Revision 1.0

SEMINIX

User's Manual

AS-uni

Universal In-System Programmer

JUNE 2013

AS-uni (Universal In-System Programmer)

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Printed in the Republic of Korea

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1. General description and Features

1.1 Main features

AS-uni is a high-speed programmer for the Samsung MCU, Fujitsu MCU and ABOV MCU.
It can program a new firmware code into MCU mount on PCB when you need to upgrade the system firmware code for A/S (After Service) without a host PC. So it is very useful to upgrade the firmware code of MCU built in the Air-conditioner, Refrigerator, Washing machine like a heavy goods which are difficult to move them to the After Service center.
So it is useful for upgrading the application firmware at field by A/S engineers.

Main features are as follows:

- Portable & Stand alone In-system programmer.
- Supports Samsung(All MCU), Fujitus(MB9AF132K/L) and ABOV(M310,I910) MCU.
- Hex data file downloads via USB port form PC.
- Main functions
  - Chip Erase
  - Program (Writing data into device)
  - Verify data with the data in buffer memory of AS-uni
  - Device checksum

- Very fast program and verify time
  - Samsung : Samsung MCU: 2K byte (OTP type MCU) or /10K byte (MTP or FLASH MCU) p
  - Fujitsu : Baud rate 9600 ~ 115200 .
  - ABOV : Baud rate 19200 ~ 38400.

- Small size for the portable use. (Width : 46, Length : 82, Depth : 16 mm, weight : 50g)

- Internal buffer memory : 118M Byte
  - Can download several hex files and select one file when programming it to MTP built in application system.

- Power supply : External power adapter operation
  - Power adapter (100~220VAC to 15VDC, 500mA)
  - Maximum supply current to Application system: 300mA

- Driver software is run under Windows 2000NT/XP/VISTA/7
  - User can easily select device type or configuration settings
  - Key-based menu-drive software for simple operation.

- System upgradeable
  - AS-uni system firmware can be upgraded at need.

1.2 Packing Includes

(1) AS-uni main body

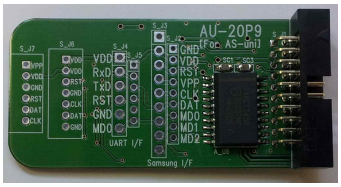
(2) USB Connection Cable

(3) 20pin Connection Cable

(4) AU-20P9 (20 to 9 pin Adapter Board)

(5) Power Adapter (15VDC)

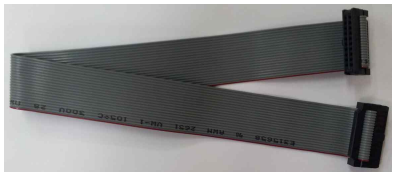
AS-uni Main body



AU20P9

USB Connection Cable

Power Adapter



20pin Connection Cable

Figure 1. AS-uni unit kit

2. Getting Started

2.1 Device support

AS-uni supports all of Samsung MCU, Fujitus - MB9AF132K/L and ABOV - M310,I910 MCU.

2.2 To install AS-uni USB driver

Window XP/VISTA/7 or later version

The USB driver will be installed automatically (No need of installation manually)

