



ITU G.728 Speech Coder



Processor

Motorola DSP56300 range.

Background

The algorithm implemented is the ITU-T G.728 recommendation, fixed rate speech coder. The encoder compresses linear-PCM (Pulse Code Modulated), narrowband speech data, at a sample rate of 8kHz, to 16 000 bps. G.728 is a complex coder using a Low-Delay Code-Excited Linear Prediction (LD-CELP) algorithm that employs backward-adaptive Linear Predictive Coding (LPC) analysis in order to achieve a low transcoding delay. The decoder also incorporates an adaptive post-filter to enhance performance for multiple transcodings. The post-filter function can be omitted for single coder-decoder operation to reduce the processing power required on the DSP.

G.728 is an essential addition to all video conferencing systems and is increasingly being used in Voice and DSL applications.

Features and Performance

- Approximately 3 channels of G.728 on 100MHz device
- Less than 4 Kwords of program memory required
- Less than 9 Kwords of data memory required for 3 channels of G.728
- Meets floating point specification

G.728	Program Memory		X Data Memory		Y Data Memory		Processing Load (MHz)
	Code (Kwords)	Tables (Kwords)	Variables (Kwords)	Tables (Kwords)	Variables (Kwords)	Tables (Kwords)	
Encoder	1.55	1.19	$0.86+n*0.68$	1.08	$0.86+n*0.3$	0	$n*17.37$
Decoder	1.92	1	$0.86+n*0.82$	0.88	$0.86+n*0.29$	0.01	$n* 14.23$
Encoder + Decoder	3.04	1.22	$0.86+n*1.5$	1.1	$0.86+n*0.59$	0.12	$n* 31.6$

Table 1 : DSP Requirements for G.728

Note: Processing loads quote worst-case scenarios with n representing the number of channels.
Program memory table values are initialisation values. 1 word equals 24 bits. Kwords equal 1024 words.

Interface Details

For convenience the individual software functions are supplied as a single library module. The library contains all the object code that is required to link in to a user's top-level application code.

Availability

Fully optimised code is available now, for a one-off payment and/or royalties depending on the commercial application.

Also available for DSP56300 are a full range of vocoders including G.711, G.722, G.726, G.729, G.729A, G.729B, G.729AB and other communication algorithms.

SIGNALS+SOFTWARE

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