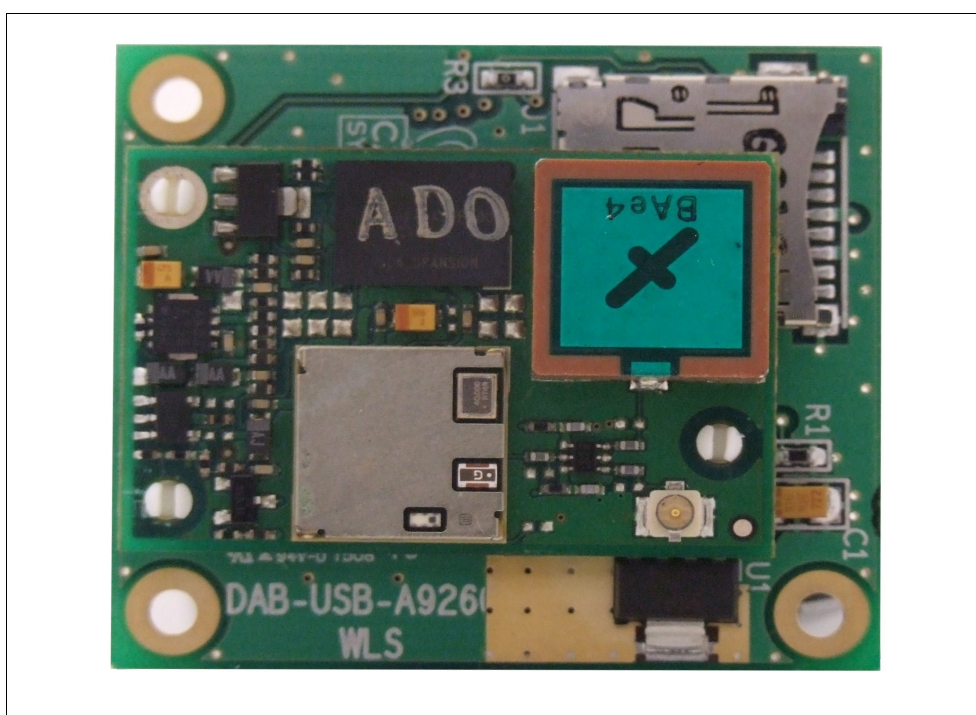




EMBEDDED AND NETWORK COMPUTING TECHNOLOGIES

GETTING STARTED WITH THE DAB-USB-A9260-WLS (WiFi)



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SECTION 1

1. Introduction

This getting started guide is aimed at helping the reader become familiar with the DAB-USB-A9260-WLS (WiFi) daughter board. First, it describes how to patch the linux kernel in order to use the WLS (WiFi) daughter board. Then it presents the WISM module and the pre-installed default API script and eventually it shows you how to setup the connection parameters and use the wireless connection.

1. How to patch the linux kernel for the USB-A9260-WLS (WiFi)

1.1. Introduction

In order to use the WLS (WiFi) daughter board, you should first apply a small patch to the linux kernel. From a 2.6.25 linux kernel patched with the at91_patch (<http://maxim.org.za/AT91RM9200/2.6/2.6.25-at91.patch.gz>), you should just issue the following commands:

- `cd linux-2.6.25/`

Copy the usb-a9260-wlan_patch in the /linux-2.6.25 directory and apply the patch:

- `patch -p1 < usb-a9260-wlan_patch`

Issue the make usb-a9260_config and modify the configuration in order to enable the RTC and the MMC support.

Issue the make command

- `make ARCH=arm CC='path of your cross compiler' uImage`

Now the USB-A9260 is ready to be used with the WLS (WiFi) module.

Note: From the kernel-2.6.23 version, you should use the last available uboot on the calao ftp site. A uboot binary is also available on the calao ftp site in the /usb-a9260-wlan (WiFi)/uboot directory.

1.2. WISM Module

The Wism module allows to create a wireless connection for the USB-A9260.

It is a fully integrated and qualified wireless device server, designed to make it simple to embed 802.11 connectivity.

The module is directly supplied by the +5V of the USB port and it is driven by the serial port 1 of the SAM9260 processor. The reset module is wired to the PA25 GPIO.

Several GPIOs are also wired between the WISM module and the GPIO of the SAM9260 processor (See the user guide for details).

Remarks: When you use the WISM module, the current consumption on the +5V USB power supply can be greater than 500mA.

1. WISM UW Default User Interface

1.1. Introduction

In order to facilitate the use of the WISM module, a default user interface is pre-installed in the wism module of the WLS (WiFi) daughter board.

The goal of this default user interface script is to provide a simple to use set of commands that can be used to accomplish standard WLAN link management and network connectivity functions.

Note: For more details about the user interface, see the following url:
<http://www.ezurio.com/uwscripts/>

1.2. The Default user interface

The default user interface operates in either COMMAND mode or DATA mode.

- COMMAND mode:

In this mode, the user can send commands either by the serial port or by using a command.txt script. Indeed when you start the default user interface, if a command.txt is present in the module filesystem then it is executed (scripted). On the contrary, if there's no command.txt script to execute then the user could send command through the serial port (interactive).

