Installation and Setup teleCARE M

SAM Configurator

2004-10-01 / Ver. A

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1 Introduction

This SAM Configurator program is designed to configure the teleCARE M Speech Answer Module also known as SAM. I.e. downloading new firmware into the SAM and change or monitor parameters.

The program is a frontend to the PicProgUltimo program for 14 bit core Microchip™ controllers.

The program works in conjunction with the Ascom Tateco PP2 programmer . This device is connected to the parallel port of a PC. It is fed by an additional power supply of approximately 16 Volt DC.

It is possible to program the SAM while it is "hooked" up in the teleCARE system or before it is being installed (i.e. without 24V power supply).

The PicProgUltimo program and the PP2 programmer board are designed by Ascom Tateco AB.

1.1 Minimum System Requirements

In order to setup the SAM Configurator program a PC is required. The minimum system requirements for the PC are:

- Processor: Pentium or equivalent
- 32 MB of RAM
- 2 MB of free hard disk space.
- Floppy or CD-ROM drive
- Windows 95, 98, ME, 2000, NT or XP operating system
- 1 parallel port (LPT) for connection of the PP2 Programmer

1.2 SAM Configurator installation software

The latest version of the SAM Configurator installation software can be downloaded from the Ascom Wireless Solutions "Extranet", where it is found in the "Software" section.

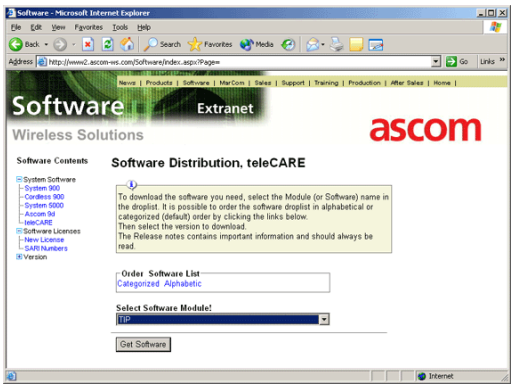

Figure 1. Ascom Wireless Solutions Extranet, Software Distribution Page

2 Installing the SAM Configurator Program

Download the SAM Configurator setup package from the "Ascom Wireless Solutions Extranet, Software Distribution Page" . When the download is finished double click on "SamConfiguratorInstaller.exe" to start the setup program.

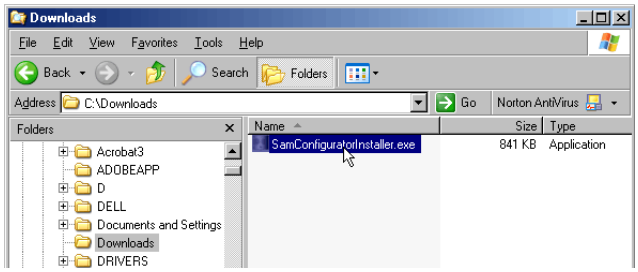

Figure 2. Start the SAM Configurator Installation Program

The "SAM Configurator V1.0 Installer" welcome screen will be displayed.

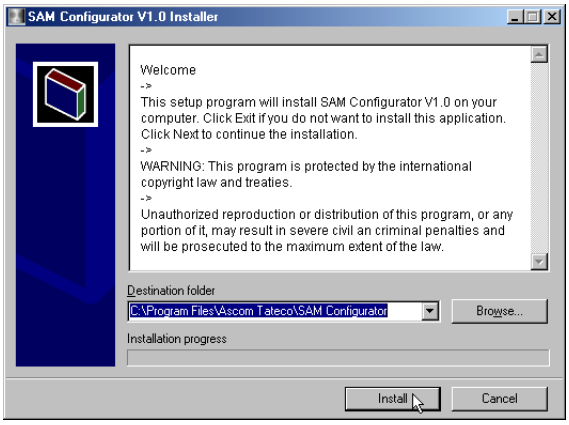

Figure 3. Welcome screen Sam Configurator installation

In the "Destination folder" selection field select a destination for the SAM Configurator installation files. Only change the destination folder if necessary. The default location is "C:\Program Files\Ascom Tateco\SAM Configurator".

To select a location different from the one used as default, click on the "Browse" button. Select a folder on the C: drive and click on "OK".

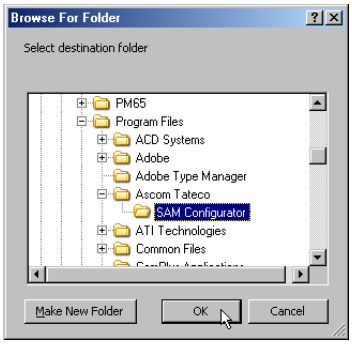

Figure 4. Select a folder for the installation

To start the installation click on the "Install" button.

In the "SAM Configurator V1.0 Installer" window a progress bar indicates the installation progress, this window automatically closes when finished.

Figure 5. Installation progress

A SAM Configurator program group will be created automatically in the Windows "Start" menu under "All Programs". It consists of the SAM Configurator executable and a help file.

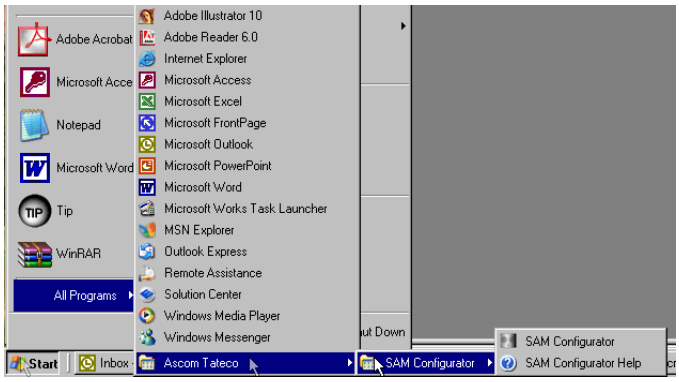

Figure 6. SAM Configurator program group in the Windows Start menu

Also a Short-cut to the SAM Configurator executable will be created on the windows desktop.

Figure 7. Desktop Short-cut to SAM Configurator

2.1 NTPort Library installation

When the SAM Configurator has been installed, a second installation window appears, this will install the NTPort Library onto the PC. The NTPort Library enables the SAM Configurator to communicate with the parallel port of the connected PC or laptop.

The "NTPort Library 2.5 Registered Version" is a licence free third party application registered to Ascom Tateco AB.

Figure 8. Installing the NTPort Library

Note: *Do not abort the NTPort Library installation process, the SAM Configurator program will not be able to start up*

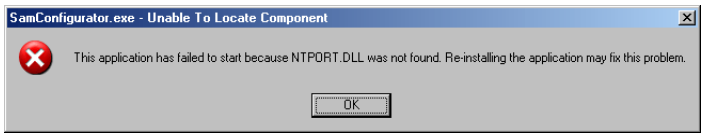

Figure 9. Trying to run SAM Configurator without NTPort Library installed

The NTPort Library welcome screens opens.

