

Comfort II Vocabulary Creation Tool

Function of VoiceProc

To allow a Comfort Vocabulary to be created for the purpose of downloading to Comfort. This also allows the KP04 keypad to display the correct words and sentences associate with the vocabulary. The KP04 keypad will automatically obtain the text information related to the vocabulary from Comfort. The tools consist of VoiceProc which creates the vocabulary and VoicePlay which allows the sentences to be heard.

VoiceProc can be used to create a customized vocabulary or a vocabulary in a different language

Applicability

Applies to the Comfort II products. Comfort I (Entry, Pro, Ultra) are NOT supported by these software tools.

Installation

The Voiceproc.msi and VoicePlay.msi installation files install VoiceProc and VoicePlay respectively. The minimum requirements are Windows XP with 256 MB RAM

Vocabulary Configuration (INI) File

The Vocabulary configuration .INI file contains information pertaining to the vocabulary, for example

```
[General]
; Comment - this is a configuration file of English vocabulary
VocabNo=05
VocustNo=255
VocSysVer=23
VocUserVer=1
VocTextVer=1
LCDVer=3
WavesDir=anita.wvd
CompressedDir=anita.dat
VCD_Quality=mid
VocabularyFileName=anita.bin
SentencesFileName=sentence36.tab
LCDFileName=lcdkp_v1a.cfg
MaxSentenceLength=10
NumOfSysWords=204
SetVol=1
TranslationFileName=translat36.tab
NumOfUserWords=141
UserFileName=resid36.tab
NumOfTables=5
```

[Tables]

Table0FileName=newtab0.tab

Table1FileName=newtab1.tab

Table2FileName=newtab2.tab

Table3FileName=newtab3.tab

Table4FileName=number4.tab

Explanatory Notes

[General]

This is the start of the General section

; Comment lines starting with ; are ignored

VocabNo is the number in the range 0 to 255 indicating the assigned number for the language. The Vocab number is assigned by Cytech. This number should be obtained from Cytech if you are customizing a vocabulary in another language. If the Vocabulary Number is set to 254, it means that this is a custom vocabulary and the custom vocabulary number applies.

VocustNo is the number in the range 0 to 255 indicating the subvocabulary or customized vocabulary number. The custom vocabulary number is for individual use and is maintained by the vocabulary creator. The VocabNo parameter should be 254 for Custom vocabulary

VocSysVer 0 to 255 is the version number of the System vocabulary. This number is assigned by Cytech Technology

VocUserVer 0 to 255 is the version number of the User Wordlist. This number is assigned by Cytech Technology. This number is assigned by Cytech Technology

VocTextVer 0 to 255 is the text version number. This number is assigned by Cytech Technology

LCDVer is the minimum compatible LCD Keypad firmware version

These parameters will identify the vocabulary to Comfigurator

VocPar1 to VocPar4 are optional identifiers which are not used. Leave blank

WavesDir gives the name of the subdirectory in which the .wav files are found.

CompressedDir gives the name of the subfolder in which the compressed .DAT files are found. This folder will be created by VoiceProc during processing if it is not found.

VCD_Quality gives the setting for Compression Algorithm

HIGH means less compression and higher quality in this context, and LOW means maximum compression but lower quality, and MID means medium compression and medium quality.

The choice of which compression to use depends on the number of words required

VocabularyFileName=file.bin gives the file name for the binary file which shall be created by the process. The output file should be written to the same directory as the .INI file unless otherwise specified. This is the file which can be downloaded to Comfort using the Vocab Download feature in Comfigurator 2.0 and above

SentencesFileName is the name of the Sentence Table which describes the words which make up a sentence.

MaxSentenceLength is the maximum number of words in each sentence applying to the sentence and number tables. This overrides the MaxSentenceLength specified in each of the sentence and number tables. **This must be set to 10 and not changed**

NumOfSysWords is the number of words in the word file in TranslationFileName

MaxSystemWords is the maximum number of system words allowed. This is optional, if not present, default = 230 is used

SetVol is the Set Volume parameter. It gives the gain of the encoding process. SetVol=0.8 means apply a gain of 0.8 to all wav files. **The compressed voice files may be corrupted if the amplitude of the word is too high. Keep the amplitude below 75%.**

TranslationFileName is the name of the Translation Table mentioned in the earlier section which has the system word numbers. The file should be found on the same directory as the .INI file unless otherwise specified

UserFileName is the name of the User Table which has the user words. The file should be found on the same directory as the .INI file unless otherwise specified

NumOfUserWords is the number of words in the word file in UserFileName

MaxUserWords is the maximum number of user words allowed. This is optional, if not present, default = 144 is used

LCDFFileName is the name of the configuration for the LCD text which is described in the LCD Keypad Configuration document.

NumOfTables is the number of Tables in the section called [Tables]

[Tables]

This is the start of the Number Tables section. Number tables are lists of words just like the sentence table which are used in making up a sentence

Table[N]FileName where [N] = 0 to NumOfTables-1, is the name of the file containing the number table. The words making up the number tables will be combined in the 4th bin file file3.bin together with the sentence table

TranslationFileName

This lists the word numbers assigned to wav files for the system words. The words in this table are used by the sentence table (SentenceFileName) and Number Tables. These are also called the System Words

e.g.

230 OPT_HOUR_12
231 OPT_HOUR_24
232 OPT_MINUTE
233 CONTROL_AM
234 CONTROL_NULL
235 CONTROL_SING
236 OPT_DOW

237 OPT_NUMBER
238 OPT_MSG_TIM
239 OPT_SYS_TIM
240 OPT_DEFAULT
241 OPT_FORM1
242 OPT_FORM2
243 OPT_FORM3
244 OPT_FORM4
245 OPT_FORM5
246 OPT_FORM6
247 OPT_FORM7
248 OPT_FORM8
249 OPT_CENTURY
250 OPT_YEAR
251 OPT_MONTH
252 OPT_DAY

0 WORD_0 ZERO
1 WORD_1 1
2 WORD_2 2
3 WORD_3 3

On each line, the first number is the word number in the range 0 to 255. The assignable word numbers are only from 0 to MaxSystemWords-1, Words 230 (MaxSystemWords) to 255 are control words and are not related to any wav file, but they are used by the sentence file to generate the vocabulary information in the 4th binary file file3.bin. The second item on the line WORD_XXX is a label for the word used. The 3rd item is the name of the .wav file, e.g.

33 WORD_ANSWERING ANSWERING (Comp=High/Mid/Low) “Answering”

This is word number 33 which is “Answering”. ANSWERING.WAV is the name of the wav file. The wav files specified in this file are to be found in the WavesDir specification for subdirectory. The wav directory may contain wav files which are not used anywhere yet.

The name of the wav file may not contain spaces

If the wav file specification is not present, the file name derived from WORD_XXXX is used, e.g.

WORD_ABC if the wave file is not specified on the line, ABC.WAV is used

The optional parameter (Comp=High/Medium/Low)

means that the word is to be compressed with the specified coding overriding the spec in the INI file. If the compression parameter is not present, the one in the .ini file shall be used

The number of words is specified in NumOfSysWords, i.e. the largest word number should be NumOfSysWords-1 as the first word number is 0. The word numbers in the file is NOT necessarily consecutive.

The text within quotation marks “” is an optional parameter to be used for the LCD Text if present. This is to allow for text to display on the LCD that is not the same as the wav file name

UserFileName

This lists the word numbers assigned to wav files for the user words. The words in this table are also called the User Words as distinct from the System words. These words are not used by the sentence table or number tables.

Eg

; Control and option code aliases, Should not be changed.

;RESID.TAB vocabulary for residential application

```
0 WORD_NUL0 NUL0
1 WORD_AIRCON AIRCON
2 WORD_BACK BACK
3 WORD_BALCONY BALCONY
4 WORD_BASEMENT BASEMENT
```

This file can have words 0 to MaxUserWords-1, ignore word numbers 230 and above

The meaning of the entries on each line are the same as for TranslationFileName

The optional parameter (Comp=High/Medium/Low)

means that the word is to be compressed with the specified coding overriding the spec in the INI file. If the compression parameter is not present, the one in the .ini file shall be used. This helps to reduce the binary file size when necessary to fit into the 64K byte limit for each sector

The wav files specified in this file are to be found in the WavesDir specification for subdirectory. The wav directory may contain wav files which are not used anywhere yet.

The number of words is specified in NumOfUserWords, i.e. the largest word number should be NumOfUserWords-1 as the first word number is 0. The word numbers in the file may NOT be consecutive.

The wav files in UserFileName will make up the 3rd bin file

SentencesFileName

The file specified here is also called the Sentence Table.

