	Send File	
Address :	0x0 Size	(For Receive File) :	0x1000 byte(s)		Compare sent file with memory	
Scripts Enable Dataflash on (CS1	Execute				
pading history file 3AM-BA console displa AT91-ISP v1.10) 2 % AT91-ISP v1.10) 2 %	1 events added ay active (Tcl8.4.1	3 / Tk8.4.13)				
					\jlink\ARM0 Board :	GE863-PR03



Reproduction forbidden without Telit Communications S.p.A. written authorization - All Rights Reserved

page 6 of 9



Then select **Send Package File** from the **Scripts** drop-down list and click on **Execute**.

😽 SAM-BA 2.6 - GE863-PRO3	
File Script File Link Help	
AT91SAM9260 Memory Display	
Start Address : 0x200000 Refresh Display format Size in byte(s) : 0x100 C ascii S-bit 16-bit 32-bit	
0x00200000 0x0000B4FF 0xFFFFFFF 0xEA000005 0xEA000005	^
0x00200010 0xEA00000D 0x00000CB0 0xEA000005 0xEA000005	
0x00200020 OxEAFFFFFE OxEAFFFFFE OxEAFFFFFE OxEAFFFFFE	
0x00200030 OxEAFFFFFE OxEAFFFFFE OxEAFFFFFE OxE59FDOAC	
0x00200040 0xE59F00AC 0xE5901000 0xE3A02001 0xE0111002	
NyIN7NNN5N Ny13NNNNN9 NYESGENNGC NYE33N19N1 NYE33N2NN1	×
Download / Upload File Send File Name : Receive File Name : Address : 0x0 Size (For Receive File) : 0x1000 byte(s) Compare sent file with memory	
-I- *(pSDRAM+0x20) = 0; -I- 5. Write refresh rate into SDRAMC refresh timer COUNT register -I- 6. A Normal Mode Command is provided, 3 clocks after tMRD is set -I- *pSDRAM = 0; -I- End of Init_SDRAM_100_Telit (AT91-ISP v1.10) 5 %	<u> </u>

At this point an Open dialog box appears; browse your PC for the Package file from Telit and click on **Open**.

This launches the copy in Flash of the Telit Package.



Reproduction forbidden without Telit Communications S.p.A. written authorization - All Rights Reserved

page 7 of 9



Open						? 🛛
Look jn:	🚞 package14		*	3 🦻	⊳ 🔁	
D Recent	package14Telit	t.bin				
Desktop						
My Documents						
My Computer						
S	File <u>n</u> ame:	package14Telit.bin			*	<u>O</u> pen
My Network	Files of type:	Bin Files (*.bin)			*	Cancel

After the copy operation, the flash contents are compared with the file sent in order to verify that the operation has been completed successfully. A dialog box should appear to report the result of the operation: click on **OK** on that dialog box.

💽 Co	mparison Result		
٩	Sent file & Memory area	content (address: 0x0,	size: 75720 bytes) match exactly !
		ОК	

Now your flash contents are recovered and your board is brought back into an operational state.



Reproduction forbidden without Telit Communications S.p.A. written authorization - All Rights Reserved

page 8 of 9



3 Document Change Log

Revision	Date	Changes
ISSUE #0	10/03/08	First release



Reproduction forbidden without Telit Communications S.p.A. written authorization - All Rights Reserved

page 9 of 9