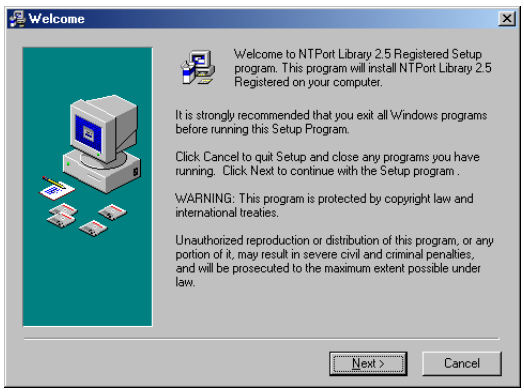

Figure 10. Welcome screen NTPort Library

Accept all default settings and click on the next button until the "Select Components" window opens.

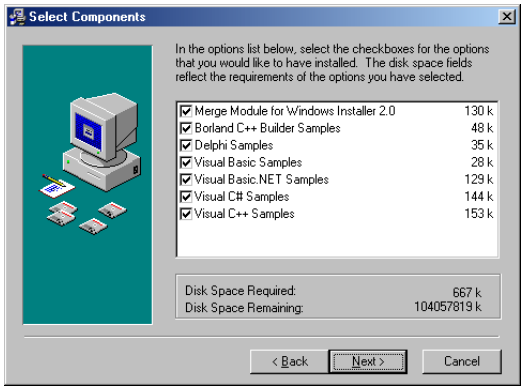

Figure 11. Select Components to install

Deselect all sample components by clicking on the check mark in front of the components name, leaving only the top component “Merge Module for Windows Installer 2.0” selected.

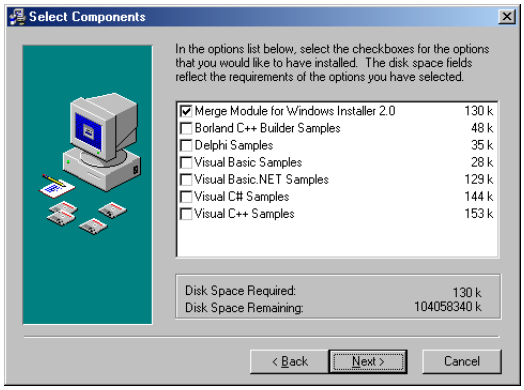

Figure 12. Deselected all sample components

Continue by clicking on the next button and the installation progress window opens showing the installation progress of the selected components.

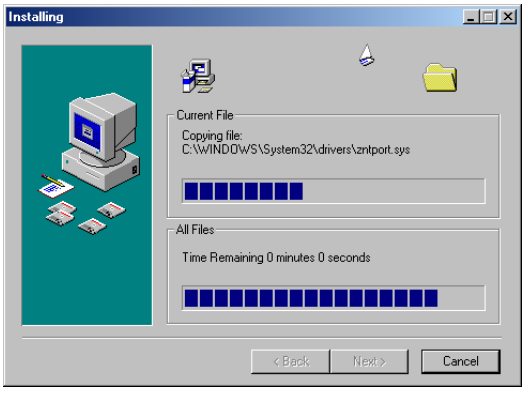

Figure 13. Installation progress window

When finished with installing the components the installation complete window is displayed. Click on the finish button to exit the installation.

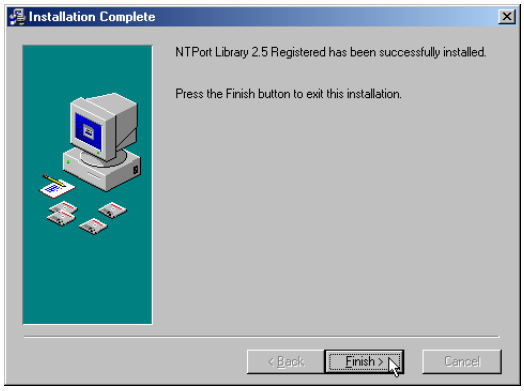

Figure 14. NTPort Library installation complete

2.2 Restarting the Computer

When the NTPort Library installation is finished, a dialogue box comes up saying that the system needs to be restarted to complete the installation.

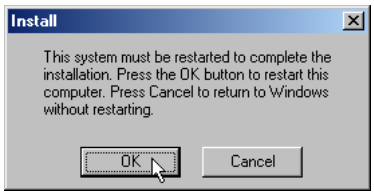

Figure 15. Restart Computer

Click on "OK" to restart the computer or click on "Cancel" if you want to restart at a later time.

3 Connecting the PP2 Programmer

After finishing the program installation connect the PP2 Programmer to the PC and the Speech Answer Module (SAM).

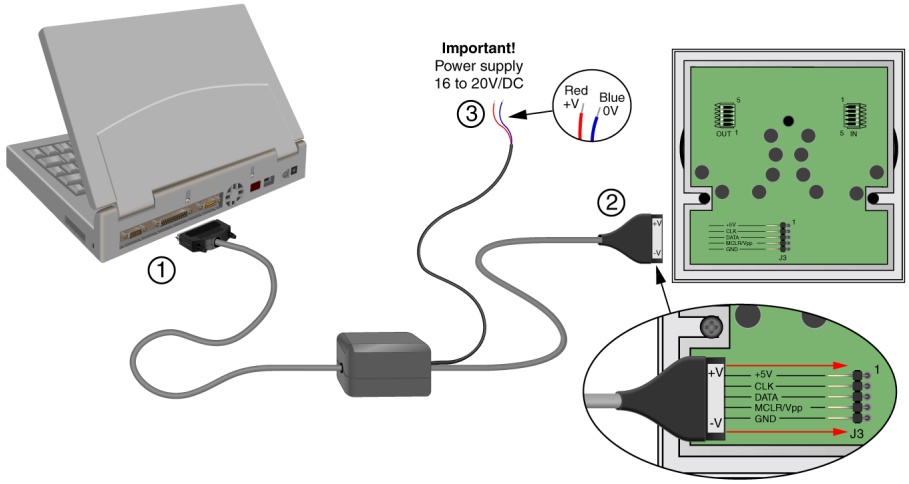

Figure 16. Connecting the PP2 programmer

1 Connect the 25-pole subD connector to the parallel port on the PC or laptop.

2 Connect the 5-pole connector to the SAM (make sure that the orientation of the SAM plug is correct, as shown in the above illustration).

3 Connect the power leads to a power supply of 16V to 20V/DC (make sure that the polarity is correct, as shown in the above illustration).