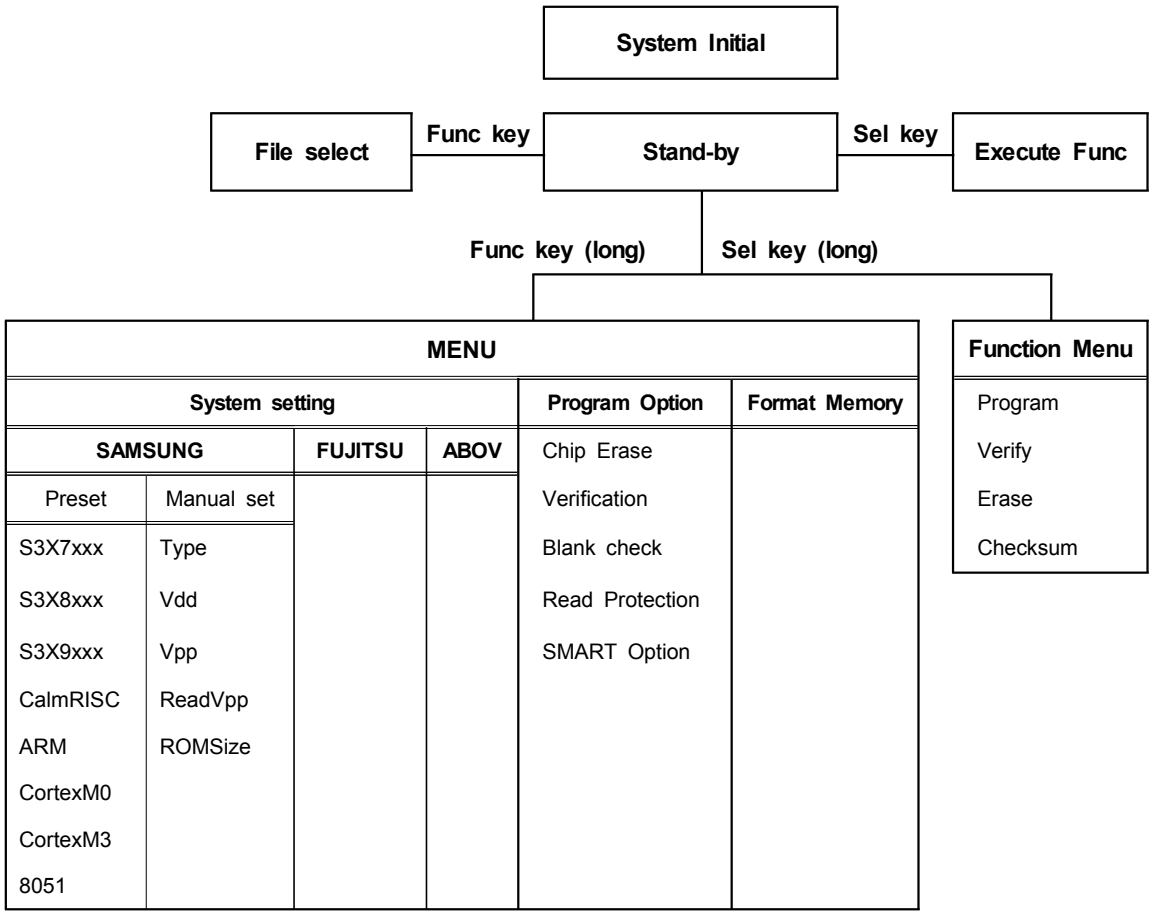
2.3 Hardware Setup (On-board programming)

1) Supply electric power to External power adapter.
2) Connect AS-uni to the Application System with connection cable.
3) AS-uni is activated and LCD screen displays basic mode.

(AS-uni main body doesn't have the power source for itself)

3. Operation descriptions

3.1 System function-map



Key Function

- UP : ‘Func’ key
- Down : ‘Sel’ key
- Select : ‘Sel’ key with long time (over 1 sec)

3.2 Stand-by Mode

Stand-by Mode

(1) Program Option

- : Auto Chip Erase
- : Auto Verify
- : Auto Blank Check
- : Auto Read Protection (Samsung MCU)
- : SMART Option (Samsung MCU)

(2) Information

- Device: product part number
- Setting Voltage : Device operating voltage (Vdd), Programming voltage (Vpp)
- End Address : length of hex file
- Buffer Checksum : 2 bytes of checksum of data in buffer
- Main Clock : System Clock

(3) Current Status (of AS-uni system operation)

- Program
- Verify
- Erase
- Checksum

(4) File Name

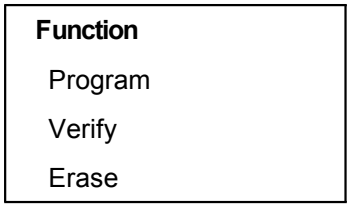
- File Name should be set in English or Arabic number.

3.3 Execute

- ‘Current Function’ is started by pressing ‘Sel’ key at Stand-by mode.
- The result and status will be displayed on LCD window.

