

CAM Tester

User Manual



1 Overview

2 Serial Line Interface

When connected to a USB Host the CAM Tester exposes a serial line interface (USB-CDC). This interface can be used to send additional commands to the connected CICAM

These commands come from the generic Rabbit Labs CAMaLot stack; they may require slot number, MPEG TS number or chip number. For these three items the only valid value is 0.

2.1 Generic commands

2.1.1 Command trace

This command enables or disables traces from the CI stack. Default is disabled.

```
trace [on/off]
```

2.1.2 Command color

This command enables or disables the syntax colouring of traces. Default is disabled.

```
color [on/off]
```

2.1.3 Command stack version

This command return the version of the stack.

```
stackversion
```

2.1.4 Command info

This command returns information on inserted CICAM

```
info
```

2.1.5 Command reset

This command resets selected CICAM.

```
reset
```

2.1.6 Command version

This command returns hardware and software version

```
version
```

2.1.7 command echo

This command enables or disables echo on the serial interface. Default is echo on.



```
echo [on/off]
```

2.1.8 Command clock

This command changes the speed of the chip serial clock. This speed is divided by 8 for the parallel clock.

```
clock [100|80|75|66|50|40|37|33|25|20|18|16|12|10|9|8]
```

2.1.9 Command bootloader

This command erases the current firmware and return to SAM-BA bootloader. Note that the firmware is not really erased, a bit is just flipped in flash to instruct the CPU to start from bootloader instead of flash. Make sure you have SAM-BA installed before sending this command to be able to return the device to normal state. If the board has not been rebooted, *bootloader off* return the board to normal state.

```
bootloader [off/will_erase_all]
```

2.2 Service list management commands

These commands are used to manage the list of descrambled services for the CA support resource. They are usable only when a stream is sent to the CICAM.

2.2.1 Command service_list

This command returns list of services present in the stream

```
service_list
```

2.2.2 Command add_service

This command adds a service to descrambling list.

```
add_service [service_number]
```

2.2.3 Command remove_service

This command removes a service from descrambling list.

```
remove_service [service_number]
```

2.2.4 Command clear_services

This command clear descrambling list on the specified TS. The only valid command is `clear_services 0 0`

```
clear_services
```

2.2.5 Command clear_all_services

This command clears descrambling list on all TS

```
clear_all_services
```

2.2.6 Command late_pmt_resolve

This command enables late resolution of PMT. This means PMT will only be filtered when the service is selected for descrambling



```
late_pmt_resolve [on/off]
```

2.2.7 command force_descrambling

This command enables insertion of fake CA descriptor in the clear services. Default is off. The insertion of fake CA descriptor may be required for certain BISS module operating on services signalled as scrambled.

```
force_descrambling [on/off]
```

2.3 High Level MMI Commands

These commands are used to access high level MMI resource of the CICAM.

2.3.1 Command enter_menu

This command enters CAM menu

```
enter_menu
```

2.3.2 Command select_menu

This command selects a menu option. Choice 0 cancel the current menu

```
select_menu [choice]
```

2.3.1 Command s

This is a shortcut for select_menu

```
s [choice]
```

2.3.2 Command close_menu

This command closes the CI CAM menu. It can also be used to close spontaneous MMI from CAM.

```
close_menu
```

2.3.3 command auto_mmi

This command executes a batch of MMI command (see chapter 3 for command string syntax).

```
auto_mmi [command stream]
```

3 Batch MMI command syntax

This is a stream of simple command executed against the High Level MMI resource. High level MMI is always closed at the end of a batch.

Example: ES1RTR1R2R3 (enter menu, select item 1, return item 1, 2 and 3)

3.1 Command E

This command sends an enter menu request to the CICAM



3.2 Command S

This command sends a choice select command to the CICAM. If it is not possible to send this command (High level MMI closed for instance), it will be ignored. Command *SB* or *SO* sends a return to previous screen message. *Snnn* selects option *nnn* in the current screen.