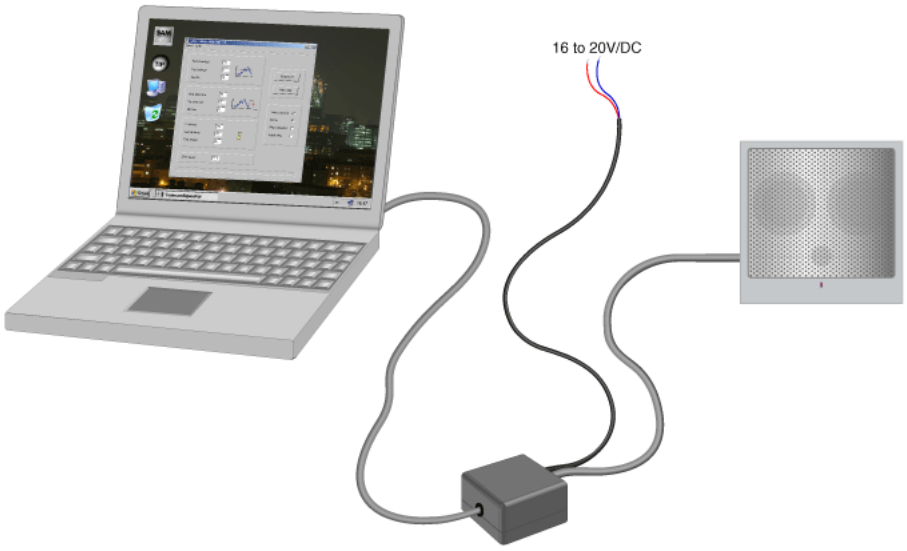

Figure 17. PC, PP2 progammer and SAM connected

4 Using the SAM Configurator

The SAM Configurator is designed to program the SAM (Speech Answer Module). It can be used to:

- Upgrade the SAM firmware
- Adjusting the parameter settings of a SAM
- Load the SAM with user saved parameter settings

Upgrading the SAM Firmware

When new firmware is released, it can be downloaded from the "Ascom Wireless Solutions Extranet, Software Distribution Page" as a "sam Vx.x.HEX" file (where x.x is the version number of the firmware). Use the SAM Configurator program to write the new firmware to the SAM.

A new firmware release includes default SAM parameter settings as determined by Ascom Tateco AB.

Adjusting the parameter settings of the SAM

The individual parameter settings of each SAM can be adjusted with the SAM Configurator. Read the parameter settings of the connected SAM, adjust the required options and simply write the new settings to the SAM.

Load the SAM with user saved parameter settings

Frequently used parameter settings can also be saved under a "*.sam" configuration file (* is the name of the file given by the user). These parameter settings can be loaded into the SAM configurator together with the latest firmware to speed up the programming of the SAM.

4.1 Functions in the SAM Configurator Task bar

The SAM Configurator's main tastable contains two functions:

- Menu
- Help

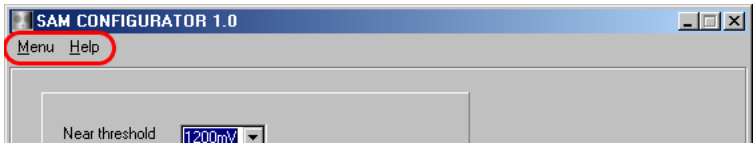

Figure 18. Functions in the main tastable

4.1.1 SAM Configurator Menu

In the SAM Configurator menu four options are available to choose from:

- Load Parameters
- Save Parameters
- Load HEX file
- Close

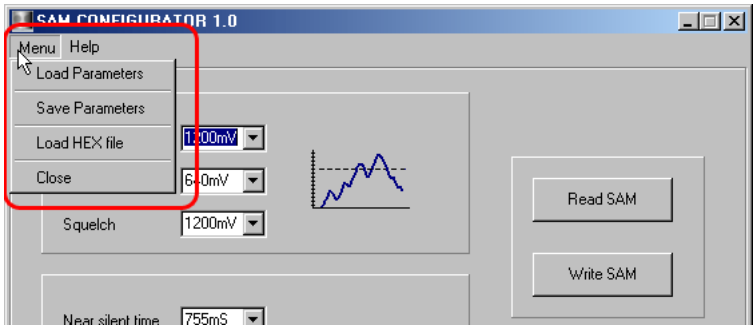

Figure 19. SAM Configurator Menu

Load Parameters

This option will pop up a dialogue box from where a user saved parameter file can be selected and loaded into the SAM Configurator.

Save Parameters

This option will pop up a dialogue box where the user can select or type in the name for the user parameter file.

Parameter files have the extension ".sam". When saving a parameter file, this extension will automatically be added to the file name.

Load HEX file

This option will pop up a dialogue box where a .hex file can be chosen. A HEX file is a firmware upgrade file which comes with the SAM Configurator program, or in case of a firmware upgrade it can be downloaded from the "Ascom Wireless Solutions Extranet, Software Distribution Page" . A HEX file always includes default parameter settings.

As long as there is no hex file loaded into the SAM Configurator, it is not possible to write the parameters to the SAM. In this case the write button will be disabled.

Close

This option will close the SAM Configurator program and closes the parallel (LPT) port for this application.

4.1.2 SAM Configurator Help

In the SAM Configurator "help" two options are available to choose from:

- Help Documentation
- About

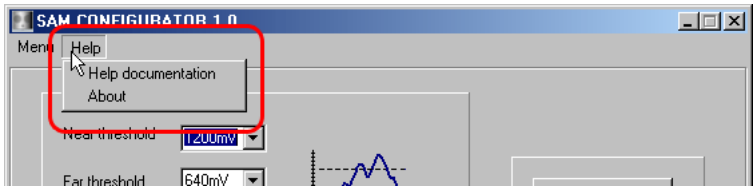

Figure 20. SAM Configurator Help

Help Documentation

The Helpfile for the SAM configurator containing the Help topics including a keyword search function.

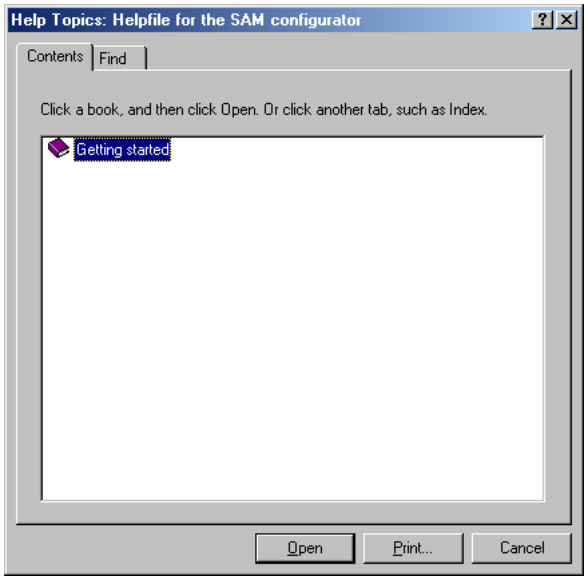

Figure 21. SAM Configurator help

About

The "About" window contains information about the SAM Configurator program like the version number of the program etc.

