

Aculab DSP65 Firmware Module
IMPLEMENTATION OF A CONFERENCING ALGORITHM WITH BEEP TONE.

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Document Revision

Rev	Date	By	Detail
1	06 Feb 1997	NMC	Initial draft - conferencing algorithm with beep tone
2	04 Dec 1997	NMC	Change to the way the 1400Hz tone is added, this is not achieved using a single write.
3	11 Jan 1999	NMC	Modification to the software for operation on Rev 5 DSP modules
4	10 May 2001	NMC	Clarification of the mode of operation
5	03 Dec 2001	DJL	Change to documentation format.
6	18.02.02	DJL	Change to descriptions and references

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1 General Guidance

This is the functional specification, which defines a conferencing algorithm, which adds a 1400Hz tone to the caller under timeslot 0 control.

The purpose is to generate a conferencing algorithm which would provide the option of adding an internally generated 1400Hz tone to any of the 31 incoming callers (timeslots 1-31) under timeslot 0's control:

Output timeslot (N) = Input timeslot (N) + 1400Hz tone

Where N= 1-31

The application for this conferencing algorithm provides the caller with a warning that his call time is about to expire without affecting the call.

2 SOFTWARE:

2.1 Functionality:

The DSP Software module will provide a conferencing algorithm to be used on any DSP module incorporated on a primary or basic rate card. This will generate a conferencing algorithm, which provides the option of adding an internally generated 1400 Hz tone to any of the 31 incoming callers (timeslots 1-31) under timeslot 0's control:

$$\text{Output timeslot (N)} = \text{Input timeslot (N)} + 1400\text{Hz tone}$$

Where N = 1-31

2.2 The Conferencing Algorithm Structure:

Incoming callers are presented to the input timeslots of the DSP. These callers are then passed through to their corresponding output timeslots whereby a 1400 Hz tone may or may not be added. The addition of the 1400Hz is dependent on the condition of a flag for that timeslot. This flag is controlled by the byte written into timeslot 0. Thus,

The byte written would have the following configuration (Bit 7-0): 1 F X T T T T T

Where,

Bit 7 = 1

Bit 6 = F, =1 means add the 1400 Hz tone
= 0 means remove the 1400 Hz tone

Bit 5 = X, don't care

Bit 4-0 = T T T T T, means the timeslot number.

The algorithm provides the user with a 32-byte block of memory called "Flag Memory". Each byte is associated with a particular timeslot and is addressed by Bits 4-0 of timeslot 0. Bit 6 of this byte is the 'flag' value written into this memory location, which indicates the request for combining a 1400Hz tone to the incoming line.

Note Connection Memory[0] and Connection Memory[16] are reserved.

Connecting a 'beep' tone to an incoming timeslot is as follows:

Say the user wishes to add a 'beep' tone to timeslot 4.

The user accesses the connection memory associated with timeslot 4. To do this a byte representing the timeslot number is written to timeslot 0 with Bit 7 and Bit 6 set. In other words byte 0xC4 is written to timeslot 0. Bit 6 denotes that the 'beep' tone is to be added to the incoming tone. The DSP acknowledges its recognition of this byte by returning the same value written on output timeslot 0.

Disconnecting timeslots from conference lines is as follows:

Say the user wishes to remove a 'beep' tone from timeslot 9.

The user accesses the connection memory associated with timeslot 9. To do this a byte representing the timeslot number is written to timeslot 0 with Bit 7 set and Bit 6 clear. In other words byte 0x89 is written to timeslot 0. Bit 6 denotes that the 'beep' tone is to be removed from the incoming tone. The DSP acknowledges its recognition of this byte by returning the same value written on output timeslot 0.

3 User Interface

Each port can accommodate only one DSP.

3.1 User Interface

The procedure for download utilises the program, fwdspldr.exe. It's used in the following manner:

```
Fwdspldr -t65 <dsp_pos> <dsp_firmware.b65> <port_no> <pm4_filename>
```

dsp_pos = dspa or dspb

dsp_firmware = any firmware title with the extension .b65.

For conference plus beep tone: conbeepa.b65 for A-law

For conference plus beep tone: conbeepu.b65 for mu-law

port_no = 0, 1, 2... .n. As many ports as supported with DSP65s

pm4_filename = any pm4 filename with ZAP loader

3.2 Program types Available

There are two types of program available:

conbeepa.b65 for A-law on DSP A.

conbeepu.b65 for mu-law on DSP A.

These are downloaded to their respective DSPs using fwdspldr.exe

Note there are no DSP B positions on cPCI cards.

Note Refer to the DSP firmware guide for information on Card types, DSP's and their associated streams

4 Configuration:

Tslot	Input	Output
0	1 Flag timeslot	Acknowledge
1	input 1	output1+beep
2	input 2	output2+beep
3	input 3	output3+beep
4	input 4	output4+beep
5	input 5	output5+beep
6	input 6	output6+beep
7	input 7	output7+beep
8	input 8	output8+beep
9	input 9	output9+beep
10	input 10	output10+beep
11	input 11	output11+beep
12	input 12	output12+beep
13	input 13	output13+beep
14	input 14	output14+beep
15	input 15	output15+beep
16	input 16	output16+beep
17	input 17	output17+beep
18	input 18	output18+beep
19	input 19	output19+beep
20	input 20	output20+beep
21	input 21	output21+beep
22	input 22	output22+beep
23	input 23	output23+beep
24	input 24	output24+beep
25	input 25	output25+beep
26	input 26	output26+beep
27	input 27	output27+beep
28	input 28	output28+beep
29	input 29	output29+beep
30	input 30	output30+beep
31	input 31	output31+beep