3.4 Function Menu

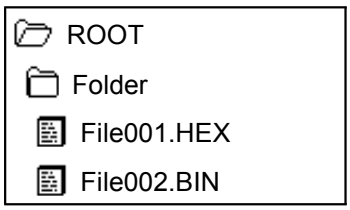
- Choose a function which you want among ‘Program’, ‘Verify’, ‘Chip Erase’, and ‘Check sum’.



1) Press ‘Sel’ key ***for a little long time*** in ‘Stand-by’ mode to go to the main menu
2) Moving the cursor is available by using ‘Sel’ key or ‘Func’ key.
3) If you press ‘Sel’ key for a little long time, an item with the cursoris selected and then the mode is back to ‘Stand-by’ mode

3.5 File select

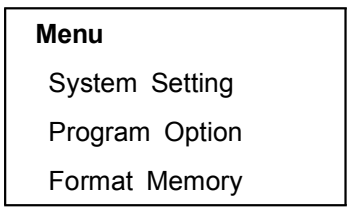
- In this mode, you can choose a file to be programmed.
  *Only support files with ‘Intel hex format or Binary format’



Display window – File Select Mode

1) Press ‘Func’ key at ‘Stand-by’ mode to go to ‘File Select’ mode.
2) Moving the cursor is available using ‘Sel’ key or ‘Func’ key.
3) If you press ‘Sel’ key for a little long time, an item with the cursor is selected and then the mode is back to ‘Stand-by’ mode
4) Press ‘Func’ key longer, if you want to go to the upper (parent) folder.
   When you are in a root folder, It can enter the Stand-by mode to press "Func" key longer.

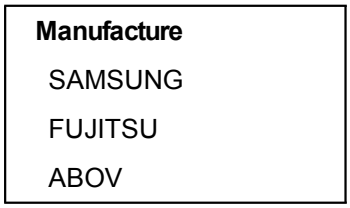
3.6 System Menu



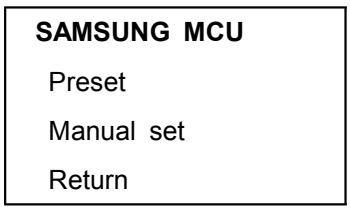
1) Press ‘Func’ key ***for a little long time***in ‘Stand-by’ mode to go to the main menu
2) Moving the cursor is available using ‘Sel’ key or ‘Func’ key
3) If you press ‘Sel’ key for a little long time, the item with the cursor will be selected

3.7 System Setting

- System setting menu is to select Device.

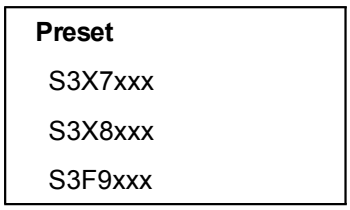


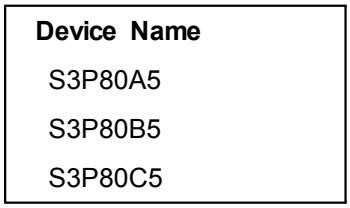
(1) SAMSUNG



1) Preset mode

If you select the device name (part number) on LCD window, ‘Device Type’, ‘Vdd’, ‘Vpp’ and ‘End Address’ of the selected device are set automatically.

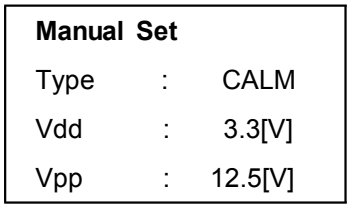




- Moving the cursor is available using ‘Sel’ key or ‘Func’ key
- If you press ‘Sel’ key for a little long time, the item with the cursor is selected

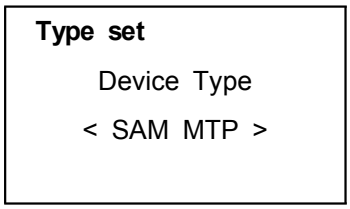
2) Manual setting mode

User should set ‘Device Type’, ‘Vdd’, ‘Vpp’, 'Read Vpp' and 'ROM Size’ manually.