The sentence table shows which word numbers are assigned to make up each sentence

There are a maximum of 255 sentences 0 to 254

Ignore any text after the “;” symbol - these are comments

NumOfSentences=255

This is the number of sentences in the table starting from sentence 0. Each sentence takes up 1 line in the file, ignoring comment lines. Sentences are in sequential order starting from sentence 0

MaxSentenceLength=9

This gives the maximum number of word numbers in the sentence. However the MaxSentenceLength specified in the .INI file overrides this setting. The MaxSentenceLength specified in this file must NOT exceed the one in .INI. For all practical purposes MaxSentenceLength here can be ignored and the common one in .INI can be applied

The rest of the file consists of sentences and comment lines. The structure of a sentence is

```
;1 - YOU HAVE <N> NEW MESSAGE/S.  
WORD_YOUHAVE OPT_DEFAULT OPT_NUMBER WORD_NEW CONTROL_SING  
WORD_MESSAGES
```

Each word is preceded by the text "WORD_". This is indexed in the TranslationFileName table of system words. The word number for the referenced word is inserted in the sentence. For example Sentence 1 above consists of the word numbers 174, 240, 237, 93, 235, 85

Hence each sentence is made up of a series of word numbers up to MaxSentenceLength

Number Tables

```
NumOfNumbers=255  
MaxNumberLength=5  
WORD_0  
WORD_1  
WORD_2  
WORD_3  
WORD_4  
WORD_5  
WORD_6  
WORD_7
```

The Number Tables are part of the Vocabulary system which provides number information for announcements. The structure of the table is similar to that of the sentence table

```
NumOfNumbers=255  
This is the Number of Sentences in the number table
```

```
MaxNumberLength=5  
This is the maximum number of words making up the sentence. However the  
MaxSentenceLength specified in the .INI file overrides this setting. The MaxSentenceLength  
specified in this file must NOT exceed the one in .INI. For all practical purposes  
MaxSentenceLength here can be ignored and the common one in .INI can be applied
```

The rest of the table consists of the sentences which are made up of word numbers from the TranslationFileName table

The Sentences and Number Tables are text files which can be edited with Notepad or any other text editor. The files used are as follows:

Sentence File (SentencesFileName)

The sentence table file consist of all the sentences which are used by Comfort in Voice Menus and announcements. **The meaning and order of the sentences should not be changed.**

The Vocabulary System allows the grammatical structure of any language to be followed. The structure of the sentence table is shown below

NumOfSentences=255

MaxSentenceLength=10

;MAIN menu complete sentence as word

;0 - (SAY DAY OF WEEK AND TIME) (ARGUMENT 1 MEANS MSG TIME, 0 MEANS SYSTEM TIME)

OPT_DOW OPT_HOUR_12 OPT_MINUTE CONTROL_AM WORD_AM

;1 - YOU HAVE <N> NEW MESSAGE/S.

WORD_YOUHAVE OPT_DEFAULT OPT_NUMBER WORD_NEW CONTROL_SING
WORD_MESSAGES

;2 N FOR STROBE

OPT_FORM1 OPT_NUMBER WORD_FOR WORD_STROBE

;4 - N TO CHANGE DATE

OPT_FORM1 OPT_NUMBER WORD_TO WORD_CHANGE WORD_DATE

;5 N FOR INSTALLER SIGNIN OPTION

OPT_FORM1 OPT_NUMBER WORD_FOR WORD_INSTALLER WORD_SIGNIN
WORD_OPTIONS

NumOfSentences=255

This is the number of Sentences in the table. 255 is the maximum allowed value of the parameter

MaxSentenceLength=10

This is the maximum number of words in each sentence. **The maximum value of this parameter which can be specified is 10.**

“;” is a comment. Anything following the comment is ignored by the software

Note that unused sentences have WORD_NULL which is a short silence. Hence every language should include WORD_NULL and NULL.WAV

Each sentence in the table has the following format;

WORD_XXXX, e.g. Sentence 104 - “PHONE TROUBLE”

WORD_PHONE WORD_TROUBLE

WORD_PHONE and WORD_TROUBLE make up the sentence “Phone Trouble”
Each WORD_xxx looks up a audio .wav file called xxx.wav in a specified directory. In the above example, there should be files phone.wav and trouble.wav in the directory

You could also define “Phone Trouble” as a single word eg

WORD_PHONE_TROUBLE

This means that “Phone Trouble” would be recorded as a single word. This will sound better, but it will take up more memory in the U7 Flash memory IC. As there is a limit to the Flash memory to be used, there is a balance between sound quality and memory usage to fit the vocabulary

“Press N for ... “ Or “For ... Press N”

;17 - ..PRESS N (AS SUFFIX FOR SELECTION eg Arm security system, press 1, Messages press 2)

Use WORD_NULL if Press N is in front of the item to be selected

;82 - N FOR .. (0-9,* #)

OPT_FORM1 OPT_NUMBER WORD_FOR

The entire selection sentence is announced in the order

Sentence 82, words, sentence 17

Eg 1 for Night Mode and For Night Mode, Press 1 can be constructed accordingly

Control Instructions

CONTROL_DAY WORD_MONDAY OPT_HOUR_12 OPT_MINUTE CONTROL_AM
WORD_AM

The items OPT_xxx and CONTROL_xxx are **Control Instructions** and not spoken words.

In the sentence; “YOU HAVE <N> NEW MESSAGE(S)”

WORD_YOUHAVE OPT_DEFAULT OPT_NUMBER WORD_NEW CONTROL_SING
WORD_MESSAGES

OPT_DEFAULT and OPT_NUMBER do not represent fixed words, but it allows words from the number tables to be used in their place to announce “you have 1 new message” or “you have 10 new messages” depending on the number of new messages you actually have. This allows the sentences to be grammatically correct for languages where grammar is used. The Comfort Vocabulary System allows the sentence structure of any language to be applied.

The Control Instructions are

OPT_HOUR_12

OPT_HOUR_24

OPT_MINUTE

CONTROL_AM

CONTROL_NULL

CONTROL_SING
CONTROL_DAY
OPT_NUMBER
OPT_DEFAULT
OPT_FORM1
OPT_FORM2
OPT_FORM3
OPT_FORM4
OPT_CENTURY
OPT_YEAR
OPT_MONTH
OPT_DAY

OPT_HOUR_12 means the system time in 12 hour format is to be announced
OPT_HOUR_24 selects 24 hour time format.

Sentence 0 is:

OPT_DOW OPT_HOUR_24 OPT_MINUTE CONTROL_AM WORD_AM

This announces the time in 24 hour format.e.g. Monday, 3:45 PM

To announce the time in 12 hour format, the sentence should be changed to

OPT_DOW OPT_HOUR_12 OPT_MINUTE

e.g.

Monday, 15:45

OPT_DOW is used in a date/time sentence. It announces the day of week to be announced
Together with the following word, it announces the current day of the week.

CONTROL_AM is used in a day/time sentence to control the AM/PM announcement. If the
current time is in the range 0 to 11, announce AM, if 12 to 23, announce PM. For this to
work, the **WORD_AM** must be followed by **WORD_PM** in the translatab file.

OPT_MINUTE announces the current minute of the Time of day. The value is in the range 0
to 59.

Sentence 235 announces the date;

OPT_CENTURY OPT_YEAR OPT_MONTH OPT_DAY

OPT_CENTURY announces the current century digits 00 to 99

OPT_YEAR announces the current year digits 00 to 99

OPT_MONTH announces the current month 1 to 12

OPT_DAY announces the current day in the month 1 to 31

For example “twenty”, “oh”, “five”, “October” “3”, or

“Two”, “oh” “oh”, “five”, “October”, “3”, or

“Two”, “thousand” “and”, “five”, “October”, “3”

Are all valid expressions which can be configured using the number tables which are
described later.

In certain languages, the form of the date may include the words for month and day, for
example, in Chinese the date is expressed in the form

“Two”, “oh” “oh”, “five”, “October”, “month”, “3”, “day”

This is done by including specific words in the sentence e.g.

OPT_CENTURY OPT_YEAR OPT_MONTH WORD_MONTH OPT_DAY WORD_DAY

The above illustrates the flexibility of the Comfort Vocabulary system is catering for various language structures.

;1 - YOU HAVE <N> NEW MESSAGE/S.

WORD_YOUHAVE OPT_DEFAULT OPT_NUMBER WORD_NEW CONTROL_SING
WORD_MESSAGES

CONTROL_SING is a control instruction which tells the system to use the singular if the argument is 1.

If the number of message is not equal to one the word following CONTROL_SING is used.

If the number of message is exactly one the word number following CONTROL_SING is incremented by 1

If there is 1 new message, sentence 1 will read "You have 1 new *message*"

If there is 0 or more than 1 new message, sentence 1 will read "You have x new *messages*"

In the translation table to be described later, the word "Messages" must be followed by the word "Message"

If the language does not have a plural form, do NOT use CONTROL_SING in the above sentences.

When translating to another language, each sentence must be translated so as to maintain the meaning of the sentence and not a word-by-word translation, for example

;4 - N TO CHANGE DATE

OPT_FORM1 OPT_NUMBER WORD_TO WORD_CHANGE WORD_DATE

translated to Italian may be

;4 - N PER CAMBIARE DATA

OPT_FORM1 OPT_NUMBER WORD_PER WORD_CAMBIARE WORD_DATA

The words making up the sentence must be chosen and arranged in such a way as to make up a grammatical sentence. The placement of the numerical value OPT_FORM1

OPT_NUMBER in the sentence must be correct for the language.

When translating to another language, translate each sentence in the Sentence Table and the number tables and list the unique words required. These unique words are entered into the **Translation Table**. More on this later.

Number Tables

Number Tables tell the Comfort Vocabulary System how to announce sets of numbers or numbered lists.

There are 5 Number tables, 0 to 4

OPT_DEFAULT means Number Table 0 is to be used until superseded by another Number table

OPT_FORM1 means Number Table 1 is to be used until superseded by another Number table

OPT_FORM2 means Number Table 2 is to be used until superseded by another Number table

OPT_FORM3 means Number Table 3 is to be used until superseded by another Number table

OPT_FORM4 means Number Table 4 is to be used until superseded by another Number table

In each number table, two lines in the beginning set the size of the number table

NumOfNumbers= ____

MaxNumberLength= ____

NumOfNumbers is the number of numbers on the number table.

