



- Compliant with the eXpressDSP Digital Media (XDM) interface
- Mixed C and C64x+ assembly code implementation
- Bit-exact with all ITU G.726 test sequences Encoder compresses the A-law or U-law PCM input samples into a 40, 32, 24, or 16 kbps ADPCM bit-stream
- Decoder expands 40, 32, 24, or 16 kbps bitstream into A-law or U-law PCM samples
- ITU-T G.726 specifications compliant
- Optimized for TI C64x+ DSP
- C-callable interface for encoder and decoder
- Re-entrant multi channel implementation
- RTP Special packing format as defined in RFC3551 and linear packing format supported
- Fully interruptible Code
- Efficient scratch memory management with reduced stack requirements
- The implementation support run time data buffers relocation and constant relocation
- Validated on DM6437 EVM, using Code Composer Studio version 3.3.13.2 with the code generation tools version 6.0.7



#### description

The ITU G.726 converts A-law or U-law PCM input samples sampled at 8 KHz sampling rate into a 40, 32, 24, or 16 kbps ADPCM bit-stream.



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PRODUCT PREVIEW



## summary of performance

Table 1. Configuration Table

CONFIGURATION	ID
Encoder – 40 kbps rate	G726_001
Decoder – 40 kbps rate	G726_002
Full Duplex – 40 kbps rate	G726_003

Table 2. Cycles Information – DM6437 EVM with Code Generation Tools version 6.0.7

CONFIGURATION ID	PERFORMANCE STATISTICS (IN MEGACYCLES/SEC) <sup>1</sup>	
	AVERAGE <sup>2</sup>	PEAK <sup>2</sup>
G726_001	2.4977	3.0542
G726_002	2.6468	2.6712
G726_003	5.1445	5.7254

<sup>1</sup> Measured with frame size = 80 samples (10ms)

<sup>2</sup> Measured with program and data memory, stack and I/O buffers in external memory.

L1P is configured to 32 KB cache, L1D is configured to 16 KB cache, and L2 is configured to 64 KB cache. All the cache memories are invalidated for every frame

Table 3. Memory Statistics - Generated with Code Generation Tools Version 6.0.7

CONFIGURATION	MEMORY STATISTICS <sup>3</sup>				
	PROGRAM MEMORY	DATA MEMORY			TOTAL
		INTERNAL	EXTERNAL	STACK	
G726_001	5.226	0	1.347	0.086	6.659
G726_002	6.6328	0	1.347	0.094	8.074
G726_003	10.9102	0	1.461	0.094	12.465

<sup>3</sup> All memory requirements are expressed in kilobytes (1 K-byte = 1024 bytes)

Table 4. External Data Memory Split-up

CONFIGURATION	DATA MEMORY – EXTERNAL <sup>4</sup>		
	SHARED		INSTANCE <sup>5</sup>
	CONSTANTS	SCRATCH	
G726_001	1.078	0.156	0.113
G726_002	1.078	0.156	0.113
G726_003	1.078	0.156	0.227

<sup>4</sup> All memory requirements are expressed in kilobytes (1 K-byte = 1024 bytes)

<sup>5</sup> Does not include I/O buffers



**notes**

- Total Data Memory for N Non-Pre-Emptive Instances =  
Constants + Runtime Tables + Scratch + N\*(Instance + I/O buffers + Stack)
- Total Data Memory for N Pre-Emptive Instances =  
Constants + Runtime Tables + N\*(Instance + I/O buffers + Stack + Scratch)

**references**

- ITU Recommendation G.726 - Pulse code modulation (PCM) of voice frequencies
- G.726 Codec on C64x+ - User Guide (literature number SPRUEG0)

**glossary**

Constants	Elements that go into .const memory section
Scratch	Memory space that can be reused across different instances of the algorithm
Shared	Sum of Constants and Scratch
Instance	Persistent-memory that contains persistent information - allocated for each instance of the algorithm

**acronyms**

ITU	International Telecommunication Union
ITU-T	Telecommunication Standardization Sector of ITU

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