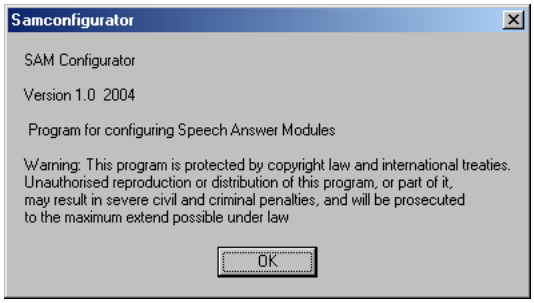

Figure 22. "About" dialogue box

5 Sam Configuration

5.1 Start the SAM Configurator program

Start the program by clicking on the Sam Configurator icon located on the Windows Desktop, or go to the windows start menu and from the "All programs" menu select "Ascom Tateco" followed by "Sam Configurator".

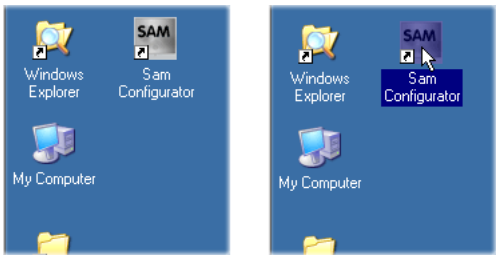

Figure 23. Selecting SAM Configurator from the Windows Desktop

Note: *On the Windows Desktop you need to single or double click the "Sam Configurator" icon to start the program. This is depending on the operating system.*

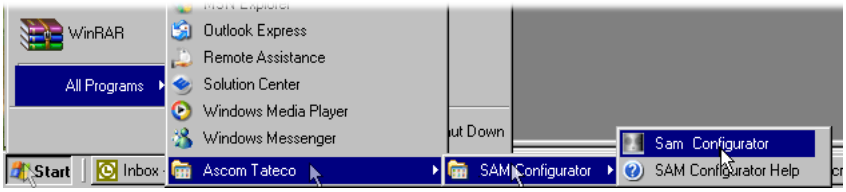

Figure 24. Selecting SAM Configurator from the Windows Start menu

This will open the Sam Configurator window as shown below.

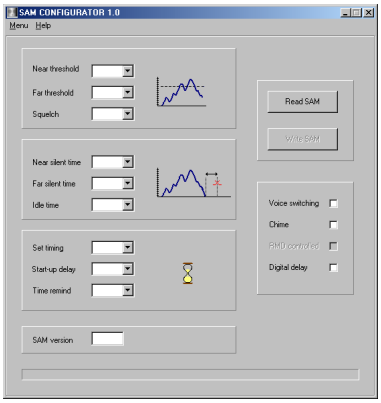

Figure 25. Sam Configurator Main window

When the SAM Configurator opens it shows empty value boxes (no parameters loaded).

5.2 Loading Parameters

There are three ways to load parameter settings into the SAM Configurator:

- Loading default Parameters from a firmware upgrade file (*.HEX file).
- Loading parameters from a user saved parameter file (*.sam file).
- Reading parameters from the connected SAM.

5.2.1 Loading Default Parameters from a Firmware upgrade

A new firmware release includes default SAM parameter settings as determined by Ascom Tateco AB. These parameter settings can be loaded into the SAM Configurator by opening the latest firmware upgrade file.

To open a firmware upgrade file click on “Menu” in the top-left corner of the SAM configurator window, and from the menu select “Load HEX file”.

An open dialogue box appears on screen from which the firmware upgrade file can be selected. Normally the firmware upgrade file is stored at the location “C:\Program Files\Ascom Tateco\Sam Configurator”. In the open dialogue box select “sam Vx.x.HEX” (where x.x is the version number of the firmware release) and click on “Open” to load the firmware upgrade and the default parameters into the SAM Configurator.

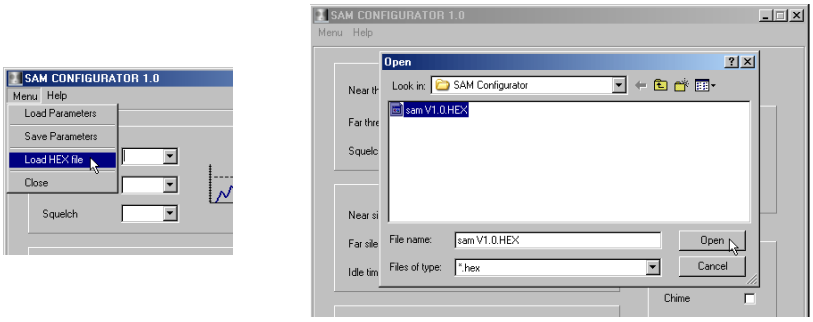

Figure 26. Loading a firmware upgrade file

The following image shows that the parameters have been loaded into the value boxes of the SAM Configurator.

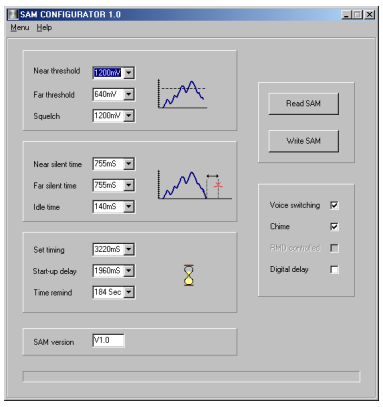

Figure 27. Firmware upgrade file with default parameters loaded.

5.2.2 Loading Parameters from a User Saved Parameter File

To load the user saved parameters click on "Menu" in the top-left corner of the Sam Configurator and from the menu select "Load Parameters".

Note: *Before opening a user saved parameter file, first load the SAM Configurator with a valid firmware upgrade file.*

An open dialogue box appears on screen from which the configuration file containing user saved parameters can be selected. Normally the user saved parameter files are stored at the location "C:\Program Files\Ascom Tateco\Sam Configurator". In the open dialogue box select "*.sam" (where "*" is the name of the user saved parameter file) and click on "Open" to load the parameters into the SAM Configurator.

Note: *The first time the SAM Configurator is going to be used there are no user saved parameter files available.* *See "Save Parameters" on page 22* *for information about saving parameters.*

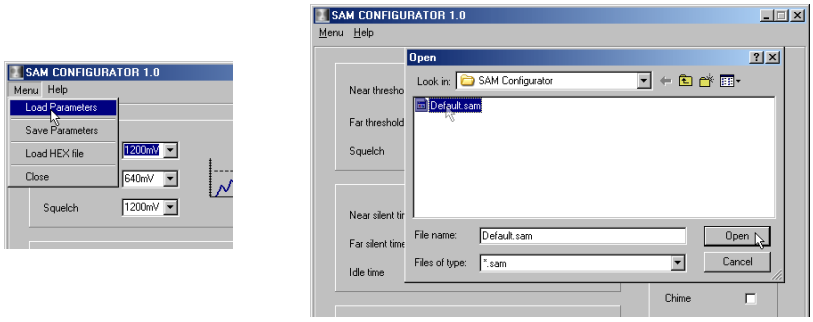

Figure 28. Opening user saved parameters

Once the user saved parameters have been loaded they will be displayed in the appropriate value boxes of the SAM Configurator.