MaxNumberLength is the maximum number of words which are used for any entry in the number table. **This must not exceed 10**

Number Table 0 (Table0FileName)

Number table 0 is used for saying numbers 0 to 255.

NumOfNumbers=255

MaxNumberLength=5

WORD_0

WORD_1

WORD_2

WORD_3

WORD_4

WORD_5

WORD_6

WORD_7

WORD_8

WORD_9

WORD_10

WORD_11

WORD_12

WORD_13

WORD_14

WORD_15

WORD_16

WORD_17

WORD_18

WORD_19

WORD_20

WORD_20 WORD_1

WORD_20 WORD_2

WORD_20 WORD_3

WORD_20 WORD_4

WORD_20 WORD_5

WORD_20 WORD_6

WORD_20 WORD_7

..

```
..  
WORD_2 WORD_HUNDRED WORD_AND WORD_50 WORD_3  
WORD_2 WORD_HUNDRED WORD_AND WORD_50 WORD_4
```

Each line in the table tells the system how to say the corresponding number e.g.
Number 103 is made up of the words;

```
WORD_1 WORD_HUNDRED WORD_AND WORD_3
```

In other languages the number would probably be put together differently, for example in Chinese;

```
WORD_YI WORD_BAI WORD_LING WORD_SAN  
("one hundred zero three")
```

Number Table 1 (Table1FileName)

Number table 1 has 4 sets of numbers;

1. Numbers on the telephone numeric keypad
2. Days of the week
3. Months of the Year
4. Days in the Month

There are 70 numbers in the table

```
;newtab1.tab  
NumOfNumbers=70  
MaxNumberLength=8  
;combined number tables 1,3,5. numeric keys, Days of the week, months, and days of month  
;0-15 for keys on numeric keypad  
WORD_0 ;0  
WORD_1 ;1  
WORD_2 ;2  
WORD_3 ;3  
WORD_4 ;4  
WORD_5 ;5  
WORD_6 ;6  
WORD_7 ;7  
WORD_8 ;8  
WORD_9 ;9  
WORD_END ;10  
WORD_STAR ;11  
WORD_POUND ;12  
WORD_AWAY ;13  
WORD_NIGHT ;14  
WORD_DAY ;15  
;Days of the week  
WORD_DAY ;16  
WORD_MONDAY ;17  
WORD_TUESDAY ;18  
WORD_WEDNESDAY ;19  
WORD_THURSDAY ;20
```

WORD_FRIDAY	;21
WORD_SATURDAY	;22
WORD_SUNDAY	;23
WORD_HOLIDAY	;24
;Months of the year	
WORD_NULL	;25
WORD_JANUARY	;26
WORD_FEBRUARY	;27
WORD_MARCH	;28
WORD_APRIL	;29
WORD_MAY	;30
WORD_JUNE	;31
WORD_JULY	;32
WORD_AUGUST	;33
WORD_SEPTEMBER	;34
WORD_OCTOBER	;35
WORD_NOVEMBER	;36
WORD_DECEMBER	;37
;Days of the month	
WORD_0	;38
WORD_1	;39
WORD_2	;40
WORD_3	;41
WORD_4	;42
WORD_5	;43
WORD_6	; 44
WORD_7	;45
WORD_8	;46
WORD_9	;47
WORD_10	;48
WORD_11	;49
WORD_12	;50
WORD_13	;51
WORD_14	;52
WORD_15	;53
WORD_16	;54
WORD_17	;55
WORD_18	;56
WORD_19	;57
WORD_20	;58
WORD_20 WORD_1	;59
WORD_20 WORD_2	;60
WORD_20 WORD_3	;61
WORD_20 WORD_4	;62
WORD_20 WORD_5	;63
WORD_20 WORD_6	;64
WORD_20 WORD_7	;65
WORD_20 WORD_8	;66
WORD_20 WORD_9	;67

WORD_30 ;68
WORD_30 WORD_1 ;69

0 to 9 are the 10 numeric numbers used in any telephone keypad.
STAR (*), POUND (#) are the regular keys on the bottom left and right respectively of a telephone keypad.

AWAY, NIGHT, DAY are additional keys on the comfort keypad.

Words 16 to 24 are the days of the week plus holiday. Word 16 is not important

Note: Only words 0 to 9 in this number table should be accessed with OPT_FORM1 in the sentence table for meaningful results. The other word numbers are used by OPT_DOW, OPT_MONTH and OPT_DAY internally

Number Table 2 (Table2FileName)

Number table 2 has 3 sets of numbers;

1. Location addresses in two digits 00 to 99
2. Hours digits in Time of day 0 to 23
3. Minutes digits in Time of day 00 to 59

;Number2.tab

NumOfNumbers=184

MaxNumberLength=4

;table for 2 digits time - minutes, seconds, location address

;DspType1 combine location address, Time in Hours, and minutes

;Location address 2 digits e.g. 2430 is "Twenty Four" "Thirty" or "two" "four" "three" "oh"

WORD_OH WORD_OH ;0
WORD_OH WORD_1 ;1
WORD_OH WORD_2 ;2
WORD_OH WORD_3 ;3
WORD_OH WORD_4 ;4
WORD_OH WORD_5 ;5
WORD_OH WORD_6 ;6
WORD_OH WORD_7 ;7
WORD_OH WORD_8 ;8
WORD_OH WORD_9 ;9
WORD_10 ;10
WORD_11 ;11
WORD_12 ;12

...

...

WORD_90 WORD_8 ;98
WORD_90 WORD_9 ;99

;time in hours 00 to 23

WORD_0 ;100
WORD_1 ;101
WORD_2 ;102
WORD_3 ;103
WORD_4 ;104
WORD_5 ;105

WORD_6 ;106
WORD_7 ;107
WORD_8 ;108
..
..
WORD_20 WORD_2 ;122
WORD_20 WORD_3 ;123
;announce time in minutes 00 to 59
WORD_OH WORD_OH ;124
WORD_OH WORD_1 ;125
WORD_OH WORD_2 ;126
WORD_OH WORD_3 ;127
WORD_OH WORD_4 ;128
..
..
WORD_50 WORD_7 ;181
WORD_50 WORD_8 ;182
WORD_50 WORD_9 ;183

The first set of numbers range from 0 to 99. These are used for announcing the location addresses from 0 to 999999 in decimal two digits at a time

The second set of numbers (word numbers 100 to 123) are for time in Hours 00 to 23

The third set of numbers (word numbers 124 to 183) are for time in Minutes 00 to 59. In English 8:05 AM is announced “eight” “oh” “five” “AM”

The hours portion is different from the minutes portion of the time announcement

Note: Only words 0 to 99 in this number table can be used with OPT_FORM2 in the sentence table for meaningful results. The other word numbers are used internally by OPT_MINUE and to announce time of say

Number Table 3 (Table3FileName)

Number table 3 is used for the year digit 00 to 99, and for century digits 00 to 99.

;number3.tab for years and century
NumOfNumbers=200
MaxNumberLength=4
;8/10/05 combined old numbers tables 6 and 7
;2 digit years 00 to 99
WORD_OH WORD_OH
WORD_OH WORD_1
WORD_OH WORD_2
WORD_OH WORD_3
WORD_OH WORD_4
WORD_OH WORD_5
WORD_OH WORD_6
..
..
WORD_90 WORD_5
WORD_90 WORD_6
WORD_90 WORD_7

WORD_90 WORD_8
WORD_90 WORD_9
;2 digit century 00 to 99
;e.g. 2015 is "two thousand and fifteen" or "Two" "oh" "one" "five" or "twenty" "fifteen"
WORD_OH WORD_OH
WORD_OH WORD_1
WORD_OH WORD_2
WORD_OH WORD_3
WORD_OH WORD_4
WORD_80 WORD_8
WORD_80 WORD_9
WORD_90
WORD_90 WORD_1
WORD_90 WORD_2
WORD_90 WORD_3
WORD_90 WORD_4
WORD_90 WORD_5
WORD_90 WORD_6
WORD_90 WORD_7
WORD_90 WORD_8
WORD_90 WORD_9

Words 0 to 99 are for the years digits and words 100 to 199 are for century digits
This tells the system how to announce a year in 4 digits, e.g. 2005 can be announced as
"2" "0" "0" "5",
"twenty" "oh five"
"Two" " thousand " "and five"
according to how the numbers are configured
Note: Only words 0 to 99 in this number table can be used with OPT_FORM3 in the
sentence table for meaningful results. The other word numbers are used internally by
OPT_CENTURY

Number Table 4 (Table4FileName)

Number Table 4 for is used for system announcements, as an extension to the sentence table.
NumOfNumbers should be 128 and unused lines must be entered with WORD_NULL for
future expansion.

This number table is used for fixed words without arguments. There should be no references
to other number tables e.g. OPT_NUMBER here.

The sentences in Number table 4 contain information about their meaning to assist in
translation

Translation Table (TranslationFileName)

The translation Table consists of all the unique words needed to make up all the sentence and
number tables. The words are prefixed with WORD_ followed by the word, e.g.
WORD_PRESS. Enter all the unique words required into the file translat.tab. DO NOT
translate the control instructions prefixed with OPT_ and CONTROL_.

The Translation Table consists of lines in the format

Number WORD_xxx yyy

There are 3 fields in the line;

Number is the word number

WORD_xxx is the word label which is used in the sentence and number tables.

