

# COM Express® Basic Module

## High End

### conga-BM45

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

Provides up to 8 GByte dual channel DDR3 DRAM

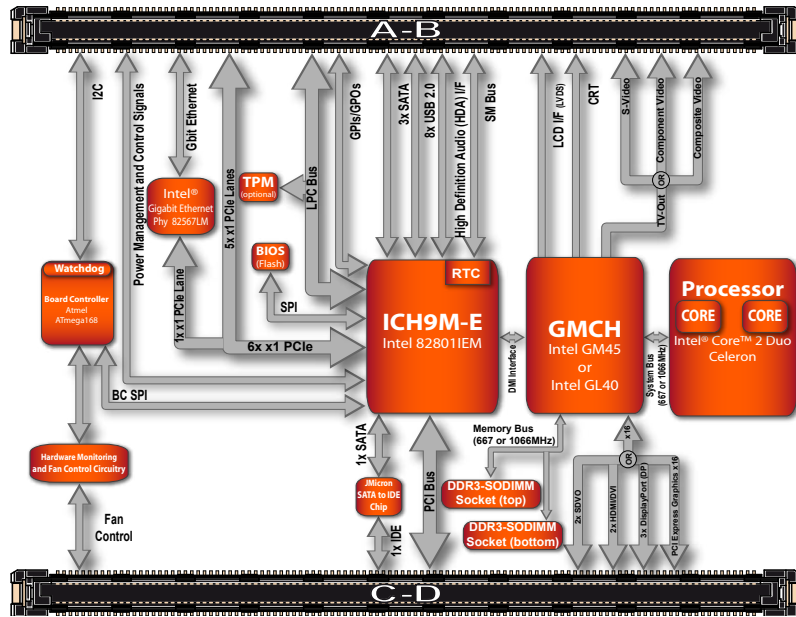
Intel AMT 4.0



<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® Windows 8, Microsoft® Windows 7, Microsoft® Windows XP, Microsoft® Windows® embedded Standard, Linux
<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/T3100	013135	Intel Celeron Processor T3100 1.9GHz CPU T3100, 1MByte L2 cache and 800MHz FSB.
conga-BM45/HSP-HP-B	013168	Standard heatspreader for COM Express module conga-BM45 with integrated heat pipes. All standoffs are with 2.7mm bore hole.
conga-BM45/HSP-HP-T	013169	Standard heatspreader for COM Express module conga-BM45 with integrated heat pipes. All standoffs are M2.5mm thread.
DDR3-SODIMM-1333 (1GB)	068751	DDR3 SODIMM memory module with 1333 MT/s (PC3-10600) and 1GB RAM
DDR3-SODIMM-1333 (2GB)	068761	DDR3 SODIMM memory module with 1333 MT/s (PC3-10600) and 2GB RAM
DDR3-SODIMM-1333 (4GB)	068764	DDR3 SODIMM memory module with 1333 MT/s (PC3-10600) and 4GB RAM

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-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
Single 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