

AP4010 ARM+Multimedia Engine High Performance Processor with Graphics/Audio/Voice/Human Interface



■ Overview

AP4010 is a high performance multimedia processor based on ARM926EJ-S CPU Core, suitable for a variety of equipment with LCD panel, such as Information Terminal, OA User Interface Panel (Copy machine and Fax etc.), and Edutainment Equipment. AP4010 incorporates LCD controller with maximum SVGA resolution, Touch Panel Controller, and a variety of peripheral features for various kinds of applications into one chip. With AP4010, high performance multimedia products can be developed with lowest cost.

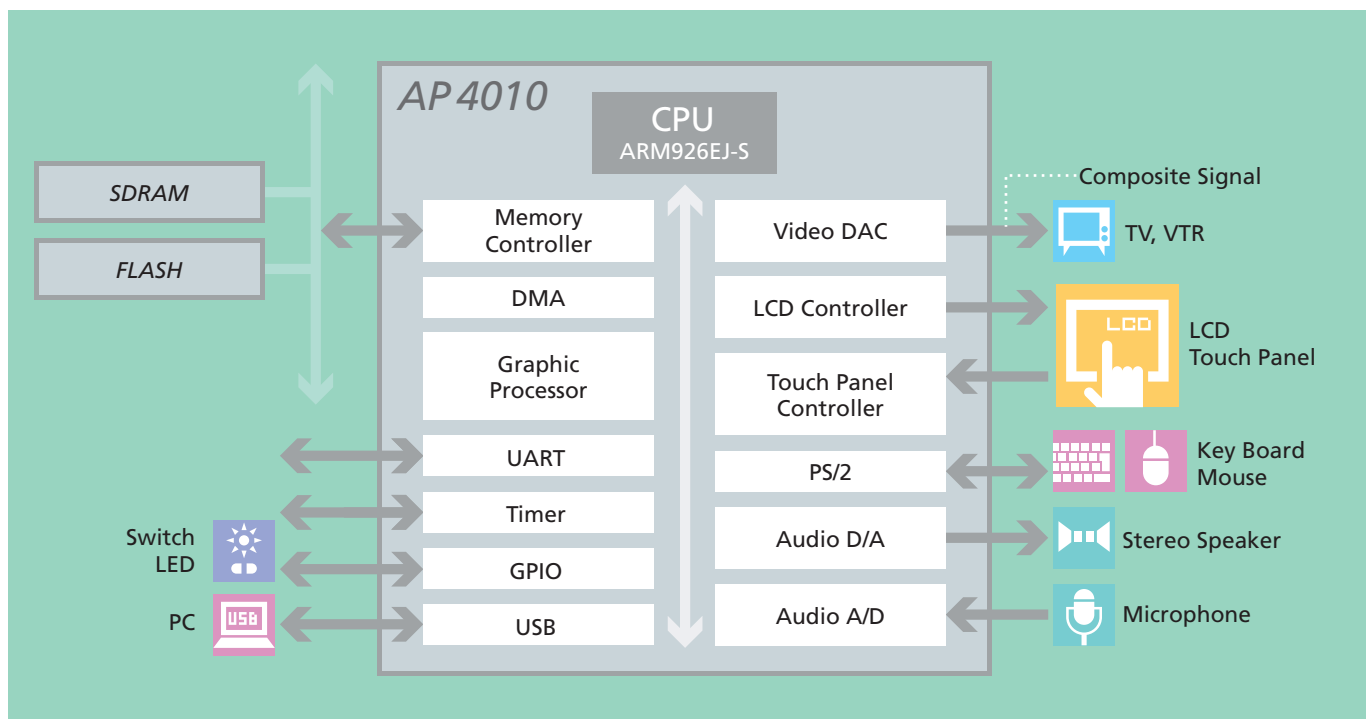
■ Feature

- (1) CPU : ARM926EJ-S (108MHz)
- (2) High Speed Drawing by Original High Performance 2D Graphics Engine (BITBLT, Alpha Blending, Affine Transformation, etc)
- (3) LCD Controller with SVGA (800X600) resolution
- (4) Peripherals : NTSC/PAL Video Encoder, Touch Panell Controller, AD/DA Converter for Audio, USB, etc.

■ Application

- Information Terminal : Order Terminal, Advertise Terminal, POS Terminal, PDA, Measuring Equipment, Kiosk
- Consumer Use : Photo Viewer, TV-Connected Equipment, Health Care Equipment, Educational Toy
- Business Use : Reception Terminal, Security Camera Monitor, Data Logger Terminal, Bar Code Reader, Ticket Vending Machine
- Control Panel: Office Equipment (Copy/FAX etc.)

■ Example of System Block Diagram



■ AP4010 SPEC

Processor	CPU	32bitRISC CPU ARM926EJ-S	
	On Chip Cache Memory	Instruction Cache: 8KB, Data Cache :8KB (write back /write through)	
	On Chip RAM (TCM)	Instruction: 8KB, Data: 16KB	
	Debug I/F	JTAG, ETM	
System Control	External Memory I/F	SRAM, SDRAM, Flash Memory (NOR, NAND), Low Speed Device Etc.	
	DMA Controller	2ch	
	Timer	Cycle Timer: 16bitX2ch, PWM Timer: 16bitX2ch	
	Real Time Clock	Counter for Year, Month, Week, Day, Hour, Minute, Second	
	UART	16 Byte FIFO Serial FunctionX2ch (Maximum Baud Rate: 1.687Mbps)	
	GPIO	General I/O Port (Enable On/Off by internal pull-up resistor)	
	USB	USB2.0 (FullSpeed(12Mbps)) FunctionX1ch	
	Graphics Control	TV I/F	Composite Video Signal Output
LCD I/F		LCD (TFT or STN) Panel Control Signal Output	
Simultaneous Display		2 different data can be displayed on TV and LCD simultaneously.	
Resolution		TV	NTSC: 704X480, PAL: 704X576
		LCD	TFT: 320X240 (QVGA), 640X480 (VGA), 800X600 (SVGA) etc. STN: 320X240 (QVGA) etc.
Color		TV, LCD	32,768 color
Graphics Processor			BITBLT, Affine Transformation, Alpha Blending, Color Transformation
Scroll			Maximum area SVGA can be specified.
LCD Touch Panel I/F		Analog Resist Layer (4-wire/8-wire) Method (On Chip 10 bit ADC)	
Sound	Output	Stereo, 12 bit	
	Input	Monaural, 10 bit Input (Resolution 10 bit +over sampling)	
Power Voltage		2 Voltage for 1.8V (Core) / 3.3V (I/O), Enable to supply only to RTC (1.8V)	
Clock		CPU: 108MHz, Bus: Internal/External 108MHz, Peripheral I/O: 27MHz, PRT: 32.768KHz	
Operation Temperature		-40~85°C	
Power Consumption		200mW (at typical condition)	
Package		24mm/one edge LQFP Package, 176pin (Pin Pitch 0.5mm), Pb-free	

■ AP4010 Evaluation Board "EMP-ARM9"

EMP-ARM9 is the AP4010 evaluation board for the embedded multimedia platform. Since this board contains LCD controller, PAL/NTSC output, Sound input/output, Touch Panel Interface, and so on, it can help you to develop a multimedia product easily. Besides, this board supports Linux / iTRON as its OS, your development cost will be lower.

EMP-ARM9COM is the additional board for EMP-ARM9, with the communication capabilities, such as Ethernet, USB Host, and Serial Interface.