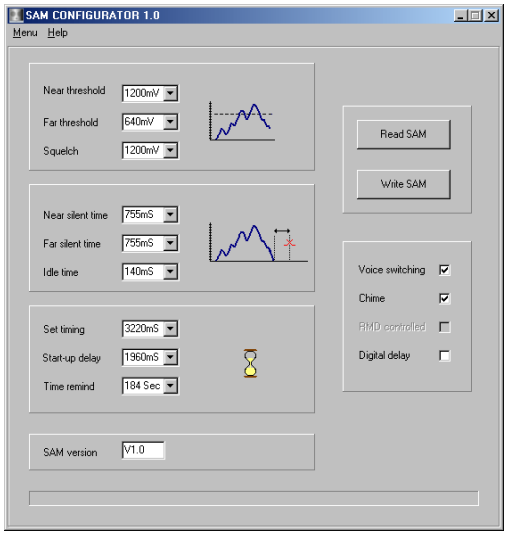

Figure 29. User saved parameters loaded

5.2.3 Reading Parameters from the connected SAM

To read the parameters from the connected SAM the "SAM Configurator" window contains a set of controls including a "Read SAM" and a "Write SAM" button.

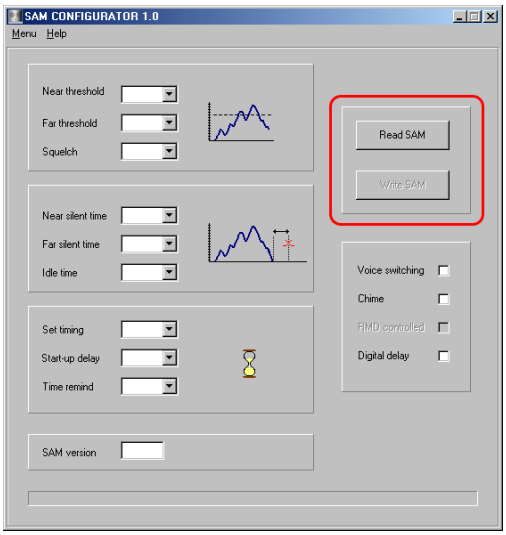

Figure 30. SAM Controls

Clicking on the "READ SAM" button will start reading the parameters together with the firmware setup information from the connected SAM and loads them into the SAM Configurator.

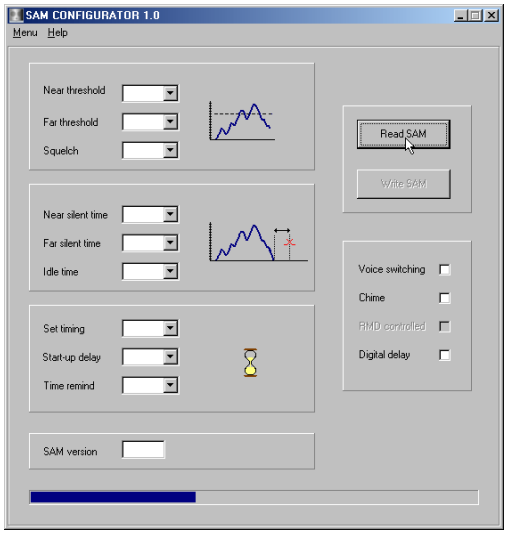

Figure 31. Read parameters from the connected SAM

A progress bar at the bottom of the SAM Configurator window shows the progress of the data transfer from the connected SAM. When finished reading, the SAM Configurator shows the values from the connected SAM in the appropriate value boxes together with the SAM's current firmware version.

5.3 Adjusting the Loaded Parameters

With the SAM Configurator you can adjust three groups of settings:

- Threshold settings
- Timing settings
- Advanced settings

5.3.1 Threshold settings

The threshold settings can be used to adjust the detection sensitivity of the automatic voice switches (Rx, Tx) and the sensitivity of the squelch in case of background noise. Threshold settings are expressed in millivolts (mV).

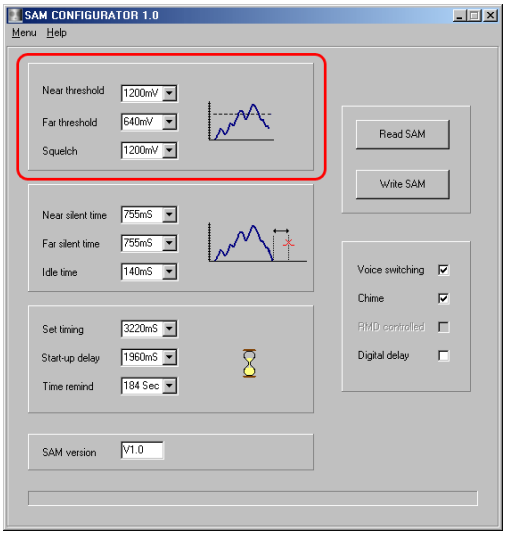

Figure 32. Threshold adjustments of the SAM Configurator

To adjust a value, click on the down-arrow of the selection box and select a new value from the drop-down list. Use the scroll bar to scroll up and down through the list.

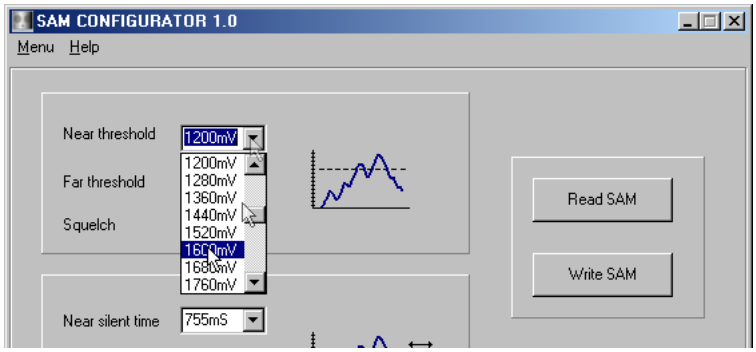

Figure 33. Adjusting the "Near threshold"

Near Threshold

When the staff is speaking into the SAM's microphone, the SAM detects the speech. On a certain level it will decide to switch into Tx mode (Speech direction from Nurse to Patient). The near threshold value is used to control the detection sensitivity of this voice switch.

Lowest value:	0 mV	The switch will detect everything
Highest value:	3600 mV	The switch will detect nothing
Average range:	480 mV - 1600 mV	Appropriate for most applications

Note: *Switching will only occur when both sides have been quiet for a certain amount of time indicated by the "idle time".*

Far Threshold

When the patient is speaking into the remote speech peripheral (NPSU), the SAM detects the speech of the far side. On a certain level it will decide to switch into Rx mode (Speech direction from Patient to Nurse). The near threshold value is used to control the detection sensitivity of this voice switch.