Yyy is the name of .wav file, i.e. yyy.wav. For example,

85 WORD_MESSAGES MESSAGES

Word 85 is WORD_MESSAGES and the wav file is MESSAGES.WAV

194 WORD_SEPTEMBER SEPTEMBER

Word 194 is WORD_SEPTEMBER and the wav file is SEPTEMBER.WAV

In translatab, words 230 to 248 are the control instructions and should not be changed or translated. These are listed in the beginning of the file and are NOT to be changed;

230 OPT_HOUR_12
231 OPT_HOUR_24
232 OPT_MINUTE
233 CONTROL_AM
234 CONTROL_NULL
235 CONTROL_SING
236 OPT_DOW
237 OPT_NUMBER
238 OPT_MSG_TIM
239 OPT_SYS_TIM
240 OPT_DEFAULT
241 OPT_FORM1
242 OPT_FORM2
243 OPT_FORM3
244 OPT_FORM4
245 OPT_FORM5
246 OPT_FORM6
247 OPT_FORM7
248 OPT_FORM8
249 OPT_CENTURY
250 OPT_YEAR
251 OPT_MONTH
252 OPT_DAY

Hence there is room for a maximum of 230 unique words in the translation table. For this reason, when doing translation, you have to be economical with the use of words. That means that you should try to make use of common words that are already in use, and not have too many instances of words which are only used one time.

You do NOT need to follow the same order or use the same words as in English.

The first 111 words (0 to 110) can be used for selection in Zone and Home Control names, i.e. they are part of the user wordlist. Word numbers > 110 are system words only and are not

accessible to the user wordlist. System words 0 to 110 are addresses in the user words list as Words 144 to 254 (i.e. with an offset of 144). Thus the words which may be useful to the user wordlist should be located in the first 110 positions.

Words 0 to 143 in the wordlist comes from the User Table

As an example in the Italian translation;

194 WORD _ SEPTEMBRE SEPTEMBRE

e.g.. septembre.wav will be the file name of the actual voice sample.

The following words from the Italian translat.tab show this:

40 WORD_CAMBIARE CAMBIARE

41 WORD_CONTROLLO CONTROLLO

42 WORD_CODICE CODICE

..

..

185 WORD_DITE_IL_VOSTRO_NOME DITLVNOM (Say your name)

184 WORD_DOPO_IL_TONO DOPILTON (after the tone)

151 WORD_LASCIATE_IL_VOSTRO_MESSAGGIO LSIVSMES (leave your message)

Words can be individual words e.g. “System”, “alarm” or they may be a full phrase e.g. “Leave your message after the tone”. The use of complete phases will result in a better sounding menu, however this uses up more memory. There needs to be a abalnce between quality and the avialbility of memory

User Table (UserFileName)

User-selected words which can be used for naming zones and control keys are placed in the User Table using the same rules as for translat.tab. You can have up to 144 words (0 to 143) in the user table. This makes up words 0 to143 in the user wordlist. Words 144 to 254 come from words 0 to 110 in translat.tab The words in the User Table should be words that are NOT used by the system, otherwise the common words should be listed in thetranslation Table. While the sentence and number tables are fixed in their meaning, the User Table can be customized according to specific requirements, as long as the number of words is less than 144.

Creating a New Vocabulary - Overview

The whole process to create a new vocabulary consists of

1. Translation
2. Recording
3. Editing
4. Processing

Translation

For help with translation, this on-line translator at Alta Vista website is very useful for words and short sentence translation (European Languages).

[Http://babelfish.altavista.com/](http://babelfish.altavista.com/)

The Sentence Table and the Number Tables must be translated sentence by sentence according to the meaning of each sentence. The translation should not be word for word from English unless the structure of the language is identical.

Next, all the individual words making up the sentence and number tables must be written down, and the unique words identified. This list of unique words must be minimized to reduce memory requirements as there are a **maximum of only 230 words** in the Translation Table. Try to select words which are already in use instead of words that are used only once. To improve perceived quality, the sentences in the main user menu can be configured so that they are single words, e.g.

.. “to arm security system”

.. “for messages”

.. “for security menu:”

.. “for Home control”

.. “for Voice station”

.. “for door station”

..”to end”

..”for previous menu”

This makes the main use menu sound better instead of being a series of unconnected words. However this takes up more memory so the applicability depends on the number of words and the length of each word

The User Words are selected. These are the words that can be selected by the user for zone names and home control menu. Draw up a list of all possible words which may be needed, and not just those which will fit into the size of the User words table of 144 words. The additional words may come in useful for customized wordlists later. Refer to the full list of words recorded by Cytech.

It is important to note that the Wordlist consists of 144 words numbered 0 to 143 in the User Table, and the first 111 words in the System Words Table. Words 0 to 110 in the System Words table are called up in the user Word list as numbers 144 to 254. For example if System Word 10 is “Entry”, then this can be used for User Words as Word number 154. Thus it is important to organise the System Words Table so that **system words which may be used for the Wordlist are in the first 111 positions** of the table. **Words not in the 1st 111 (0 to 110) words of the system words table cannot be used in the wordlist**

Recording

Voice Talent

It is recommended that a professional voice talent (newsreader, radio announcer, TV reporter etc.) be employed for the recording process in a proper recording studio, **as this is the most important factor determining the quality of the final result**. After the recording, a lot of work needs to go into the editing and compression process, and this will be wasted if the original source is poor for pronunciation or clarity.

Environment

A quiet room without background noise from radios or air-conditioners should be used. A recording studio is ideal for best results and is recommended

Equipment

A professional recording studio is recommended as this will produce the best results. Otherwise use a PC with a good sound card and a professional unidirectional microphone

Procedure

All the words in the Sentence table are contained in the Translation table. **Hence all the words in the Translation Table** must be recorded. The context of the individual words in the sentences must be noted. Some words are used in more than one context and must sound right in all contexts e.g.

"Intruder Alarm", and "Press 1 for Alarm Voice message", "Alarm History". There is not the space in the vocabulary structure to include several recordings of a single word to fit in different contexts, so in such cases the pronunciation of such multiple-context words should be flat or neutral.

Adjust the recording volume so that the peak amplitude of the voice samples are around half full scale. The recording should be done in the .wav format.

Use a recording program like Goldwave for Windows.

Recording parameters should be Mono, 8000 Khz sampling rate, 16 bit samples.

Record the words in groups of about 30 seconds to a minute. It is best to record in sentences, but with short breaks between words, e.g. : Press, 1, to, arm, security, system, 2, for, messages, etc. Repeated instances can be skipped, e.g. "Press (N) for"

The Translation Table contains all the words needed by the system and the User Table has the user-selected words used in zones and control menu..

You should expect to do at least 2 sessions of recording, to re-record certain words for better pronunciation or to fit into the context of the sentence.

Editing

When all the recording has been completed, it is time for the most time-consuming part of the process, editing. Use a voice file editor like Goldwave for Windows (This is shareware which can be downloaded from www.goldwave.com)

Each of the words should be isolated from the files in which they were recorded, and saved as a separate word. The file name for the words must be taken from the `translat.tab` file.

When editing,

1. Remove unwanted silence before and after each word. The system does not add silence between words, so the word itself should have the required silence if necessary. However, it is usually not necessary to add silence before and after each word, as the trailing portions of many words are inaudible even though signal may be present. Edit the silence after each word in order that the words may join together smoothly and naturally. Edit the inaudible sections to 0 amplitude so as to improve compression..
2. Adjust the volume of each word sample so that the amplitude is around 1/2 to 3/4 full scale. However, some words are naturally pronounced softer. If the amplitude of the signal is too high, the compressed .dat file may be corrupted and may produce noise or a high pitched whistle. The `SetVol` parameter (0 to 1) can be used to uniformly reduce the volume of all words during compression without having to edit each file
3. Adjust the duration of each word when necessary. Certain words may be pronounced too slowly. Certain sections within words have silence which may be removed, or reduced. Also, most sound editing tools have a facility to adjust the speed of the pronunciation without affecting the pitch. Be careful when doing this - make liberal use of the Undo button.

VoiceProc Installation

Run the installation file voiceproc.msi to install VoiceProc on your computer. This will install the VoiceProc programs and the set of English sentence and table files and the INI file as well as the compressed .DAT files.

Sample English Vocabulary

The sample english vocabulary configuration files and wav files are available from the Cytech FTP site as a ZIP file. Unzip the file with the USE FOLDER NAMES attribute, ie with the relative directory structure contained within.

ANITA.INI

This is the .INI configuration for the standard English vocabulary. It is named after the lady whose voice is used.