3.3 Command R

This command return the value of the specified item from the currently display MMI screen. If no MMI screen is displayed the command will wait until the CICAM sends an MMI screen or a timeout occurs. If several R commands are present together in the batch they will all return value from the same

<i>RT</i>	Top title
<i>RS</i>	Sub title
<i>RB</i>	Bottom title
<i>RM</i>	Manufacturer ID from CIS
<i>RP</i>	Product ID from CIS
<i>Rnnn</i>	Line <i>nnn</i>
<i>R*</i>	All the lines

If the batch MMI is launched from command line the result will display on the serial interface. If the batch MMI is sent from the internal batch repository the command will display on the embedded OLED screen.

There are two options to crop the chain that will be returned. These options are following the command separated by semi-colon.

Rx:sss:ccc

sss is the number of character to skip at the beginning of the string.

ccc is the maximum number of character of the returned string.

Example: if the return string is "ABCDEFGH" the command *R1:3:4* will display "DEFG".

3.4 Command K

This command sends an answer string to the CICAM

3.5 Command C

This command closes the CICAM High Level MMI resource

3.6 Command T

This command sets a timeout. If the timeout expires before the end of the batch is reached or before another timeout is set an error is returned. If the batch has been launched from the internal batch repository a red "KO" is display on the embedded screen.

3.7 Command W

This command waits for the specified number of seconds. Exemple *W2* waits 2 seconds before executing the next command. A *W* command cannot be followed by a *R* command.

3.8 Useful Tricks

If an error screen is already displayed when a batch is started, the following sequence will get rid of it cleanly: *W2S1W2* (wait 2s, select 1, wait 2s).



4 SAM-BA update

Software required

The update requires the SAM-BA from Atmel updaters which can be found at this address:

