JPEG & Motion JPEG Encoder and decoder

This baseline implementation of JPEG and Motion JPEG standards is fully optimised for the Texas Instruments TMS320C62x DSP family. Every JPEG parameter and bit stream feature is user-defined, making this algorithm very flexible

High Performance

From a single C6211 low cost implementation to a high end C6203 application, a large scalable offer is available to optimise the cost / performance ratio :

- 'C6211-150 : real time color CIF video (load 40%)
- 'C6201-200 : real time B&W PAL or NTSC full format (load 60%)
- 'C6203-300 : real time color PAL or NTSC full format (load 85%)

Ease of integration

The compliance with Texas Instruments eXpressDSP software technology guarantees compatibility with other eXpressDSP algorithms, ease of use of the interface and quality of the documentation.

This library does require no external memory and no calls to DMA features. Therefore it keeps internal DSP resources available for the application.

This level of flexibility allows any hardware architecture, and code compatibility between C620x and C621x DSPs.

Flexibility

As your technology partner, ATEME can help you to define the most appropriate hardware and software architecture to reach your performance, cost and time-frame targets. Other JPEG functionalities such as lossless, progressive, hierarchical encoding are available on request.





Observation Systems Video Security Medical Vision UAV



ATEME products can be customized to your system requirements



Features

Target DSP TMS320C62x Texas Instruments™

Interface eXpressDSP Software Technology[™] compliant

Input

YUV 4:2:2 YUV 4:2:0 Others on demand

Quantization tables

user-definable (JPEG standard tables by default)

Huffman tables

JPEG standard tables

Output

restart markers user-definable Zero-insertion can be disabled

Hardware specifications

No specific constraints are to be applied on hardware design

Deliverables

Object code of encoder, decoder, codec library for JPEG or Motion JPEG algorithm User manual Specific libraries can be delivered on request (to optimise program memory, for instance)

Memory

The memory requirements for the library are given in dwords :

	Program	Const	Data		
Compression	3 400	700	550		
Decompression	2 300	3 400	50		

Performances

The measures shown bellow are the results of compression and decompression by the library of the following pictures, in pure JPEG or Motion JPEG standard, with no pixels ordering into the library.



In the following table, for each case, the first line indicates the number of frames processed per second, the second line the load of the DSP to process 25 frames per second and the third line shows the time in ms needed to process one frame. For NTSC video it would be the same performances.

Input	Format		C6203-300		C6201-200		C6211-150	
			Encode	Decode	Encode	Decode	Encode	Decode
YUV 4:2:0	Full size PAL fra 720x576 ms /	frames/s	36	39	24	26	18	19
		Load	69%	65%	104%	97%	138%	129%
		ms / frame	28	26	41	39	55	52
	CIF PAL frames/s 352x288 Load ms / frame	frames/s	145	154	97	103	72	77
		Load ms / frame	17%	16%	26%	24%	35%	32%
			6,9	6,5	10	10	14	13
	QCIF PAL fram 176x144 I ms / fr	frames/s	580	618	386	412	290	309
		Load	4%	4%	6%	6%	9%	8%
		ms / frame	1,7	1,6	2,6	2,4	3,5	3,2
YUV 4:2:2	Full size PAL 720x576	frames/s Load ms / frame	29	32	20	21	15	16
			85%	78%	128%	117%	171%	157%
			34	31	51	47	68	63
	CIF PAL frames 352x288 Lo ms / frar	frames/s	117	128	78	85	59	64
		Load	21%	20%	32%	29%	43%	39%
		ms / frame	8,5	7,8	13	12	17	16
	QCIF PAL frames 176x144 Loa ms / fran	frames/s	469	511	312	341	234	255
		Load	5%	5%	8%	7%	11%	10%
		ms / frame	2,1	2,0	3,2	2,9	4,3	3,9