

# COM Express® Basic Module

## High End

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### conga-BM45

45nm Intel® Core™ 2 Duo Processors up to 2.53 GHz

Provides up to 8 GByte dual channel DDR3 DRAM

Intel AMT 4.0

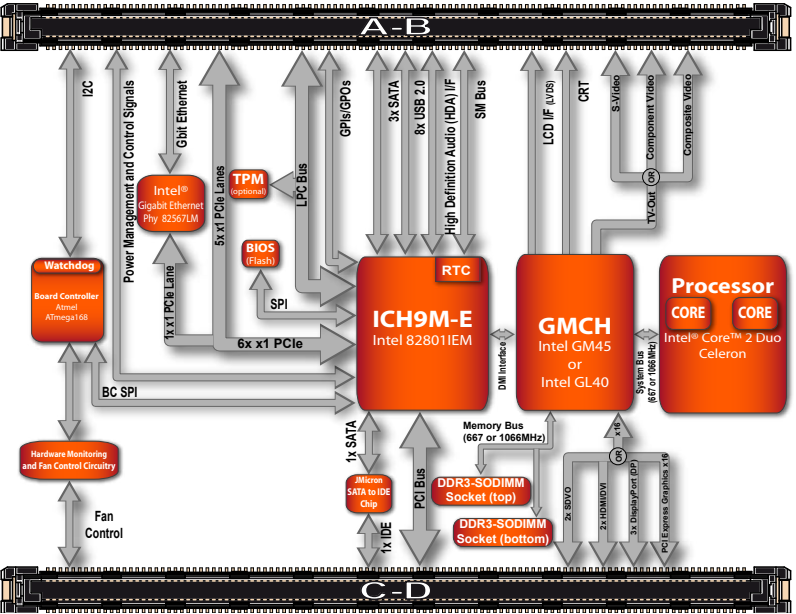
**COM Express®**



<b>Formfactor</b>	<b>COM Express™ Basic, (95 x 125 mm), Type II Connector Layout</b>
<b>CPU</b>	Intel® Core™ 2 Duo T9400, 2.53 GHz (6M cache, 1066 MHz FSB, 45nm), Socket mPGA479M Intel® Core™ 2 Duo P8400, 2.26 GHz (3M cache, 1066 MHz FSB, 45nm), Socket mPGA479M Intel® Celeron® T3100 1.9GHz (1M cache, 800MHz FSB, 45nm). Intel® Celeron™ 575, 2.0 GHz (1M cache, 667 MHz FSB, 45nm), no PEG Support (with Intel® GL40 Chipset)
<b>DRAM</b>	2 Sockets, SO-DIMM DDR3 1067 MHz, up to 8 GByte
<b>Chipset</b>	Graphics & Memory Controller Hub: Intel® GM45/GL40 I/O Controller Hub: Intel® ICH9M-E
<b>Ethernet</b>	Integrated within the ICH9M-E, 10/100/1000 LAN MAC + Intel® 82567 Phy
<b>I/O Interfaces</b>	5x PCI Express™ lanes, PCI Express Graphics (PEG), 3x Serial ATA® (AHCI) supporting RAID 0/1, 1x EIDE (UDMA-66/100) optional, 2x ExpressCard® (uses 2x USB & 2x PCI Express), 8x USB 2.0 (EHCI), PCI bus 33 MHz Rev. 2.3, LPC bus, I²C bus (fast mode, 400 kHz, multi-master)
<b>Sound</b>	Digital High Definition Audio Interface with support for multiple audio codecs
<b>Graphics</b>	Mobile Intel® Graphics Media Accelerator 4500MHD, graphics core speeds up to 533 MHz, improved graphics and 3D rendering performance, Intel® Dynamic Video Memory Technology (Intel® DVM 5.0) OpenGL 2.0 and DirectX10 support, Two independent pipelines for full dual view support
<b>Motion Video Support</b>	High performance hardware MPEG-2 decoding, WMV9 (VC-1) and H.264 (AVC) support Blu-ray support @ 40 Mb/s, hardware motion compensation
<b>Flat panel Interface</b>	Dual channel 112 MHz LVDS transmitter, Supports flat panels with 1x18, 2x18, 1x24, 2x24 bit interface, VESA mappings, resolutions from 640x480 up to 1920x1200, Automatic Panel Detection via EDID/EPI
<b>DisplayPort (DP)</b>	Supports two DisplayPorts multiplexed with the PCI Express Graphics interface 1.62 Gb/s and 2.7 Gb/s, 1/2/4 data lanes, 8B10B-coding, Hot-Plug detect support
<b>HDMI</b>	Single TMDS Link, only support for RGB, Video support for CEA modes 480i/p, 576i/p, 720p, 1080i/p and PC modes via dot clock
<b>CRT Interface</b>	300 MHz RAMDAC, resolutions up to QXGA
<b>AUX Output</b>	Supports two SDVO Ports multiplexed with the PCI Express Graphics interface
<b>TV Out</b>	Onboard TV encoder, supports HDTV (420p, 720p and 1080i), supports component and S-video
<b>congatec Board Controller</b>	Multi Stage Watchdog, non-volatile User Data Storage, Manufacturing and Board Information, Board Statistics, BIOS Setup Data Backup, I²C bus (fast mode, 400 kHz, multi-master), Power Loss Control
<b>Embedded BIOS Features</b>	OEM Logo, OEM CMOS Defaults, LCD Control, Display Auto Detection, Backlight Control, Flash Update, Based on AMIBIOS®
<b>Security</b>	The conga-BM45 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.
<b>Power Management</b>	ACPI 3.0 with battery support
<b>Operating Systems</b>	Microsoft® Windows7, Microsoft® Windows XP, Microsoft® Windows® embedded Standard, Linux 2.6, QNX 6.x
<b>Power Consumption</b>	Typ. application: TBD W @ 12V, see manual for full details, CMOS Battery Backup
<b>Temperature</b>	Operating: 0 .. +60°C Storage: -20 .. +80°C
<b>Humidity</b>	Operating: 10 - 90% r. H. non cond. Storage: 5 - 95% r. H. non cond.
<b>Size</b>	95 x 125 mm (3.74" x 4.92")

# Block Diagram conga-BM45

# Order Information conga-BM45



Article	PN	Description
conga-BM45/T9400	013130	Intel GM45 and Intel Core2Duo T9400, CPU with 2.53 Ghz, 6 MB L2-Cache and 1066 Mhz FSB
conga-BM45/P8400	013140	Intel GM45 and Intel Core2Duo, CPU with 2.26 Ghz, 3 MB L2-Cache and 1066 Mhz FSB
conga-BM45/575	013132	Intel GL40 and Intel Celeron M 575, CPU with 2.0 Ghz, 1 MB L2-Cache and 667 Mhz FSB. No PEG-Port!
conga-BM45/575	013135	Intel® Celeron® Processor T3100 1.9Ghz CPU T3100, 1MByte L2 cache and 800MHz FSB.
conga-BM45/TSS P8400	013142	Thermal Stack Set (TSS) for COM Express Basic module conga-BM45/P8400
conga-BM45/TSS T9400	013155	Thermal Stack Set (TSS) for COM Express Basic module conga-BM45/T9400
DDR3-SODIMM-1066 (1GB)	068750	DDR3-SODIMM memory module with 1 GB RAM (1066 MT/s)
DDR3-SODIMM-1066 (2GB)	068760	DDR3-SODIMM memory module with 2 GB RAM (1066 MT/s)
DDR3-SODIMM-1066 (4GB)	068765	DDR3-SODIMM memory module with 4 GB RAM (1066 MT/s)

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 customer 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 to 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