Sentence36.tab

This is the sentence table file specified in ANITA.INI

Newtab0.tab

This is the Number Table 0 file specified in ANITA.INI

Newtab1.tab

This is the Number Table 1 file specified in ANITA.INI

Newtab2.tab

This is the Number Table 2 file specified in ANITA.INI

Newtab3.tab

This is the Number Table 3 file specified in ANITA.INI

Number4.tab

This is the Number Table 4 file specified in ANITA.INI

Translat36.tab

This is the Translation Table file specified in ANITA.INI

Resid36.tab

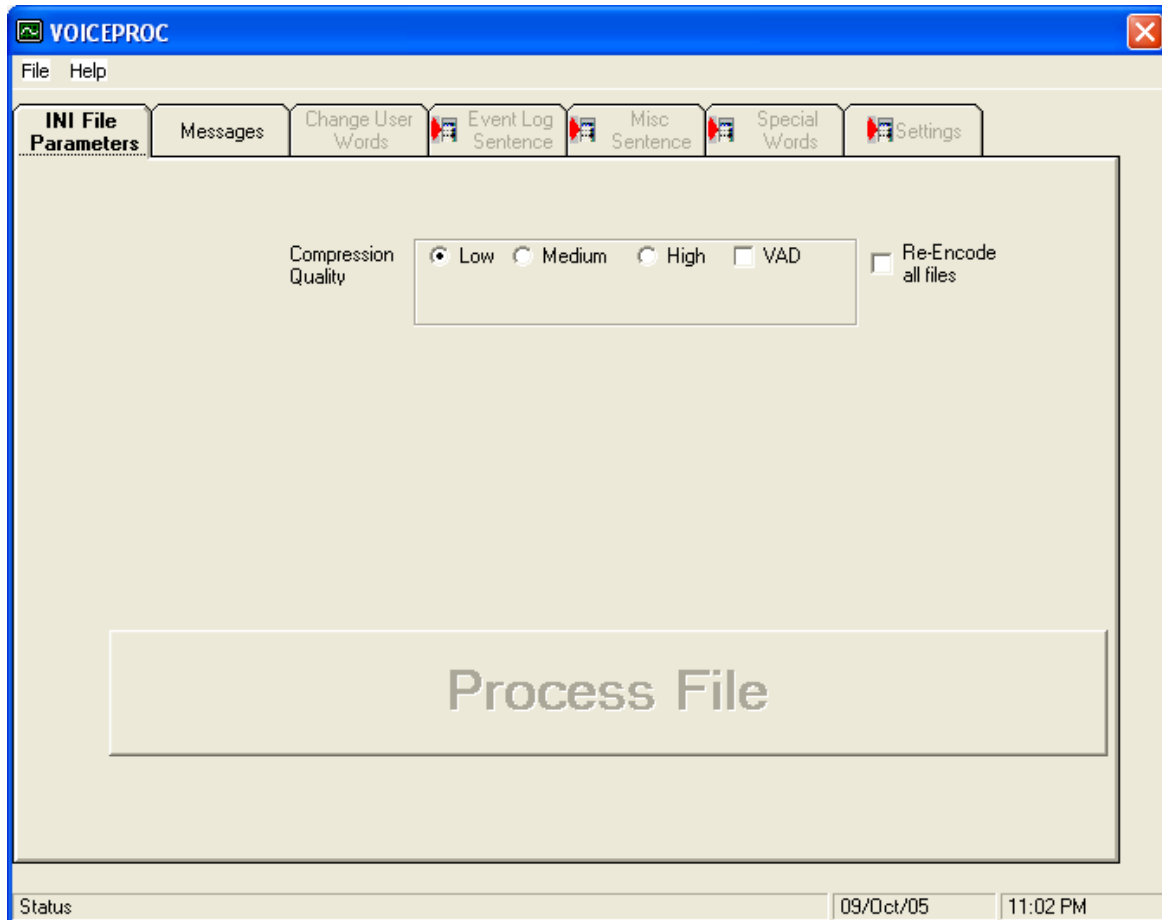
This is the User Table file specified in ANITA.INI

Lcdkp_v1a.cfg

This is the LCD Keypad text configuration file specified in ANITA.INI

The sample folder ANITA.DAT will also be installed. This contains all the compressed .DAT files used in the Standard English vocabulary for sentences as well as user words. It also contains an extended list of user words which are NOT currently defined in the User Table, but can be selected for a custom vocabulary. VoiceProc is also a tool for creating customized vocabularies in the same language

VoiceProc Operation



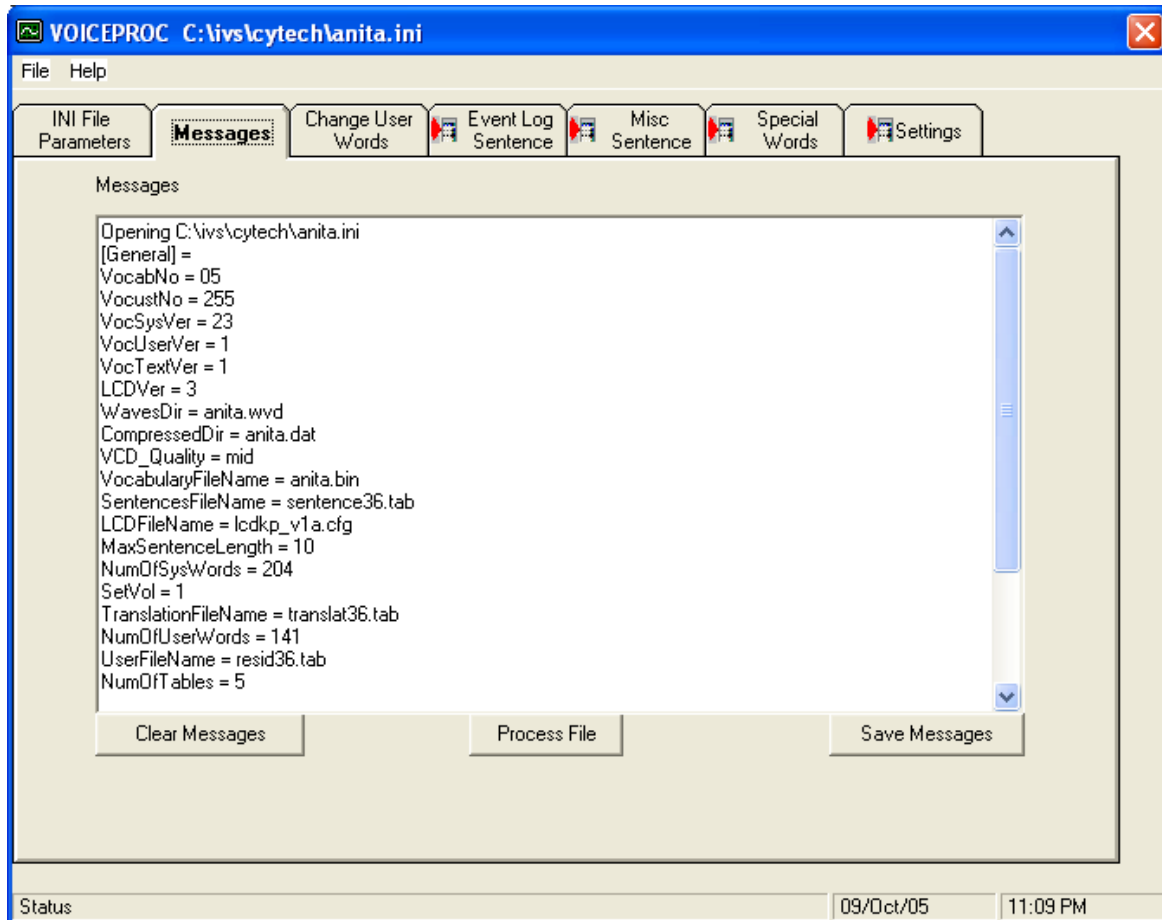
The opening screen is shown above

The buttons in the Compression Quality box determine the compression rate. Although the INI file will specify the compression parameter, this can be overridden by using the radio buttons

VAD if checked will enable silence compression which results in higher compression

Re-Encode all files will cause all the wav files to be re-encoded when Processed

To start, do File > Open and select the INI configuration file for the vocabulary. This Vocabulary Configuration file is created with the rules defined in a previous section. Once the INI file is opened, the PROCESS FILE button becomes active as well as the Tabs at the top of the screen



Messages Tab

Select the Messages tab. The contents of the INI file selected are shown, along with any Error messages. Errors occur when the words in the Sentence Table and Number Tables are not found in the Translation table, or the wav files specified in the Translation and User Tables are not found, or due to other parameter errors.

Clear Messages will clear the messages in the Message window. This does not remove any of the parameters

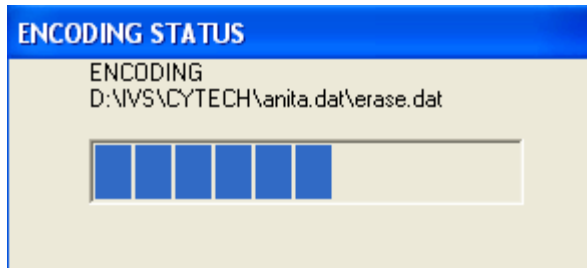
Process File will process the files according to the parameters specified in the Ini file. This has the same function as the button in the main screen