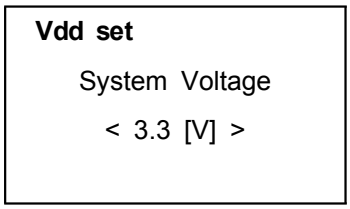


- Moving the cursor is available using ‘Sel’ key or ‘Func’ key
- If you press ‘Sel’ key for a little long time, the item with the cursor is selected
- The value of the selected item can be changed.

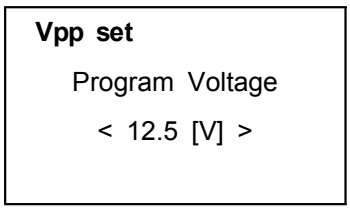
a) Device Type



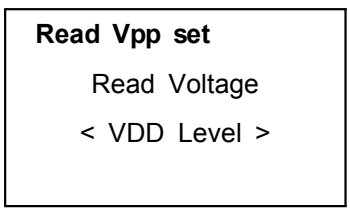
b) System voltage



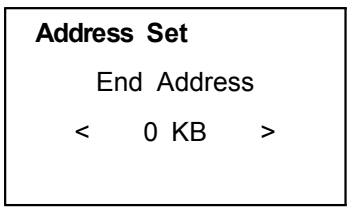
c) Program voltage



d) Read voltage



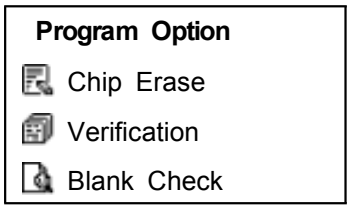
e) Rom size



3.8 Program Option

This menu is to choose the programming options such as Chip Erase, Verification, Blank check, Read Protection, LDC Protection, Hard Lock, and SMART Option.

(Example)
If users choose the Read Protection, the read protection will be done automatically after programming.



1) Moving the cursor is available using ‘Sel’ key or ‘Func’ key
2) If you press ‘Sel’ key for a little long time, the item with the cursor is selected
3) Selection and cancellation will be toggled whenever you press ‘Sel’ key at the same item.
4) The icons are come out on the left side of the selected items, and there is no icon if you cancel item of the program options.

3.9 File Download(Hex data files)

1) Connect the AS-uni to the USB port of the PC using the USB cable.
2) Copy a file to removable disk.
3) Disconnect the USB connection.

* File name should be made in English.
* Remove 'Adapter power' or turn off 'Application System Power' when AS-uni connectsPC via the USB cable.

3.10 System Upgrade

1) Download the upgraded file from website (http://www.seminix.com).
2) Copy the upgraded file to AS-uni and then disconnect USB cable after copying.
3) Connect the USB cable again (AS-uni and PC) for upgrading sequence.
4) AS-uni will be connected to PC after finishing the system upgradesuccessfully.

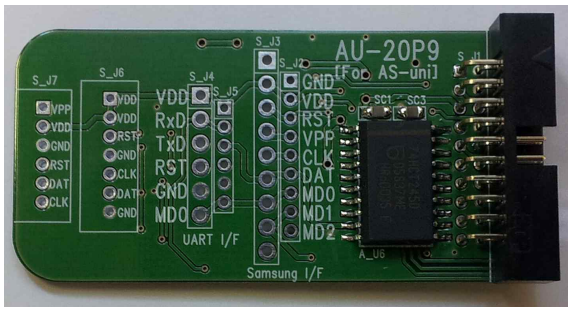
* Please backup the hex data in the buffer of AS-uni before the upgrade because the buffer data will be formatted after finishing the upgrade

* All setup data(‘Device Type’ ,‘Vdd’, ‘Vpp’, 'Read Vpp' and ‘ROM Size’) of the system setting are initialized after the upgrade.

