# COM Express Basic Module

# High-Performance Intel Atom Processor

## conga-BA945

**Featuring the Intel® Atom™ processor N270, 1.6 GHz**

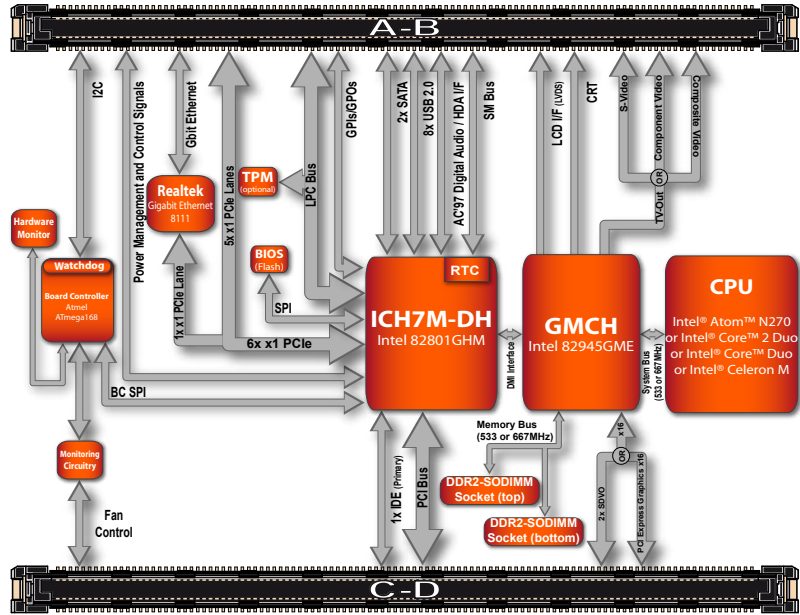**Provides up to 4 GByte Dual Channel DRAM**

**ACPI Battery Support, Flat Panel detection ...**

**COM Express®**

| Formfactor | COM Express™ Basic, (95 x 125 mm), Type II Connector Layout |
|---|---|
| CPU | Intel® Atom™ processor N270, 1.6 GHz, 512 kB cache, 533 MHz FSB, 45nm, 2.5W TDP |
| DRAM | 2 Sockets, SO-DIMM DDR2 667/PC5300 up to 4 GByte physical memory |
| Chipset | Graphics & Memory Controller Hub: Intel® 945GME    I/O Controller Hub: Intel® 82801 GHM (ICH7M-DH) |
| Ethernet | Gigabit Ethernet, Realtek RTL8111 |
| I/O Interfaces | 5x PCI Express™ Lanes, PCI Express Graphic (PEG x16), 2x Serial ATA® (AHCI) supporting RAID 0 and RAID 1, 1x EIDE (UDMA-66/100), 2x Express Card® (uses 2x USB & 2x PCI Express), 8x USB 2.0 (EHCI), PCI Bus 33 MHz Rev. 2.3, LPC Bus, I²C (Fast Mode, 400 kHz, Multi Master) |
| Sound | AC'97 Rev.2.2 Compatible, Digital High Definition Audio Interface with support for multiple audio codecs |
| Graphics | Enhanced 256 Bit 3D Video Controller, Intel® Graphics Media Accelerator 950, up to 10.6 GB/sec memory bandwidth, 256-bit graphics core, max. 224 MByte 64 Bit Video RAM (DVMT 3.0), Dynamic Display Modes for flat-panel, wide-screen and Digital TV support. Two independent pipelines for full dual view support |
| Motion Video Support | High Definition Hardware Motion Compensation to support high definition hi-bitrate MPEG2 media playback, Up and Down Scaling of Video Content, High Definition Content Decode, HDTV (1080i/p) Support |
| Flat panel Interface | Dual 112 MHz LVDS Transmitter, Supports all 1x18, 2x18, 1x24, 2x24 Bit, VESA- and openLDI-Mappings, Resolutions 640x480 up to 1920x1200, Automatic Panel Detection via EPI, (Embedded Panel Interface, based on VESA EDID™ 1.3) |
| CRT Interface | 400 MHz RAMDAC, Resolutions up to 2048x1536 @ 75 Hz, including 1920x1080 @ >85 Hz (HDTV) |
| AUX Output | 2x SDVO (shared with PEG x16 pins) |
| TV Out | Onboard TV encoder, supports HDTV (420p, 720p and 1080i), supports component and s-video |
| congatec Board Controller | Multi Stage Watchdog, Non-volatile User Data Storage, Manufacturing and Board information, Board Statistics, BIOS Setup Data Backup, I²C (Fast Mode, 400 kHz, Multi Master), Power Loss Control |
| Embedded BIOS Features | OEM Logo, OEM CMOS Defaults, LCD Control, (Auto Detection, Backlight Control), Flash Update, Based on AMIBIOS8® |
| Security | The conga-BA945 can be optionally equipped with a discrete "Trusted Platform Module" (TPM). It is capable of calculating efficient hash and RSA algorithms with key lengths up to 2,048 bits and includes a real random number generator. Security sensitive applications such as gaming and e commerce will benefit also with improved authentication, integrity and confidence levels. |
| Power Management | ACPI 2.0 with Battery support |
| Operating Systems | Microsoft® Windows7, Microsoft® Windows XP, Microsoft® Windows® embedded Standard, Microsoft® Windows CE 6.0, Linux 2.6, QNX 6.x |
| Power Consumption | Typ. application: <10 W @ 12V, see manual for full details, CMOS Battery Backup |
| Temperature | Operating: 0 .. +60°C    Storage: -20 .. +80°C |
| Humidity | Operating: 10 - 90% r. H. non cond.    Storage: 5 - 95% r. H. non cond. |
| Size | 95 x 125 mm (3.74" x 4.92") |