Save Messages will save the messages in the window to a text file

Processing

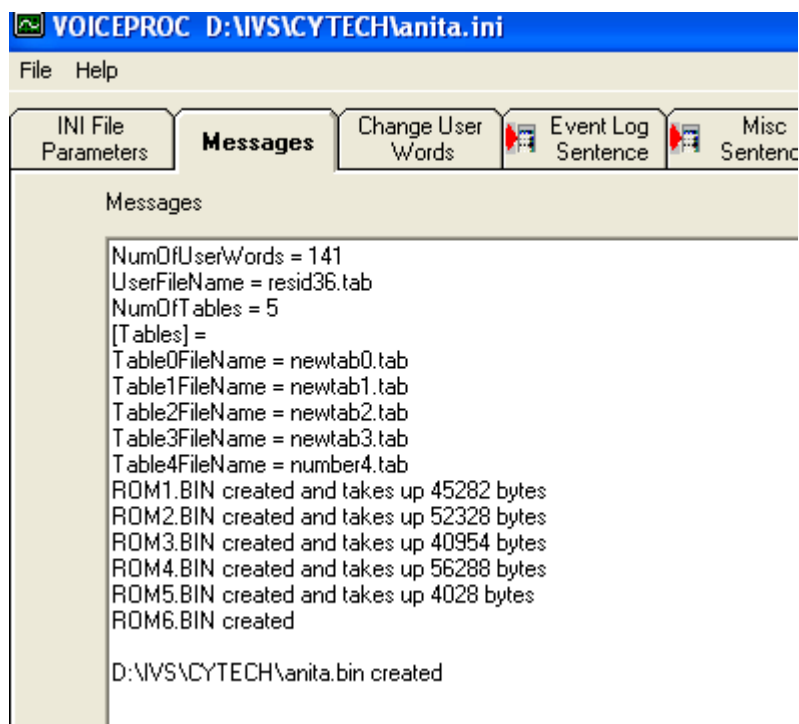
Press the PROCESS FILE button on the main screen or messages screen. This activates the following processes

1. The Wav files in the specified WavesDir directory are encoded according to the words in the Translation Table and User Table specified in the INI file, and stored in the directory specified in CompressedDir as .dat files



2. The encoded files are combined into a single .BIN file specified in VocabularyFileName. There are several intermediate .BIN files produced, ROM1.BIN to ROM6.BIN. See the next section for a description of the contents.

The messages screen will show the progress of the Encoding



The final .BIN file is the one to be used by Configurator for Vocabulary Download. It consists of the words and sentences used by Comfort as well as the text for the LCD data related to the Vocabulary

BIN Files

During the processing 6 intermediate BIN files are produced, ROM1.BIN to ROM6.BIN, which are combined into a single BIN file. The BIN files consist of compressed words.

ROM1.BIN consists of words 0 to 89 in SYSTEM WORDS (TranslationFileName in .INI file)

ROM2.BIN consists of words 90 to 179 in SYSTEM WORDS (TranslationFileName in .INI file)

ROM3.BIN consists of words 180 to NumOfSysWords-1 (specified in the .INI file) in SYSTEM WORDS file **followed by** User Words 96 to NumOfUserWords-1 (specified in the .INI file). There is a maximum of 48 words of user words in this file

ROM4.BIN consists of words 0 to 95 in USER WORDS (UserFileName.in the .INI file)

ROM5.BIN is the vocabulary information which is made up of the sentence and number tables which tell the system how to construct sentences using the compressed wav files.

ROM6.BIN consists of the LCD text information

Each of the 6 BIN files is limited to 64K bytes. Hence if the words contained in any of the BIN files exceed the allowed size, an error message will be produced like below;

ROM1.BIN created and takes up 54692 bytes

ROM2.BIN created and takes up 57698 bytes

ROM3.BIN created and takes up 28846 bytes

ERROR : TOTAL SIZE > 64K ROM4.BIN Word# 94

1908 more bytes required for ROM4.BIN

ROM5.BIN created and takes up 4237 bytes

ROM6.BIN created

When such an error message is encountered, the size of the affected BIN file must be reduced to within 64 Kilobytes. Normally only ROM1.BIN to ROM4.BIN which contain the voice data will tend to be too large. To reduce the size of one of BIN file, try to redistribute the words to another BIN file. In the example above, ROM4.BIN contains User Words 0 to 95. The file size has exceeded the 64K limit by 1908 bytes. User Words 96 onwards are on ROM3.BIN which has only 28846 bytes. In User Words, you can transfer some words to numbers greater than 96 and use NULL words in some words in words numbers 0 to 95. Alternatively, move some longer words to word numbers higher than 96 and move shorter words to words numbers 0 to 95

One way of reducing the file size is to edit each word carefully, removing the excess silence from the front and back of each word. This should be carefully edited so as to make the words join together smoothly. Any inaudible sections of the word should be set to 0 amplitude

Downloading a Vocab file to Comfort II

The BIN file that is created by VoiceProc can be downloaded to Comfort II using Configurator 2.0.0 and above (available from the Cytech.biz website). In the menu bar, select Transfer > Vocab Download, and select the BIN file to download. The vocabulary will be downloaded as 4 compressed voice sections, the sentence and number tables and the LCD text. The entire process takes about 20 minutes. Due to the duration of the download, sometimes there may be errors in the download process. If this happens, repeat the download. If the voice part of the download has completed but the error occurred in the sentences or LCD text, use Transfer > Sentence Table Download which is much faster.

The KP04 LCD keypad will check if the text display requires update, and if so, it displays “Wrong Text. Press *1 to update”. Pressing *1 will cause the LCD textdata to be downloaded from Comfort. The LCD Language Customisation software is no longer needed for the KP04

CFG file for Comfigurator

A file with the same name as the output bin file with CFG extension shall be produced to be used by the Comfigurator program for vocabulary words

```
>WordList1
Item0=NUL0,0
Item1=AIRCONDITIONER,1
Item2=BACK,2
.
..
Item135=FOUNTAIN,135
Item136=HEAT,136
Item137=LAWN,137
Item138=WASH,138
Item139=WORKSHOP,139
Item140=PATIO,140
Item141=ZERO,144
Item142=1,145
Item143=2,146
Item144=3,147
Item145=4,148
Item146=5,149
..
Item248=PHONE,251
Item249=PABX,252
Item250=LOCATION,253
Item251=WEEK,254
Item252=<Terminator>,255
```

This file shall have >Wordlist1 as the first line and shall be made up of the selectable words for zones and control menu in Comfigurator. Wordlist1 is applicable for Comfort II products. The word after “=” is the word and the number following the comma is the user word number. This CFG file gives the words selected in the drop-down list in Comfigurator in the Zone words and Control Words screens. Copy the CFG file into the Comfigurator directory. The other CFG files, vocab.cfg and vocust.cfg may have to be changed. See the following section for details

Vocab.cfg

The contents of Vocab.cfg are shown below;

```
>WordList
00=Standard Residential,cs-wl-std.cfg,sentence.cfg
01=Chinese Residential,cs-wl-ch.cfg,sentence-ch.cfg
02=UK Residential,cs-wl-uk.cfg,sentence.cfg
03=Italian Residential,cs-wl-it.cfg,sentence-it.cfg
04=Pagewatch,cs-wl-pw.cfg,sentence.cfg
```

05=English Residential,newengwl.cfg,sentence.cfg
06=Australian Residential,cs-wl-au.cfg,sentence.cfg
07=Thai Residential,cs-wl-th.cfg,sentence_thai.cfg
08=Spanish Residential,cs-wl-sp.cfg,sentence_sp.cfg

A new standard vocabulary will belong in this list. The Vocabulary number is assigned by Cytech Technology. If you are preparing a new language vocabulary which currently is not existing, Cytech will assign a new Vocabulary number to be included in new distributions of Comfigurator. This file is not to be changed by third parties.

The sentence CFG file specified in each line needs to be created. This is the Alarm Sentences file for each alarm type. Refer to the senetence.cfg file in english and translate that in the same format

If you are creating a custom vocabulary for your own use or for your customers, you can make a change in the Custom Vocabulary file vocust.cfg, described in the next section.

Vocust.cfg

A typical content of the vocust.cfg file is shown below

```
>Custom WordList  
00=Jacks wordlist,jack.cfg,sentence.cfg  
01=Henry,promnfor.cfg,sentence.cfg
```

```
>Custom WordList  
Must be the first line
```

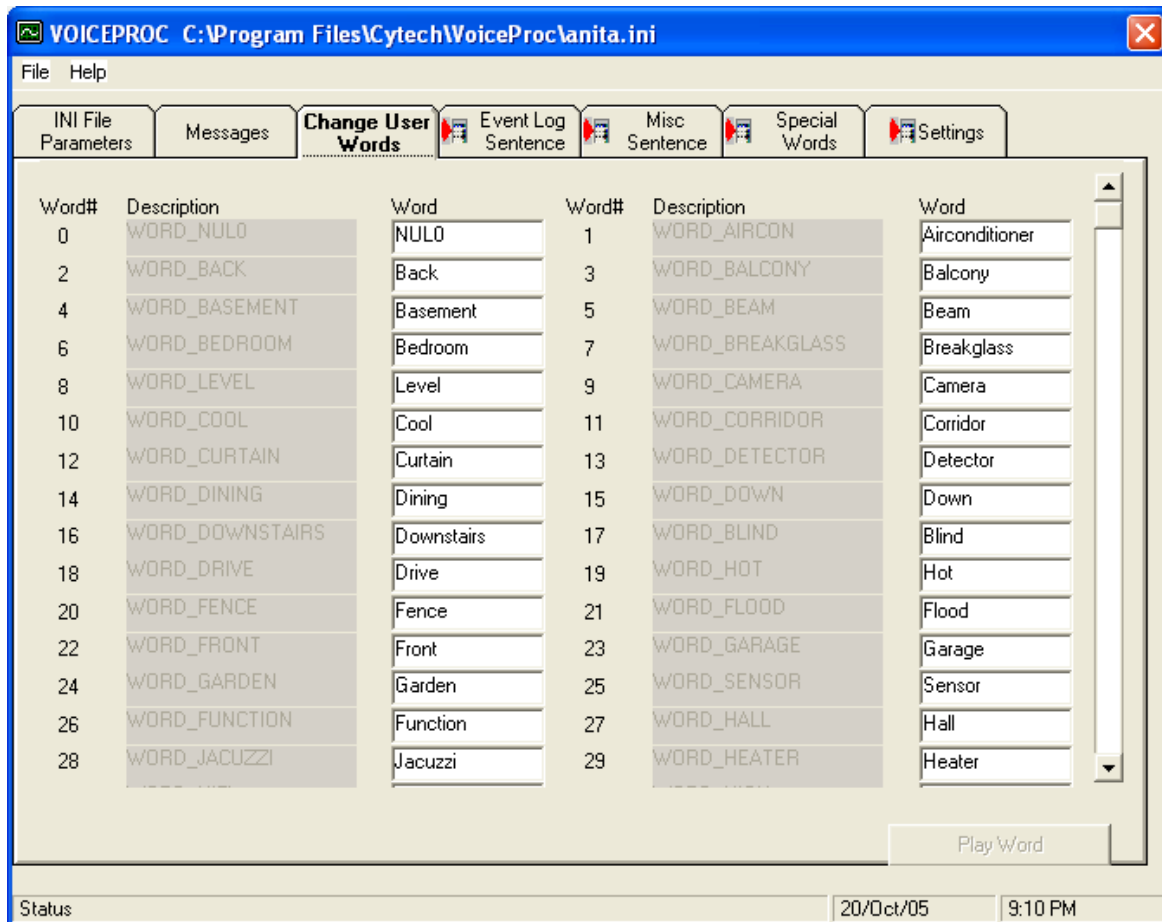
The Custom Vocab number is the 1st number on the line. There can be up to 255 custom vocabularies.