4. Electrical Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Current Consumption (Vdd : 5V)	Stand by	-	-40	-85	mA
	Operating	-100	-	-200	
Programming Voltage (Vpp)	Ipp=10mA	3.3	-	12.5	V
Programming Current (Ipp)	Vpp=12.5V	5	10	-	mA

5. AU-20P9



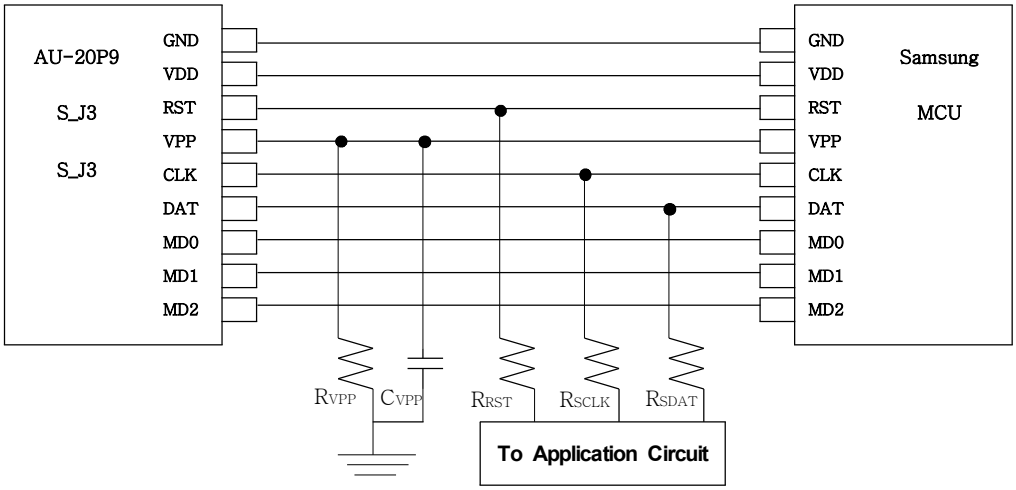
Connector Name	Description
S_J2	For Samsung Serial Program – 9pin 2.54mm pitch
S_J3	For Samsung Serial Program – 9pin 2.00mm pitch
S_J4	For UART Program– 6pin 2.54mm pitch
S_J5	For UART Program – 6pin 2.00mm pitch
S_J6	For Samsung Electronics Co.,Ltd., – 7pin 2.00mm pitch
S_J7	For Samsung Electronics Co.,Ltd., – 6pin 2.00mm pitch

6. On-board writing application

6.1 Samsung MCU

At the Samsung MCU writing, the AS-uni needs only 9signal lines that are VDD, GND, TEST, MODE0, MODE1, MODE2, RESET, SCLK, and SDAT of MCUs.

When you design the PCB circuits, you should consider the usage of these lines for the on-board writing(In-system programming).



Pin name (MCU side)	I/O mode in Applications	Resistor (need)	Recommend Value
Vpp(TEST or Mode)	Input	Yes	RTEST is 47kΩ CVPP is 104pF
RESET	Input	Yes	RRESET is 47kΩ
SDAT(I/O)	Input	Yes	RSDAT is 4.7kΩ
	Output	No (Note 1)	
SCLK(I/O)	Input	Yes	RSCLK is 4.7kΩ
	Output	No (Note 1)	

Reference Table for connection

Please be careful to design the related circuit of these signal pins because rising, falling timing of VPP, SCLK and SDAT are very important for proper programming.

**** if 'Reset pin' and 'Vpp(Test) pin' are same, you have only to connect Vpp(Test) pin.***

6.2 Fujitus MCU

At the Fujitus MCU writing, the AS-uni needs only 6 signal lines that are VDD, GND, RXD, TXD, Reset, MODE0 of MCUs.

6.3 Abov MCU

At the Abov MCU writing, the AS-uni needs only 6 signal lines that are VDD, GND, RXD, TXD, Reset, BOOT of MCUs.

Notice

1) In te on-board writing mode, very high-speed signal will be provided to CLK and DAT pin. And it will cause some damages to the application circuits which are connected to SCLK or SDAT port if the application circuit is designed as the high-speed response such as relay control circuit.

2) 0.5m of cable is the maximum length from AS-uni to a target chip

3) Power supply - Use 'External Power Adapter (15VDC)' for program to chip.

4) Please check Vdd, Vpp, and Checksum before programming.

5) Please check the connection line are correct.

If user doesn't follow this notice and keep using AS-uni even though there seem to be a problem of AS-uni, SEMINIX will disclaim all responsibility.

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