Lowest value:	0 mV	The switch will detect everything
Highest value:	3600 mV	The switch will detect nothing
Average range:	400 mV - 1600 mV	Appropriate for most applications

Note: *Switching will only occur when both sides have been quiet for a certain amount of time indicated by the "idle time".*

Squelch

Most applications are build up of SAM's and NPSU's. The SAM is used as a central unit in the room, used by staff. The NPSU's are mounted near the beds of the patients. In some cases however, there is only one speech peripheral in a room required. In these situations a SAM can be master or slave. In slave mode it acts just like a normal NPSU.

When in slave mode the SAM always "listens" to the audio-line. Because there can be some disturbance on an idle audio-line the SAM is equipped with a noise gate, also known as squelch.

The sensitivity of the squelch can be controlled with the squelch threshold parameter.

Lowest value:	0 mV	The switch will detect everything
Highest value:	3600 mV	The switch will detect nothing
Average range:	400 mV - 1600 mV	Appropriate for most applications

5.3.2 Timing Settings

The timing settings consists of the timings used in the SAM. In this chapter a description of each individual timing is described. Timing settings are expressed in seconds (Sec) or milliseconds (mS).

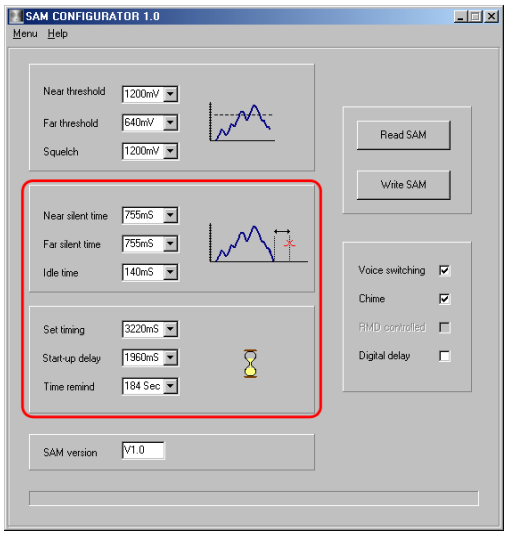

Figure 34. Timing adjustments of the SAM Configurator

To adjust a value, click on the down-arrow of the required selection box and select a new value from the drop-down list. Use the scroll bar to scroll up and down through the list.

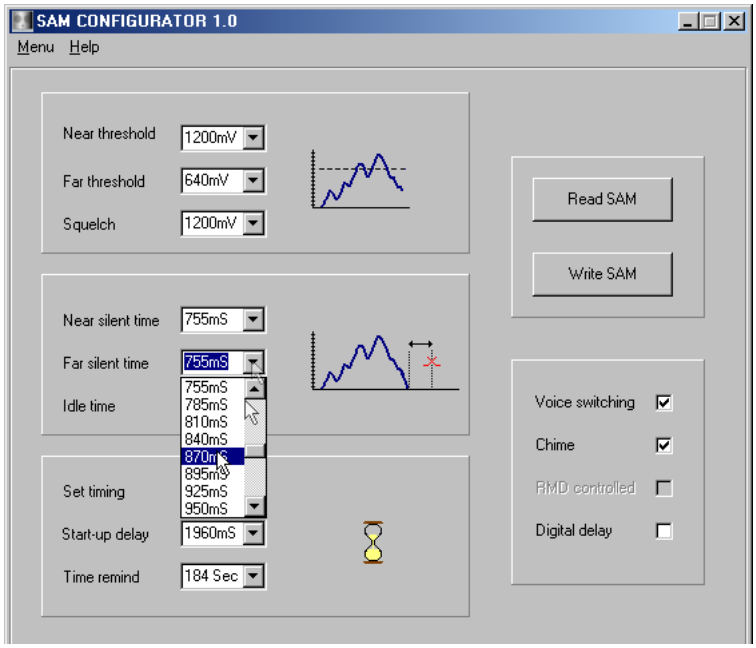

Figure 35. Adjusting the "Far silent time"

Near Silent Time

When the SAM is in Tx mode it monitors the microphone signal. Every time that the level is over the Near Threshold, a timer is reloaded with a value called Near Silent Time. As long as the timer is running, the SAM stays in Tx mode. When no microphone signal is detected the timer times out and the SAM will go into idle mode. This is the mode where decisions can be made on the Rx or Tx mode, depending on which side is crossing the threshold first.

Lowest value:	0 mS	Short
Highest value:	1510 mS	Long
Average range:	505 mS - 1010 mS	Appropriate for most applications

Far Silent Time

When the SAM is in Rx mode it monitors the incoming signal. Every time that the level is over the Far Threshold, a timer is reloaded with a value called Far Silent Time. As long as the timer is running, the SAM stays in Rx mode. When no "far end" signal is detected the timer times out and the SAM will go into idle mode. This is the mode where decisions can be made on Rx or Tx mode, depending on which side is crossing the threshold first.

Lowest value:	0 mS	Short
Highest value:	1510 mS	Long
Average range:	505 mS - 1010 mS	Appropriate for most applications

Idle Time

When the SAM is in idle mode, the program is making no decisions for a short period of time. This time is used to be sure that the circuit is stable. Both Rx and Tx are muted during that time. This configurable time is called idle time.

Lowest value:	0 mS	Short
Highest value:	1510 mS	Long
Average range:	55 mS - 225 mS	Appropriate for most applications

Set Time

In stand alone mode the SAM can be activated by pressing the RED button for a certain amount of time. This is due to the fact that pressing the button shortly will issue a call level into the teleCARE system. The time needed to activate the SAM can be controlled with the SET time parameter.

Lowest value:	0 mS	Short
Highest value:	7000 mS	Long
Average value:	3220 mS	Appropriate for most applications

Startup Delay

After the SAM has been activated a chime can indicate the start of a speech session. Because the teleCARE system needs some time to establish the complete audio path, there must be some delay between activation and the chime. A timer is used to time this event and the parameter can be set.

Lowest value:	0 mS	Short
Highest value:	7000 mS	Long
Average value:	1960 mS	Appropriate for most applications

Time remind

The length of a speech session is determined by the Intelligent Address Module and set to approximately four minutes. It is possible to configure the SAM so that it will play a four beeps reminder after a certain amount of time. Normally a time of about three minutes is used. This will notify the user that communication reaches the end and speech will be disconnected after a certain amount of time. One unit equals 7.1 seconds.

Lowest value:	0 Sec	Short, no delay
Highest value:	305 Sec	Long
Average value:	184 Sec	Appropriate for most applications

5.3.3 Advanced Settings

In the Advanced settings section of the SAM Configurator special options can be turned on or off depending on the installation.