The .CFG file specifed in each line is the CFG file produced by Voiceproc.exe.

Sentence.cfg is the same sentence file as the main vocabulary in the language, This gives the names of the alarms

Vocust.cfg is **not** distributed with Comfigurator. It is managed by the installer or customer for their own needs.

Change User Words - Creating Custom Vocabulary

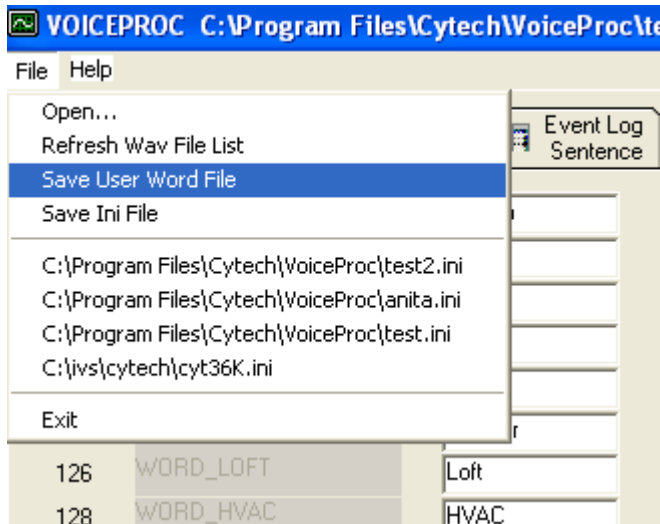


This tab **Change User Words** is **not** for the creation of a new standard vocabulary in a different language. Rather, it allows you to change the standard wordlist and create a customized wordlist in your chosen language, selected from the library of words provided in the DAT directory. For example you can use it to define wordlists used in commercial offices, or factories, or Industrial Monitoring.

The 144 words from the User Table can be changed but the 111 system words which form part of the wordlist cannot be changed without changing the structure of the sentences themselves.

Each of the 144 words in the User Table can be selected from a drop down list of words in the library. The available words can be found in the ANITA.DAT folder. The supplied words are in English, and they are in compressed form. Hence as long as the desired words are available, there is no need to record the,

Once the words have been selected, or the required changes have been made to the standard wordlist, go to File > Save User Word File as shown in the screenshot below. Save the User Words Table just created under a new file name with the extension .TAB. This will be the new User table file.



Next, go to File > Save INI File, and select the name of the new INI or configuration file with extension .INI. This INI file references the User Word File that you have just created.

When the 2 files, user Table and INI file have been created, load the new INI file using File > Open. You can Process the vocabulary to generate a new BIN file.

However please note that the BIN file which is created will be that defined in the INI file.

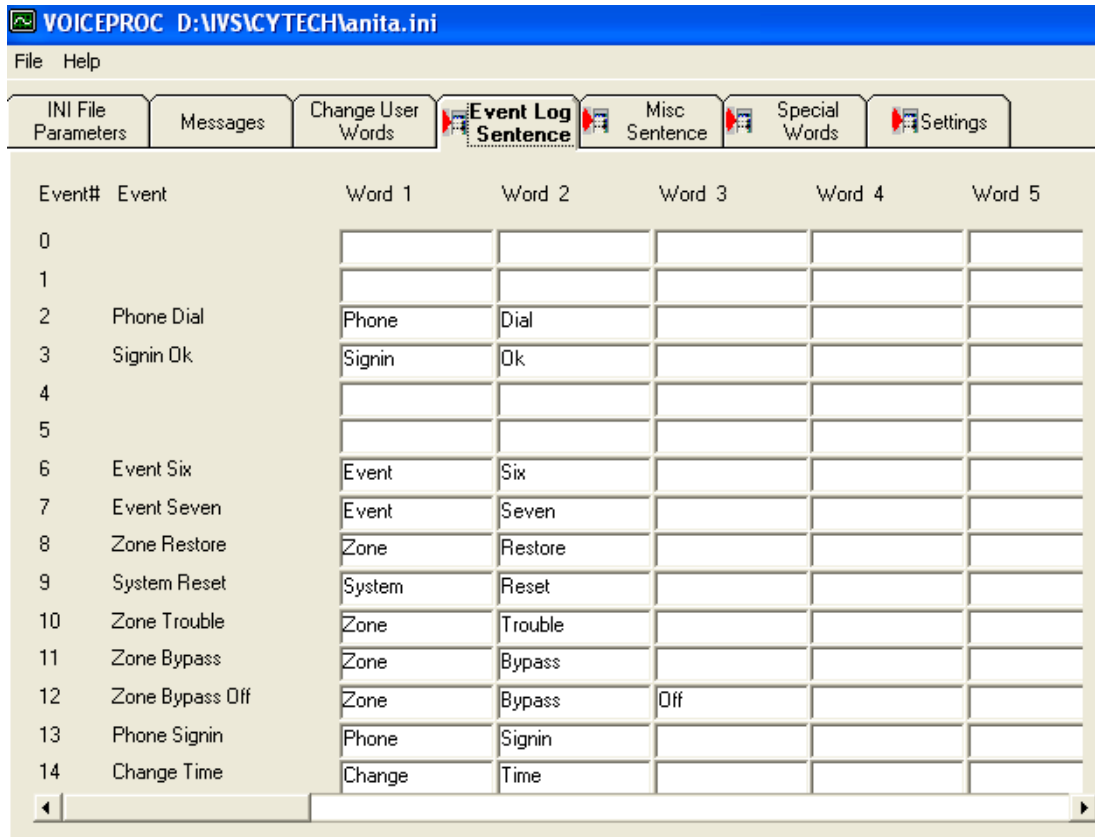
The BIN file will be the same as previously defined, ie you may override the BON file of the default vocabulary. Hence you should modify the new INI file to change the name of the BIN file specified, eg office.bin for office wordlist, resid.bin for residential applications

When the Ini file is processed, the BIN file and a CFG file with the same name as the Bin file is produced as described in the above section “CFG file for Comfigurator”

To allow Comfigurator to read the new vocabulary, copy the CFG file into the Comfigurator program folder and create an entry in the VOCUST.CFG file as described in the section above on VOCUST.CFG.

LCD Keypad Configuration Tabs

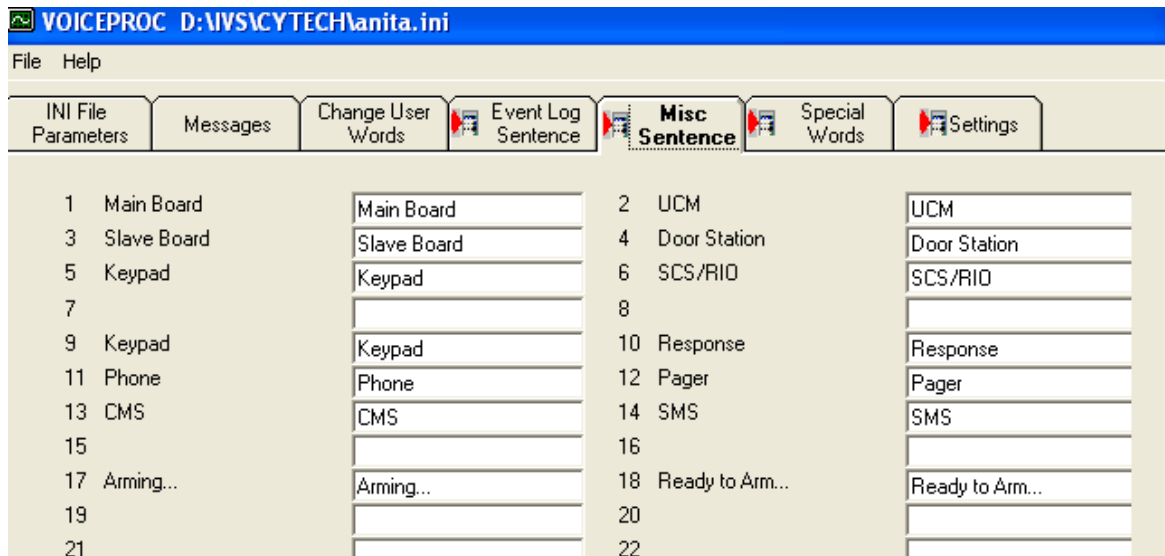
Event Log Sentence



This screen selects the words displayed in the LCD Keypad for events in the event log. The default selected text is shown in the window. You can choose alternate words by clicking on the word and selecting from the pulldown menu of System Words. The picture below shows the screen for Spanish language

