
WISMO2C firmware downloader

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1. Scope of the document

The document aims at describing the use of WISMO 2C firmware downloader.

2. WISMO 2C downloader feature

The WISMO 2C downloader will load into the module:

- binary code of the GSM stack
- EEPROM factory default parameters

The download can be made regardless the status of WISMO 2C software (either a software loaded in the module or not).

Two different interfaces can be used to download the software :

- Serial port (V24)
- Infra Red port (IRDA) if the link has been implemented on the application.

3. WISMO 2C downloader operation

3.1 Entering the downloader

As far as the code is concerned, the downloader is a part of the nominal binary code (GSM stack code). However the downloader runs completely independently from the GSM stack.

The downloader starts if one of the two conditions described below is fulfilled :

- Condition1: at module reset, if the GSM stack part of the flash is virgin or corrupted,
- Condition2: on user request when the module is running, by AT command (AT+WDWL).

In Condition1, the GSM stack does not start (the downloader will run alone).

In Condition2, the GSM stack is stopped by an AT command and the downloader is activated.

3.2 WISMO 2C downloader interface selection

When the downloader is activated as described in the previous section, an interface should be selected (either V24 or IRDA port if implemented). The selection will be done by the entity that controls the WISMO2C (e.g.: user, microprocessor) as described below.

3.2.1 V24 or IRDA selection

The V24 or IRDA selection depends on the way the downloader is started.

3.2.1.1 Starting the downloader after hard reset

If the downloader is started after an hard reset, the module will alternatively poll each port (V24 and IRDA if implemented) during 5 seconds.

The entity (user or microprocessor) should send continuously the capital letter A of the AT command through the link the entity needs to use. The "A" should be sent until the GSM module/modem echoes it on the used link. When the "A" is echoed by the GSM module/modem, the link is said to be selected and the speed and format of the link will be those used by the entity.

Example:

A user (= entity) accesses the WISMO2C through the V24 link with Hyperterminal. The user speed defined in Hyperterminal configuration is 115200 baud and the format is 8N1.

User à AAAAAAAAAAAAAA

WISMO2C echo à AAA

When the WISMO2C echoes the "A" character, the downloader is said to have selected the V24 link at 115200 baud with 8 bits of Data, None for parity check, 1 stop bit format.

3.2.1.2 Starting the downloader on user request

If the downloader is started on user request (with AT+WDWL command), the serial settings of the downloader are those used to type AT+WDWL.

If the downloader has not yet been started, the settings will be set as described in the previous section.

3.3 V24 and IRDA download

3.3.1 AT commands

As we saw, the downloader is managed by AT commands, even if the downloader was entered at hard reset. These AT commands are :

> AT+WDWL

> AT+CFUN

3.3.1.1 Start download : +WDWL

This command is used to start download, even if we entered download after hard reset.

The immediate response of the GSM just indicates that the GSM starts the download protocol.

The GSM then send the first character of the Xmodem protocol.

The user must send the download file, using Xmodem protocol.

Application to GSM	AT+WDWL	ask for start download
GSM to application	+DWL : 0	Start download

3.3.1.2 Restart module : +CFUN=1

This command is used to stop download and start GSM stack. A complete software reset is done. All parameters are reset to their previous EEPROM value.

This mean that the OK may not be received if the used speed is not the same than the one programmed in the EEPROM.

Application to GSM	AT+CFUN=1	ask for restart module
GSM to application	OK	Command valid

3.3.2 Download protocol

The applicable protocol for firmware downloading is Xmodem. This allows almost any data terminal to download a file into the module, since Xmodem is a standard protocol.

The actual version uses only 128 bytes packets with a checksum.

3.3.3 download procedure by V24 or IRDA link

The download procedure implies that the module is powered on. The user has to configure and to start a data terminal. He must know where to find the files to be downloaded i.e the files with binary code, parameters...

If using IRDA, the user must then place the module in front of the terminal.

If using V24, the user must connect the module and the terminal using **the right** data cable. The compulsory signals are:

- > TX
- > RX
- > CTS

It is also strongly recommended to use the following signal:

- > RTS

The other RS232 signals are optional as far as the download is concerned.

The user can now try to establish communication, by sending the character 'A' until it is echoed by the WISMO2C. The character might have to be sent more than once if the module enters download immediately after hard reset.

The user then sends the end of the AT command "T+WDWL".

The module sends "+DWL : 0", then the Xmodem protocol starts.

The user can now start sending files using Xmodem protocol.

We must notice that the Xmodem protocol specifies that the receiver initiates the communication by sending a character. This character may not be seen by the user, because it is a control character. If the transmitter is not ready, a new start character is repeated by the module every 10 seconds.

At the end of the file transmission, the user can start sending a new file, using the same protocol.

When there is no more file to send, the user exits the downloader by sending the AT command " AT+CFUN=1 " .

The module stops the download code and restarts the GSM stack. The user receives " OK " if the speed and format configuration that are specified in EEPROM are the same than the ones used for download.