To turn a function on or off click on the check-box of the desired function. The function is turned on when the check-box shows a check mark.

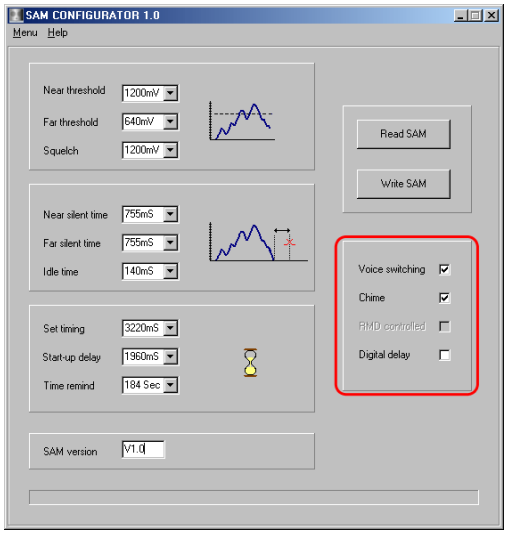

Figure 36. Advanced settings of the SAM Configurator

Voice Switch Enable

If "Voice switching" check box is checked, the automatic voice switch protocol is enabled. This means that the program will automatically detect sound at both near and far side and makes a decision on Tx (Transmit) or Rx (Receive) mode.

It is possible to keep the SAM in Tx or Rx mode by continues speech or loud noise at the respective side. This can cause a patient to block the speech path for the staff. In such a situation it is possible to force the SAM into Tx mode by pressing the RED button shortly. If the nurse starts talking before the "near silent time" times out, the SAM stays in the Tx mode. If the nurse keeps the button pressed, the SAM stays in the Tx mode regardless the state of the "near silent time" setting.

This option also works the other way around. When, for example, an alarm sound at the SAM (nurses) side is disabling the SAM from going into the Rx mode, the nurse can change the speech direction by pressing the button shortly or keeping it pressed as long as she/he desires.

Voice Switch Disabled

If the "Voice switching" check box is not checked, the speech direction of the SAM will always be in the Rx mode (Patient to nurse). The direction of the speech only changes to the Tx mode when the nurse keeps the red button pressed. When the nurse releases the red button the speech direction switches back to Rx mode.

Chime Enable

If the check box of this parameter is checked the sound of a chime will be heard when the SAM starts up. The sound is audible at both near and far side of the speech system. A delay between start-up and the chime can be configured with the "Startup Delay" parameter.

RMD Control Enable

Not applicable in the current release.

Digital Delay Enable

If this check box is checked, the microphone is digitized and delayed. The output delay is about 27mS. The delay will help to avoid that the first syllable of a word is missed due to the fact that the system needs some time to switch over from Rx to Tx. Due to the nature of this 8 bits linear signal, sampled at 9,25kHz, it introduces some noise. This can be a drawback.

When this check box is not checked, the solder-link that is situated on the backside of the SAM pcb, must be closed in order to feed through the analog microphone signal. See the SAM Installation manual TD 92269GB for more information. The default setting of the SAM is with the Digital Delay disabled (solder-link closed).

5.4 Write Parameters to SAM

The "Write SAM" button on top of the SAM Configurator is used to program the complete configuration to the connected SAM. This includes a valid firmware version with the changed or user saved parameters loaded.

Write the new configuration to the connected SAM by clicking on the "Write SAM" button. A progress bar indicating the progress of the write sequence will appear at the bottom of the SAM Configurator window.

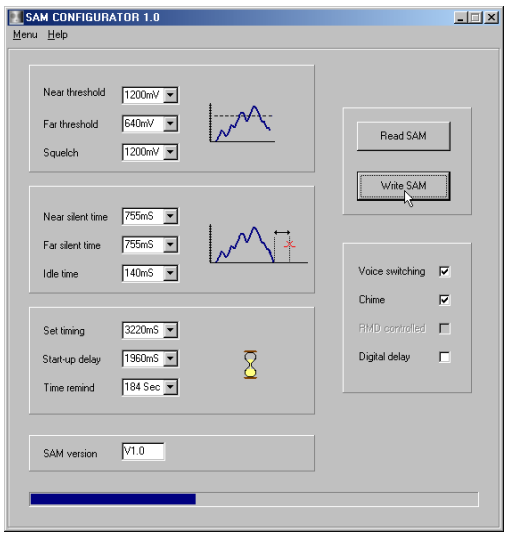

Figure 37. Write to SAM

It is not possible to write the configuration to the connected SAM if only a user saved parameter file is loaded into the SAM Configurator (See "Loading Parameters from a User Saved Parameter File" on page 13). This is indicated by the "Sam version" at the bottom of the SAM Configurator showing "No File". The "Write SAM" button will be blocked and writing the configuration to the SAM is not possible.

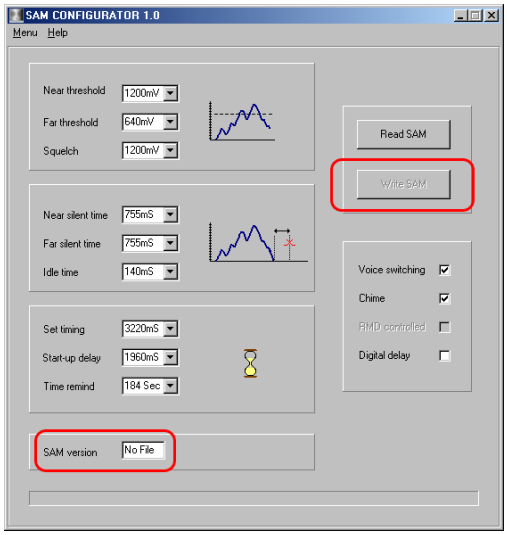

Figure 38. "Write SAM" button disabled when no firmware is loaded

To be able to write a configuration to the SAM, a valid firmware version should always be loaded first (See "Loading Default Parameters from a Firmware upgrade" on page 12). Then load a user saved parameter file or change the values of the default parameters displayed in the SAM Configurator's value boxes.

5.5 Save Parameters

In the last step the parameter settings can be saved to the local hard disk of the connected pc. Save the parameter file under a new name by selecting "Menu" and from the drop-down list select "Save Parameters".

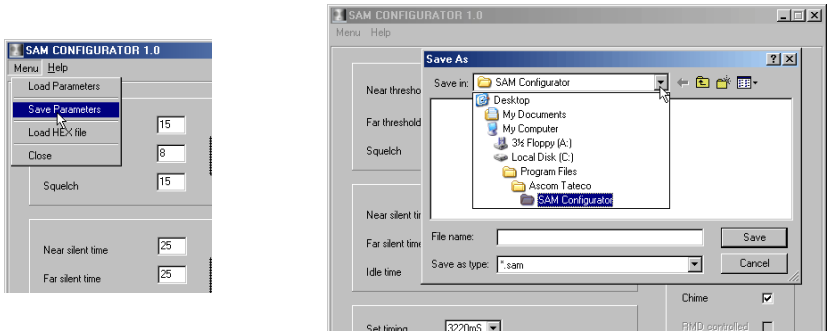

Figure 39. Click "Save parameters" and select a location

A "Save as" dialogue box appears on screen. Point to the location where you want to save the file to by clicking on the down-arrow next to the "Save in" selection field, from there select the desired location on the local hard disk. It is best to use the default location used by the SAM Configurator (C:\Program Files\Ascom Tateco\Sam Configurator).