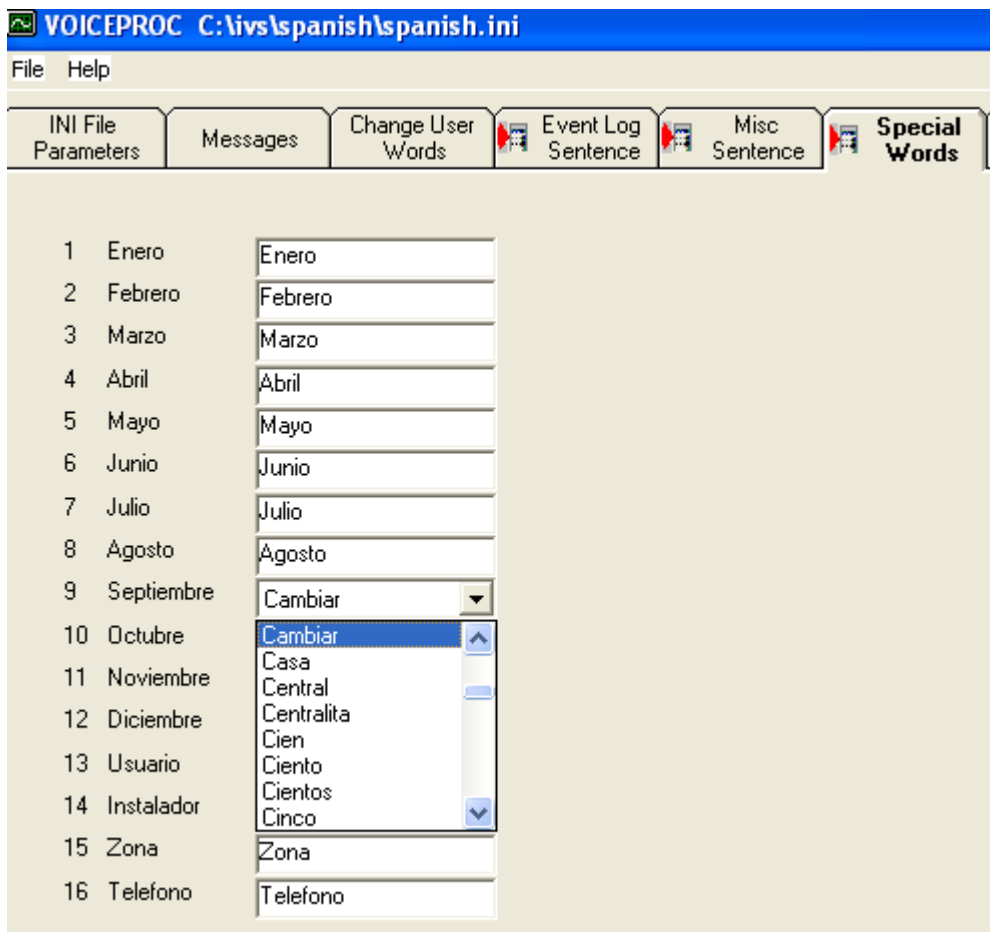


Misc Sentences



This screen is for display on the LCD keypad of various conditions and events in Comfort, e.g. the Ids of the devices which have Communications Failure and when dialing out, and when the system is arming. Do not change the assigned words in normal circumstances. When translating to other languages, type the most suitable words to describe the events.

Special Words



Special words include the display of Months of the year and various other text which are required for the LCD Keypad. Leave this unchanged under normal circumstances. For translation into other languages, select the word from the System words in the pulldown menu which correspond to the item selected. The picture above shows the screen for Spanish language

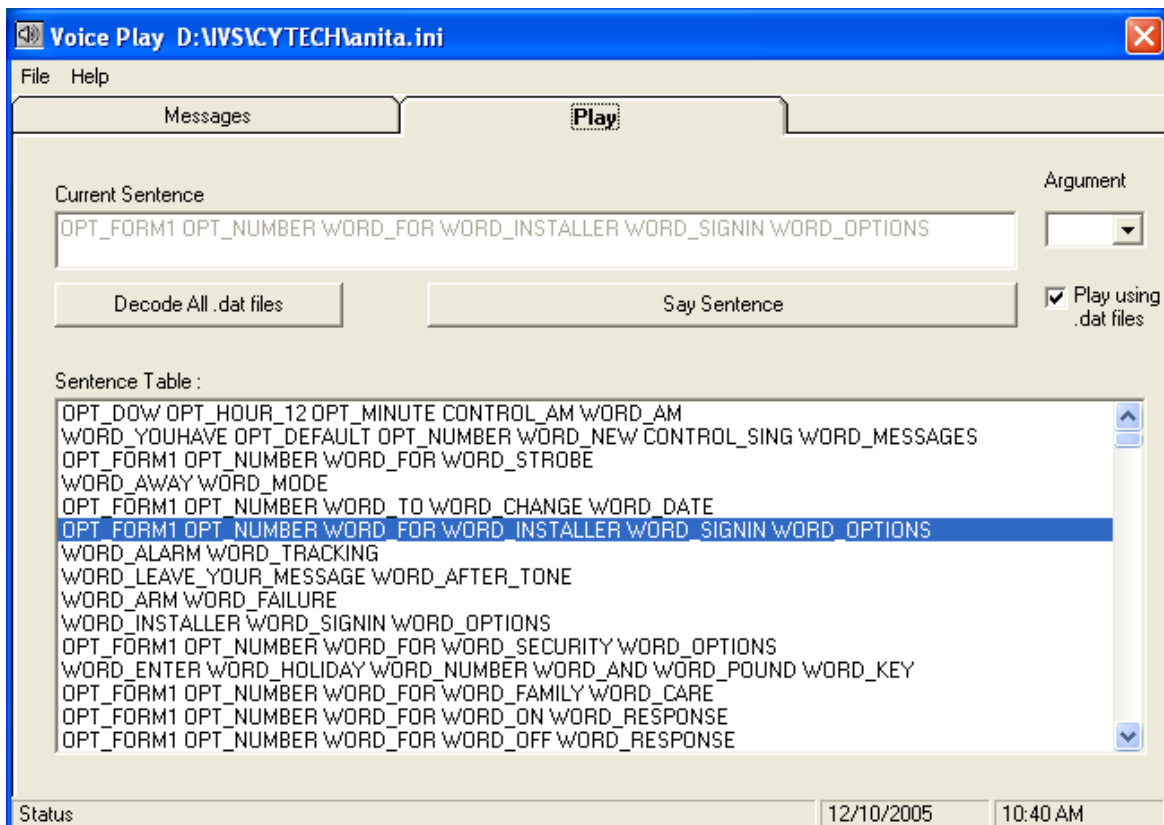
Settings



These are special settings for the LCD Keypad only
Page Timing is related to the time that the LCD displays the 2 lines when switching between two screens e.g. Zones and Alarms

Vocabulary Playback Tool - VoicePlay

This is a separate application from VoiceProc. This allows the sentences which are defined in the INI file to be played



Do File > Open and select the INI file used in VoiceProc to generate the vocabulary.

Say Sentence allows the sentence selected to be played. The argument drop down field selects the argument in the sentence, if any. Arguments in sentences will refer to entries in the Number Tables. For example OPT_NUMBER. OPT_FORM1 selects the number table 1 file. The argument is the index to the number table selecting a sentence within the number table

If the box "Play using DAT" file is checked, the compressed file DAT will be played instead of the original WAV file. This will allow the quality of the voice when encoded in Comfort to be heard. If the box is unchecked, the original wav file is played. The "Decode all .dat files" button can be used to decode all the compressed dat files so that any sentence can be played without having to decode the sentence first

Problems

Screeching sound or Noise is heard on playback

After download, if some of the sentences have unintelligible noise or a high pitched screeching sound, this is caused by an overflow in the compression algorithm. The VoicePlay program should also produce the same noise when playing the affected sentence using the Play DAT file option. This is usually due to the amplitude of one or more of the words being too high, or saturated. Keep the amplitude of each recorded word to less than 75%. Edit the offending words. The SetVol parameter in the .INI file can also be used to uniformly reduce the amplitude of the words during compression.

ROM sections exceed 64K

The voice files are split up into 4 section of 64K bytes each., If any section exceeds 64K bytes, an error message will be seen at VoiceProc processing. Refer to the BIN file section above for how to solve this

Software History

VoiceProc Version 1.3.0

Initial Release

Document History

19 October 2005 - Initial Release

21 October 2005 - expanded Change User Words

15 Feb 2006 - Added Bin files section, added to LCD keypad settings descriptions, added Problems section

22 Sept 2006 - explained that only the 1st set of numbers in each number table can be used by OPT_ in the sentence tables

16 March 2007 - added Sentence 82 and 17 explanation