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| Article | PN | Description |
|---|---|---|
| conga-BA945/N270 | 041400 | Intel Atom N270 with 1.6GHz, 512kb L2-Cache and 533MHz FSB |
| conga-BA945/HSP-B | 042755 | Heatspreader, Standoff with 2.7mm bore hole |
| conga-BA945/HSP-T | 042750 | Heatspreader, Standoff with 2.5mm thread |
| conga-BA945/Thermal Stack Set | 041500 | Thermal-stack-set for COM-Express-Basic-Module with BGA-CPU`s |
| DDR2-SODIMM-667 (0512MB) | 057841 | 512 MByte DDR2 SODIMM memory module |
| DDR2-SODIMM-667 (1024MB) | 087412 | 1 GByte DDR2 SODIMM memory module |
| DDR2-SODIMM-667 (2048MB) | 068712 | 2 GByte DDR2 SODIMM memory module |

### Engineering Tools / Accessories for COM Express®

| | | |
|---|---|---|
| conga-CEVAL | 065749 | Evaluation carrier board for COM-Express-modules |
| conga-Cdebug | 047854 | COM-Express debugging platform. Including cable for COM, PS/2 and VGA. |
| conga-CKIT | 064714 | COM-Express-Starterkit, incl. conga-CEVAL, conga-CDEBUG, conga-FPA1 (PN: 024241), Dual DVI-D ADD2 card, Power supply, USB-Stick, … Without COM Express-module |
| conga-SBM²C-module | 014141 | SMART Battery Manager Module for COM Express |
| conga-SBM²C-kit | 029874 | Starterkit to evaluate SBM-Features for COM Express with SMART-Battery Manager Module and cable set |
| conga-SBM²C Licence and Design Kit | 025478 | SMART Battery Manager Module Design Kit for COM including licence agreement for costumer integration, Hardware design files (Schematics, Bill of Material), Battery Manager Firmware (incl. commented source code), AVR-Programming Tool AT90 JTAG ICE MKII |
| conga-LDVI/EPI | 011115 | LVDS to DVI converter board for digital flat panels with onboard EEPROM |
| conga-HDMI/Display Port adapter | 500014 | The conga-HDMI/DisplayPort adapter is used fo convert the chipset graphic ports Port-B, Port-C and Port-D to the HDMI or DisplayPort Interface |
| DVI-D ADD2 Card | 058500 | ADD2 display adapter card with single DVI-D digital output. Suitable for all Intel based platforms that support Serial Digital Display Outputs (SDVO) on the standard, x16 PCI Express Graphics (PEG) port. |
| Dual DVI-D ADD2 Card | 013226 | ADD2 display adapter card with dual independent DVI-D output. Suitable for all Intel based platforms that support Serial Digital Display Outputs (SDVO) on the standard, x16 PCI Express Graphics (PEG) port. |
| conga-FPA2 | 047250 | Flatpanel prototype adapter to develop your own flatpanel adapter Including cables set. |
| COM-Express-carrierboard-Socket-5 | 400007 | Connector for COM-Express carrier boards, height 5mm, packing unit 4 pieces |
| COM-Express-carrierboard-Socket-8 | 400004 | Connector for COM-Express carrier boards, height 8mm, packing unit 4 pieces |

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