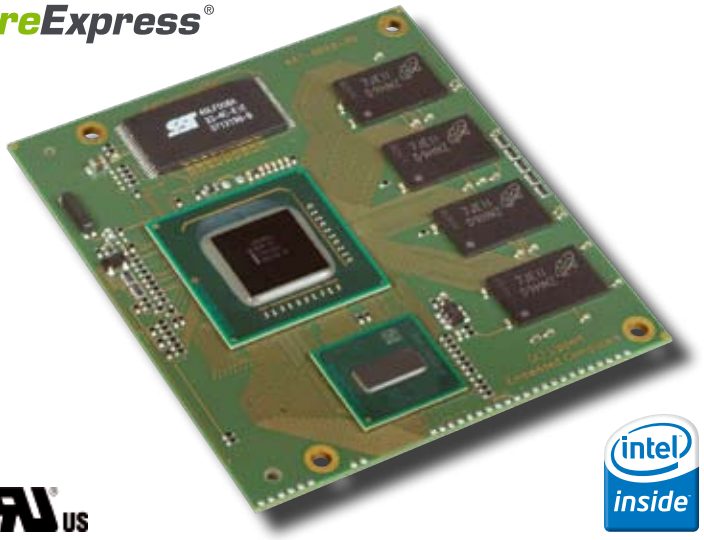
CoreExpress®-ECO

Next Generation Computer-On-Module

Features

- Intel® Atom™ Processor
- 512 MB, 1 GB, 2 GB SDDR2 soldered RAM
- 2 PCI Express Lanes
- SDIO/MMC
- SMBus
- GMBus/DDC
- LPC bus
- 2 Graphics Ports (LVDS & SDVO)
- HD Audio
- 8 USB 2.0
- IDE
- Award BIOS
- Only 58 mm x 65 mm and 28 grams
- 5 V only supply, 5 Watts
- Extended temp. range -40 °C ... +85 °C (opt)



The CoreExpress-ECO is a Computer on Module (COM) implementation in a 58 mm x 65 mm format. It is based on the CoreExpress specification, a no-compromise new development that leaves the traditional PC interfaces behind.

CoreExpress modules are legacy-free, meaning they come with digital interfaces only; when an application requires analog signals, these can easily be implemented on the carrier board. The tiny module size stems from today's advanced chip technology that not only reduces the required space but also allows for very low power processors. The low power requirements lead to minimum cooling efforts, decreasing the total dimensions further, when compared to existing solutions.

The CoreExpress-ECO utilizes an Intel Atom processor and related Intel System Controller Hub US15W. The processor's advanced micro-architecture retains the popular X86 programming model. Multiple threads improve responsiveness delivering a better user experience.

The computer module comes completely with up to 2 GB of SDDR2 RAM soldered to the board, graphics, MPEG2/4 support, LVDS and SDVO display ports, as well as HD audio streams. Two PCI Express lanes are available for external I/O and graphics. There are eight USB 2.0 ports, IDE, SDIO/MMC interface, SMBus, and LPC bus available for even further expansion. All these signals are made available on a tiny 220 pin connector.

CoreExpress-ECO features the LiPPERT Enhanced Management Technology (LEMT) based on an integrated system management controller (SMC). It handles the power sequencing and other housekeeping tasks, and provides a protected flash area for miscellaneous user information.

An Developer's kit is available to assist in the development of customer designed carriers. It contains a CoreExpress-ECO module on an EPIC carrier board, a LCD module and power supply. Additionally, a "best practices" manual is included, detailing how to design an application specific carrier board for the CoreExpress-ECO. All necessary cables and full technical documentation are also included in the kit.

Supported operating systems are Windows, VxWorks, QNX, and Linux.

LiPPERT is an independent design house and manufacturer that develops and builds special customer specific solutions. Please ask for a specific quotation.

LiPPERT ADLINK TECHNOLOGY
Hans-Thoma-Str. 11 · D-68163 Mannheim
Phone +49 621 43214-0 · Fax +49 621 43214-30
sales@lippertembedded.com
www.lippertembedded.com

Ampro ADLINK Technology, Inc.
5215 Hellyer-Avenue, #110
San Jose, CA 95138, U.S.A.
Toll Free (800) 966 5200 · Fax (408) 360 0222
info@adlinktech.com