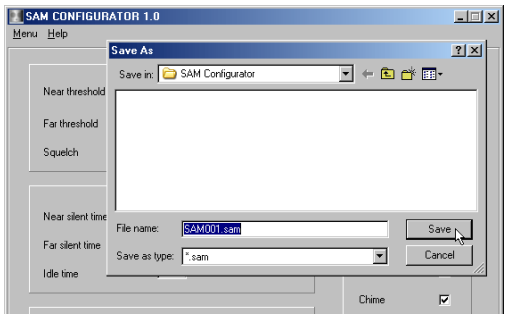

Figure 40. Saving the configuration file

In the "File name:" entry box type in the name for the file, in this example the file will be called SAM001. Next click on the "Save" button to save the user parameter file to the specified location on the disk.

6 Upgrading Firmware

To upgrade the Firmware of a SAM first download the latest firmware version from the "Ascom Wireless Solutions Extranet, Software Distribution Page" . Place the new firmware file "sam Vx.x.HEX" (where x.x stands for the version number of the downloaded firmware) in the same folder as the SAM Configurator program executable (C:\Program Files\Ascom Tateco\SAM Configurator).

From the SAM Configurator "Menu" select "Load HEX file". In the open dialogue box click on the downloaded firmware file "sam Vx.x.HEX". To load the file into the SAM Configurator click on "Open".

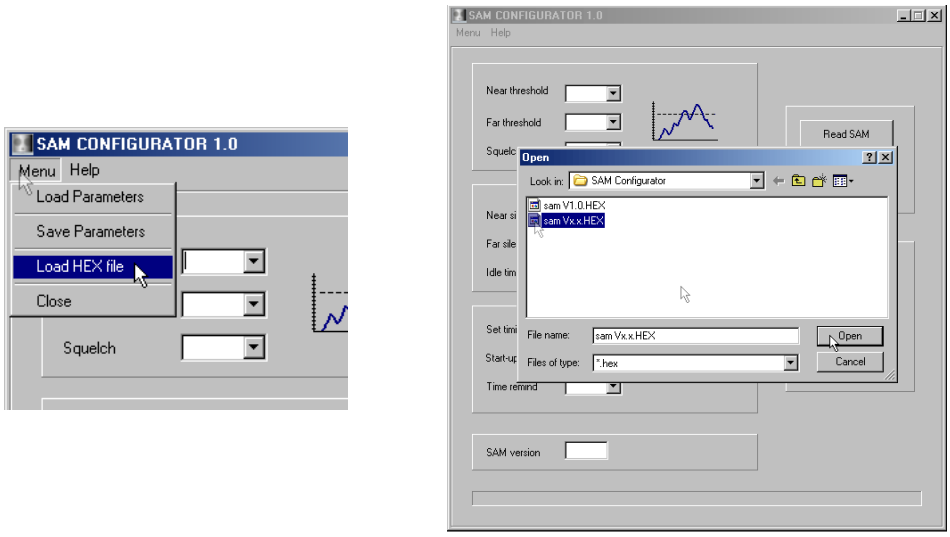

Figure 41. Opening the firmware upgrade file

If the firmware file has been loaded correctly, the "Sam version" display box at the bottom of the SAM Configurator window shows the version number of the loaded firmware (Vx.x) together with the default parameters.

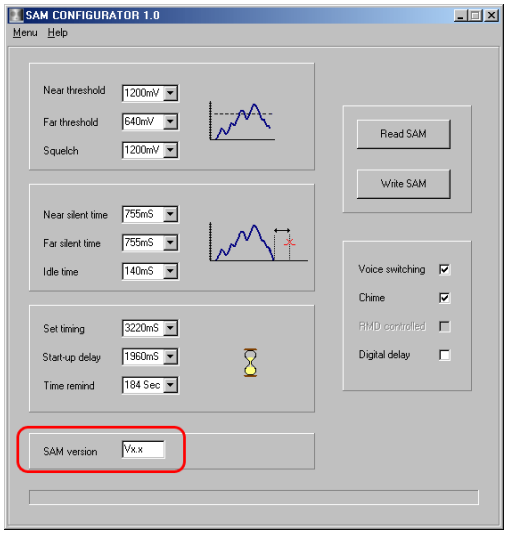

Figure 42. Firmware version x.x loaded

Next click on the “Write SAM” button to write the firmware to the connected SAM. The Progress bar at the bottom of the screen shows the progress of the write action.

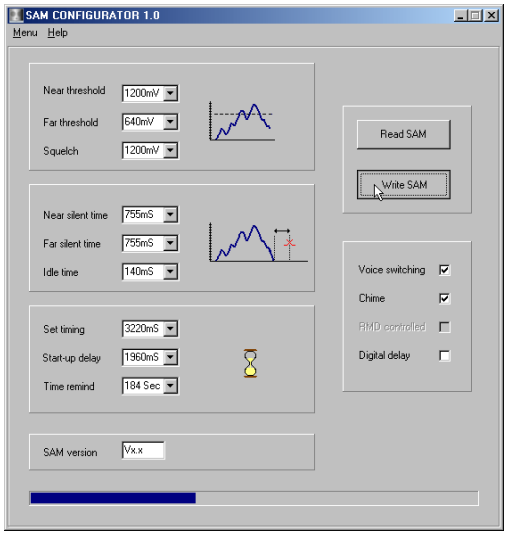

Figure 43. Firmware upgrade write progress

If the SAM Configurator is not connected to the PC, a popup window opens saying that there is no programmer found.

Figure 44. No programmer found

6.1 Maintaining the current Parameters

What to do when you want to upgrade the SAM’s firmware to a newer release, but you do not want to loose the current parameter settings of the SAM.

First step: Load the SAM Configurator with the parameter settings from the SAM by clicking on the “Read SAM” button. See “Reading Parameters from the connected SAM” on page 14 for more details.

Second step: Save the parameter settings to a SAM parameter file “.sam”. See “Save Parameters” on page 22 for more details

Third step: Open the new firmware upgrade file as described in “Upgrading Firmware” on page 23.

Fourth step: Load the SAM parameter file which was saved during the second step. see “Loading Parameters from a User Saved Parameter File” on page 13.

Last step: Write the new firmware with the loaded parameter file to the SAM by clicking on the “Write SAM” button. see “Write Parameters to SAM” on page 21.