<http://www.atmel.com/tools/atmelsam-bain-systemprogrammer.aspx>

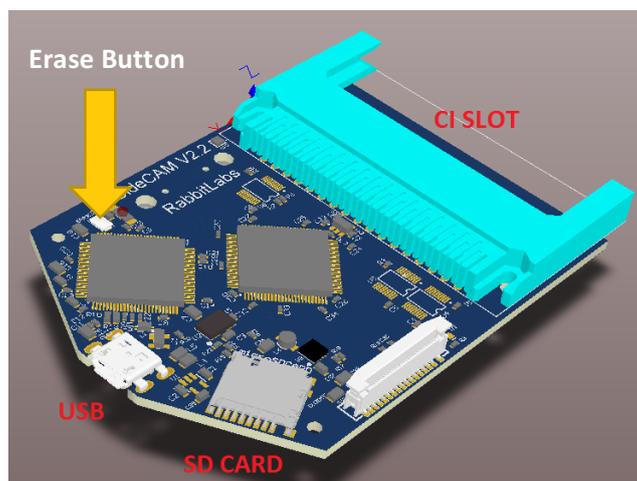
4.1 Bootloader activation

4.1.1 Activation from command line

This is the simplest method, see chapter 2.1.9

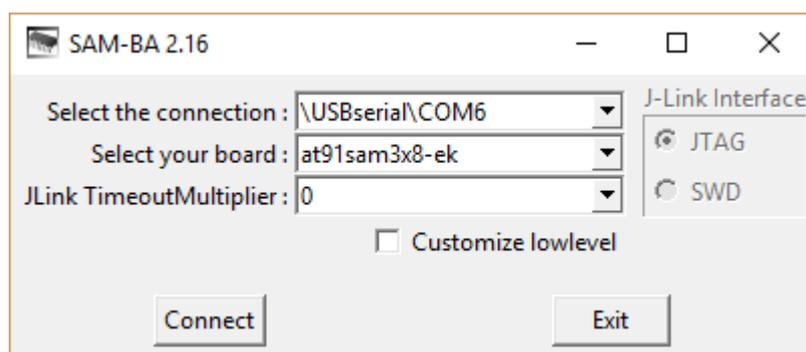
4.1.2 Manual activation

Press button erase close the LED while powering the device

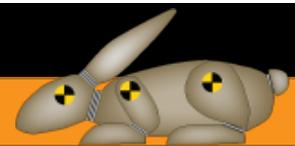


4.2 Update procedure

Connect to board using the following parameters



You should see this screen



SAM-BA 2.16 - at91sam3x8-ek

File Script File Help

at91sam3x8-ek Memory Display

Start Address: 0x20000000 Refresh

Size in byte(s): 0x100

Display format: ascii 8-bit 16-bit 32-bit

Applet traces on DBGU: infos Apply

0x20000000	0x00000001	0x00000000	0x00000001	0x00100377
0x20000010	0x00100379	0x0010035F	0x0010036B	0x00100E1B
0x20000020	0x00100EB9	0x0001C200	0x00080000	0x000021A1
0x20000030	0x00070000	0x00430209	0xC0000102	0x00040932
0x20000040	0x00000000	0x00000000	0x00000000	0x00000000

Flash | SRAM 0 | SRAM 1

Download / Upload File

Send File Name:

Receive File Name:

Address: 0x80000 Size (For Receive File): 0x1000 byte(s)

Send File

Receive File

Compare sent file with memory

Scripts

Boot from Flash (GPNVM1) Execute

loading history file ... 3 events added
SAM-BA console display active (Tcl8.5.9 / Tk8.5.9)
(sam-ba_2.16) 4 %
(sam-ba_2.16) 4 % |

\USBserial\COM6 Board : at91sam3x8-ek

Browse in the Send File Name dialog for the bin update file and press send file



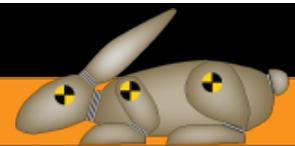
Address	Value	Address	Value	Address	Value
0x20000000	0x00000001	0x00000000	0x00000001	0x00100377	
0x20000010	0x00100379	0x0010035F	0x0010036B	0x00100E1B	
0x20000020	0x00100EB9	0x0001C200	0x00080000	0x000021A1	
0x20000030	0x00070000	0x00430209	0xC0000102	0x00040932	
0x20000040	0x00000000	0x00000000	0x00000000	0x00000000	

Answer yes to this screen

Do you want to lock involved lock region(s) (0 to 6) ?
"Yes" Lock it

Oui Non

Then press the execute button to enable boot from flash



SAM-BA 2.16 - at91sam3x8-ek

File Script File Help

at91sam3x8-ek Memory Display

Start Address: 0x20000000 Refresh Display format: ascii 8-bit 16-bit 32-bit Applet traces on DBGU: infos Apply

Size in byte(s): 0x100

0x20000000	0x00000001	0x00000000	0x00000001	0x00100377
0x20000010	0x00100379	0x0010035F	0x0010036B	0x00100E1B
0x20000020	0x00100EB9	0x0001C200	0x00080000	0x000021A1
0x20000030	0x00070000	0x00430209	0xC0000102	0x00040932
0x20000040	0x00000000	0x00000000	0x00000000	0x00000000

Flash | SRAM 0 | SRAM 1

Download / Upload File

Send File Name: firmware/SideCAMV2/SideCAMV2/Debug/SideCAMV2.bin Send File

Receive File Name: Receive File

Address: 0x80000 Size (For Receive File): 0x1000 byte(s) Compare sent file with memory

Scripts

Boot from Flash (GPNVM1) Execute

-I- Sector 1 locked
-I- Sector 2 locked
-I- Sector 3 locked
-I- Sector 4 locked
-I- Sector 5 locked
-I- Sector 6 locked
(sam-ba_2.16) 4 %

\\USBserial\\COM6 Board : at91sam3x8-ek

Unplug and replug the board to restart with new firmware.