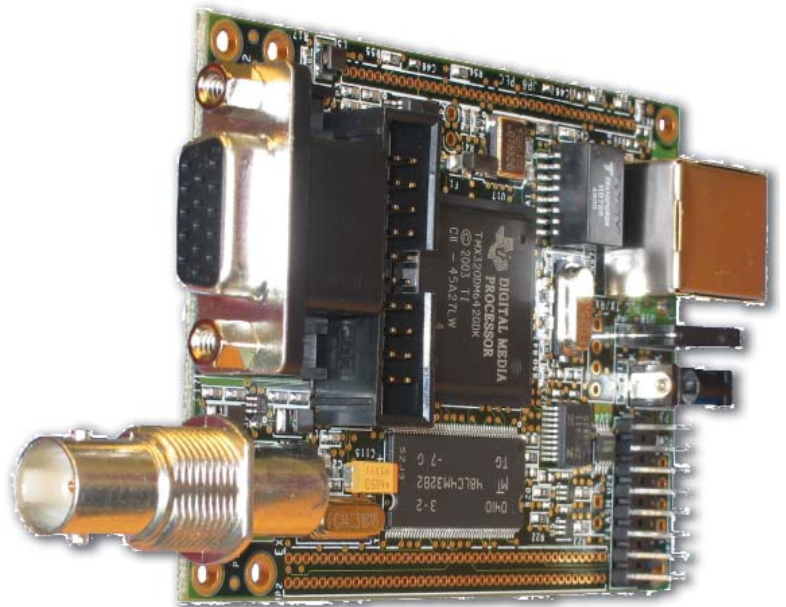# SmartCam™

Compact and Flexible Compression
Module for OEMs & Developers

Key features :

- 1 x DSP TMS320DM642™ from Texas Instruments (4.8 GIPS),
- 1 x Video input,
- 1 x Audio input,
- Audio and Video sync,
- Watchdog,
- Ethernet interface,
- TCP/IP stack,
- HomePLug 1.0 ready (add-on from Intellon),
- Connectors for future extensions (CMOS sensor, HD, USB, ...),
- Compact size: 80x60 mm (3.14"x2.36").

SmartCam ™ is a flexible and compact compression module which can be used in many applications such as :

- Cameras for industrial applications,
- Digital video recorders over IP,
- MPEG compression modules,
- Real time image processing, ...

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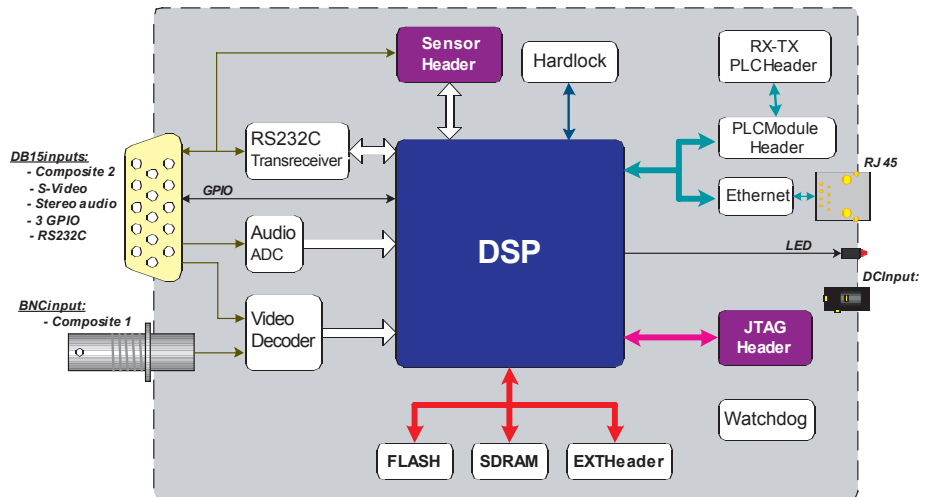Fax +33 1 46 73 06 00
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SMARTCAM™ ARCHITECTURE

The architecture of SmartCam™ includes a multi-standard video decoder, an audio stereo ADC, a powerful video DSP, an Ethernet interface, a Flash memory, and a set of connectors for future extensions like CMOS sensor, Hard Disk, USB and other connectivity solutions.

The DSP is the TMS320DM642 from Texas Instruments running at 600 MHz or more (720 MHz in 05Q1) thus providing up to 4.8 GIPS with a maximum of 4 operations per instruction (4 operations of 8 bits, 2 operations of 16 bits or 1 operation of 32 bits) thus leading to a maximum of 19.2 GOPS.

The DSP has a 32 MB SDRAM running at 100 MHz and 64 bits, which provides a throughput of 800 MB/s.

EXTENSION CONNECTORS

Apart from video (BNC & DB15), audio (DB15), Ethernet (RJ45) and power supply (DC In) connectors, SmartCam™ has a number of header connectors to interface with extension modules :

- Sensor (2x10 pins): an interface has been included to connect SmartCam™ to a CMOS sensor (ITU-R BT.656 8bits YUV 4:2:2 bus),

- PHY for PLC (PowerLine Communications) module (1x40 pins) : directly compatible with the Embedded PowerPacket™ module from Intellon™ (HomePlug 1.0 compliant),

- RX-TX PLC (1x4 pins): to be connected to the power line through a tiny transformer,

- JTAG (2x8 pins): allows to connect an emulator from TI during software development phase,

- EXT (2x42 pins) : allows to connect an extension board which may include a Hard Disk interface or a USB connector for instance.

SOFTWARE TOOLS

SmartCam™ comes with :

Vitec recommends the use of the Texas Instruments development tools to develop software for the DSPs themselves :

C/C++ compiler,
Simulator,
Emulator via the RTDS protocol and standard JTAG connector.

TECHNICAL SPECIFICATIONS

Inputs	
	Video formats : NTSC, PAL, SECAM
	BNC : 1 composite
	DB15 : - 1 composite and 1 S-Video (Y/C), - 1 analog unbalanced stereo audio input, - RS232C (For VISCA™ Control Protocol), - 3 programmable GPIO with edge detection.

Digitiza-tion	
	Video : 720x480x30 fps or 720x576x25 fps in 4:2:2 sampling
	Audio : 32, 44.1, 48, 88.2 or 96 KHz and 16, 20 or 24 bits per sample

Outputs	
	Video and audio compression : the compression features are defined by the software codecs that the developer decides to implement in the DSP. Many codecs can be found on the market at competitive prices. Check the TI's 3rd party software website
	Outputs : Ethernet (10 Base-T or 100 Base-TX Ethernet using single RJ-45 connector)

Other feature	
	Adjustments : brightness, contrast, saturation and hue as well as audio level
	Size : 80 x 60 mm (3.14"x2.36")
	Weight : 65 g
	Power supply : 3,3 V - 1 A **Power dissipation :** 3,3 W
	JTAG : 16-pin connector for external emulation hardware support. This is used to connect SmartCam™ to the TI emulator
	Flash memory : (8 MBytes) to store the DSP program