CoreExpress®-ECO

Technical Specifications

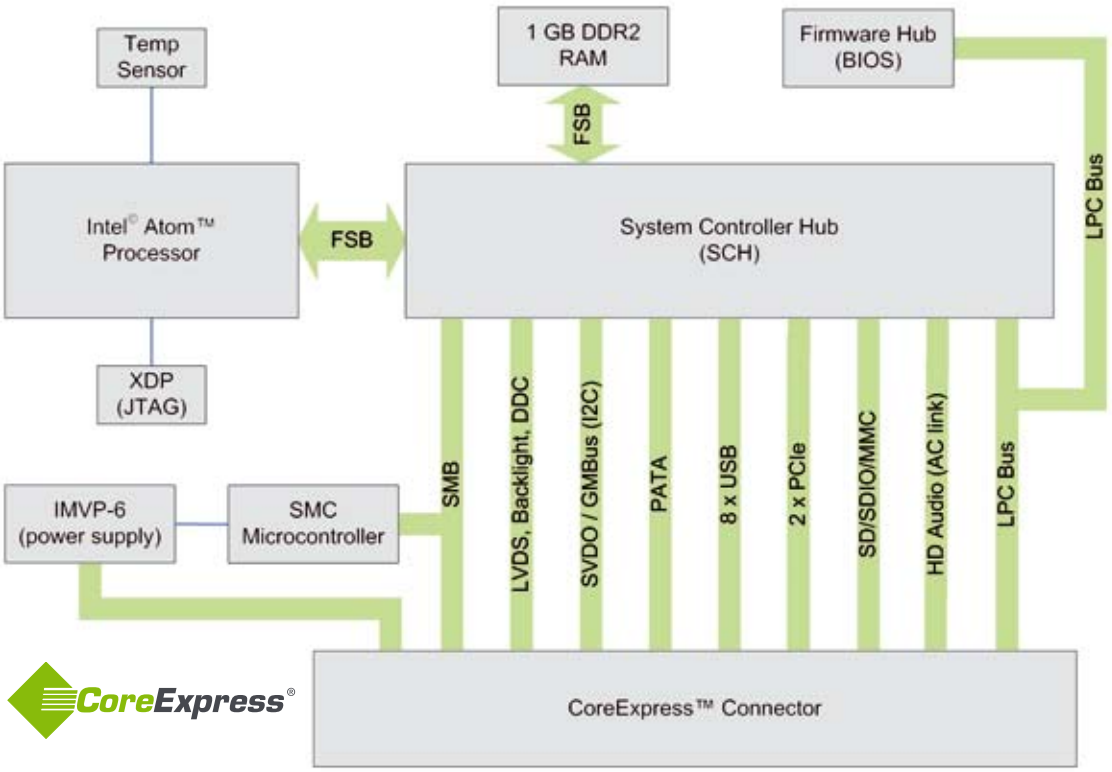
Board Format	CoreExpress® 58 mm x 65 mm
Processor	Intel® Atom™ Z530 processor@ 1,6 GHZ or Intel® Atom™ Z510 processor @ 1,1 GHz 45 nm process 512K L2 cache 533 MT/s FSB USFF uFCBGA8, 13x14mm, 0.6mm pitch, 447 pins
Core logic	Intel System Controller Hub US15W (SCH) 65 nm process USFF uFCBGA3, 22x22mm, 0.6mm pitch, 1249 pins
RAM	512 MB, 1 GB, 2 GB SDDR2, 533 MHz. Soldered on board
PCI Express	2 root ports Spec. Rev. 1.0a (2 lanes x 1) • Each port supports 2.5 Gb/s bandwith in each direction • Low power "L-states" are supported • Hot-plug is supported • External x1 graphics devices are supported (internal GD must be disabled) • Only SDVO or external graphics can be used at one time
HD Audio	High Definition Audio Controller supports 4 audio streams; 2 in, 2 out • 1.8 V and 3.3 V I/O is supported • Docking is supported • Each stream can obtain up to 16 channels
SDIO/MMC	Integrated Secure Digital I/O (SDIO) or Multimedia Card (MMC) Controller. Supports SDIO Rev. 1.1 and MMC Rev. 4.0. SDIO/MMC interface permits x1 and x4 I/O read/write modes. SDHC supported
SMBus	Compatible with most I2C devices and SMBus Spec. 1.0 for system management. 2 MByte serial EEPROM on board
GMBus/DDC	I2C for display control
LPC	Supports LPC 1.1 spec

CoreExpress®

Graphics	Integrated graphics device (IGD) includes LVDS and SDVO display ports for simultaneous independent operation of 2 displays. • LVDS interface supports pixel color depth of 18 and 24 bits, • Max. pixel clock 112 MHz (equates to 1376x768 @85 Hz) • SDVO max. pixel clock 160 MHz (equates to 1280x1024 @85 Hz) • SDVO for any external device HDMI/DVI, Analog, VGA/CRT, LVDS Full hardware acceleration for: • H.264 baseline profile L3, main profile 4.1 and high profile L4.1 • MPEG2 main profile high level • MPEG4 simple profile L3, advanced simple profile L5 • VC1 all profiles up to L3 • WMV9 simple profile medium level • WMV9 main profile high level • SD/HD TV broadcast up to 1080i
USB	• USB 1.1 with 3 UHCI controllers, • 2 USB 1.1 ports per controller (port 0-5) • USB 2.2 with 1 EHCI controller with 8 ports, ports 6 & 7 must be internal only to meet USB spec requirements • Debug port lives on Port 0 Port 2 can be USB client port, USB On-The-Go is not supported USB client connect signal (USBCC/GPIOSUS3) may be used to detect host/client connection
PATA (IDE)	1 port supports 2 devices (master/slave) with the following modes : • PIO Modes 0, 1, 2, 3, 4 • Single-word DMA Modes 0, 1, 2 • Multi-word DMA Modes 0, 1, 2 • Ultra-DMA Modes 0, 1, 2, 3, 4, 5 • Up to 100 MBytes/s in UDMA-100 mode
Operating temperature	0 °C … +60 °C (commercial) -20 °C … +60 °C (industrial) -40 °C … +85 °C (extended, optional)
Power	+5 V +/- 5%, ~5 Watts @1.6 GHz and with 1 GB RAM
BIOS	Award BIOS 1 MByte firmware hub (FWH)
UL Certificate Number	20090826-E329059