- DATA mode:

When a connection is established to a remote device the module automatically switches into DATA mode and the serial port is used to transport data to and from the remote device.

Note: If you wish to break the connection in order to force the module back into COMMAND mode, you should send a break on the Tx line.

Note: You could download on our ftp site the pre-installed default API script. Indeed the main script (Command_Default script) has been a little bit modified for several reasons. First we replaced the #include and the #define directive in the Command_Default script because the calao wism_utility doesn't parse the script before downloading unlike the ezurio uwTerminal.

Secondly on account of syntax, for each " character in the html files, we duplicated this one in order to be able to download the html file from the wism_utility.

1.3. How to start with the WISM module

The wism module populated on the USB-A9260-WLS (WiFi) is pre-installed with the default API script. If you want to interact quickly with the module, you can issue commands from microcom.

(see the WISM_Default_API_Definition.pdf in the directory below:
/usb-a9260-wlan (WiFi)/Default_API on the calao ftp site)

- `microcom -D/dev/ttyS2`
- press `~, t, p, h` to configure the baud rate
- and press `~ s` to start the `script.scr`

Then from microcom you can issue a command like 'search' in order to detect the available access points around.

- `>search`

You should get the list of the available AP.

Note: The `script.scr` allows the user to start the `Command_Default.txt` script.

1.4. How to configure the wireless connection

There are two possibilities to configure the WLAN connection from the default user interface:

➤ *From the Web configuration Interface*

In order to enter in the configuration mode, you have to set the GPIO4 (PB16) before starting the `Command_Default` script.

Just download the `gpio9260` utility from the calao ftp site , copy this utility on your USB-A9260 and then issue the following command:

- `./gpio9260 +PB16`

Once PB16 is set, start the default script with the following command from the microcom utility (available in the buildroot packages).

Issue the following command to start microcom on `ttyS2`.

- `microcom -D/dev/ttyS2`

Press the `~` key in order to enter in the config menu

Then setup the serial port to 115200,n,8,1 with hardware flow control.

Eventually send from the keyboard or from a script the following command in order to start the Command_Default script

- AT+RUN ' 'Command_Default' '

Once started, you can setup your host in order to establish a wireless connection in ad-hoc mode.

From your host start your web browser and enter the following ip address: 192.168.1.20
You should get the following page:

EZURIO

WISM Configuration Screen

UART Parameters

Baud Rate: bps

802.11 Parameters

Region: This sets the channels to the appropriate national regulatory requirements

IEEE PowerSave Mode - 0 1 5 6

Access Points

1 Wireless Networks have been found within range.

| | | | |
|--------------------|-------------------|---------------|-------------|
| SSID: Livebox-7e1e | Infrastructure AP | Security: WEP | Good Signal |
|--------------------|-------------------|---------------|-------------|

Assign the Access Points in the order of preference of attachment:

Access Point 1.
SSID: Encryption:
Password1:

*Note: For WEP Encryption the password must be either 10 or 26 HEX characters.
For WPA the password may be 1-63 alphanumeric characters or 64 HEX characters.*

Access Point 2.
SSID: Encryption:
Password:

Access Point 3.
SSID: Encryption:
Password1:

Server Details

Server IP Address: . . . Port:

Action on Save

Apply now
 Save and Auto-run at power up

Terminé

Now from this page, you can configure and store the connection parameters in the module by clicking on the « ok » button at the bottom of the page.

Note: If you take a look to the USB-A9260-WLS (WiFi) schematics, you'll see that the DSR input has been left «open ». Consequently the « AUTORUN » for the WISM module is always disabled.

Once initialized, you can reset the PB16 gpio by issuing the following command

- `./gpio9260 -PB16`

Reset the module by issuing the following commands

- `./gpio9260 +PA25`
- `./gpio9260 -PA25`

and then restart the Command_Default script with the AT+RUN "Command_Default"

➤ *From the Command line*

You can also setup the connections parameters from the command line interface (see the addap, remoteip, and port commands in the WISM UW Default User interface documentation for more details)

1.5. The command.txt script

In order to use the API default script with the command.txt script, you have to download the command.txt script in the WISM module. Calao provides a tcl script which allows to download and execute uwscript, to download html files, to list the filesystem module ... Just issue the following command in order to start the script.

- `etcl wism_utility.tcl`

From the menu, you could start the basic operations ...

1.6. How to start a server

Once a connection to an AP is established, you can use your wism module as a server. Just issue the following commands:

- `restore`

Restore your connection parameters you have previously applied.

- `join`

This command allows you to join an wireless network

- `runserver`

Establish a server and wait for client connection

Now from your host web browser you should see the page corresponding to the index.html file (by default the Web configuration page) from the IP address allocated by your access point dhcp server.

Note: You will find a lot of script examples on the ezurio web site (<http://www.ezurio.com/>) in the *Firmware and software downloads* section.

SECTION 4

1. Errata

SECTION 5

1. Revision History

1.1. Revision History

| Date | Version | Remarks |
|------------|---------|---------------|
| 2007-10-06 | 1.0 | first version |

SECTION 6

1. COPYRIGHT

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