LIPPERT™ BY ADLINK

Block Diagram



LEMT Functions (implemented in SMC, accessible via SMBus; excerpt)

Total operating hours counter	Counts the number of hours the module has been run in minutes
On-time counter	Indicates the amount of time since last power on in seconds
Power cycles counter	Counts how often the module has been powered on
Watchdog timer	Set / Reset / Disable / Trigger Watchdog Timer
System restart reason	Power loss / Watchdog / External Reset
Fail-safe-BIOS support	In case of a boot failure, hardware signals tell external logic to boot from a Fail-Safe-BIOS
Flash area	1024 bytes of Flash area for customer data
Protected flash area	128 Bytes. Keys, ID's, etc. can be stored in a write- and clear-protectable region
Board identity	Vendor ID / board ID / serial number

Check www.CoreExpress.com for news and updates of the CoreExpress® specification.

LiPPERT ADLINK TECHNOLOGY
Hans-Thoma-Str. 11 · D-68163 Mannheim
Phone +49 621 43214-0 · Fax +49 621 43214-30
sales@lippertembedded.com
www.lippertembedded.com

Ampro ADLINK Technology, Inc.
5215 Hellyer-Avenue, #110
San Jose, CA 95138, U.S.A.
Toll Free (800) 966 5200 · Fax (408) 360 0222
info@adlinktech.com

CoreExpress®-ECO

Next Generation Computer-On-Module

CoreExpress®



CoreExpress-ECO on EPIC carrier



CoreExpress-ECO, bottom view



CoreExpress-ECO, top view



CoreExpress-ECO with heatsink

Windows® Embedded Partner

Quality Management DQS ISO 9001

Linux

QNX PARTNER NETWORK QNX SOFTWARE SYSTEMS

WIND RIVER

Check www.lippertembedded.com for the most up-to-date information about the CoreExpress-ECO.
Check www.CoreExpress.com for news and updates of the CoreExpress specification.

Ordering Information

Ordering Number	Description
t13-0002-10	CoreExpress-ECO, 1.6 GHz, 1 GB RAM, without heatsink
t13-0004-10	CoreExpress-ECO, 1.1 GHz, 1 GB RAM, without heatsink
808-0005-10	Developer's Kit CoreExpress-ECO with Intel Atom 1.6 GHz, 1 GB RAM, 0°…50 °C Operating system: Windows XP Embedded (Developer's Version)
808-0006-10	Developer's Kit, CoreExpress-ECO with Intel Atom 1.6 GHz, 1 GB RAM, 0°…50 °C Operating system: Linux
808-0007-10	Developer's Kit, CoreExpress-ECO with Intel Atom 1.6 GHz, 1 GB RAM, 0°…50 °C Operating system: QNX
808-0010-10	Developer's Kit, CoreExpress-ECO with Intel Atom 1.6 GHz, 1 GB RAM, 0°…50 °C Operating system: VxWorks 6.8
865-0020-10	Heat sink, passive, for CoreExpress-ECO

Note: t denotes the temperature range. Substitute with 7 for commercial, 8 for industrial and 9 for extended temperature range
Other processor and memory configurations are available on request.

02/12 · Specifications subject to change without notice · ©LIPPERT ADLINK TECHNOLOGY · Printed in Germany
All mentioned trademarks are the properties of their respective holders.

LiPPERT ADLINK TECHNOLOGY
Hans-Thoma-Str. 11 · D-68163 Mannheim
Phone +49 621 43214-0 · Fax +49 621 43214-30
sales@lippertembedded.com
www.lippertembedded.com

Ampro ADLINK Technology, Inc.
5215 Hellyer-Avenue, #110
San Jose, CA 95138, U.S.A.
Toll Free (800) 966 5200 · Fax (408) 360 0222
info@adlinktech.com

LiPPERT™ BY ADLINK

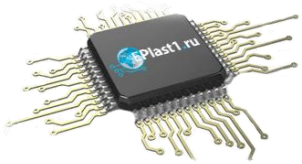
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)
Факс: 8 (812) 320-02-42
Электронная почта: org@eplast1.ru
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.