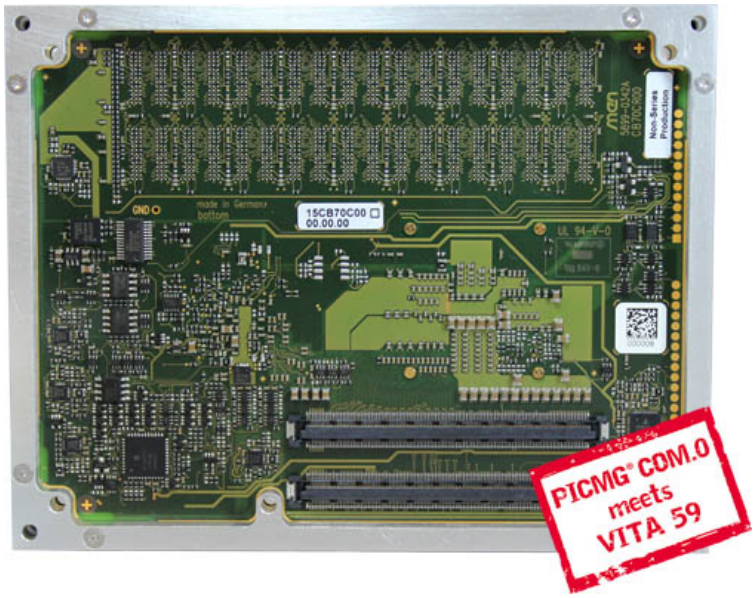
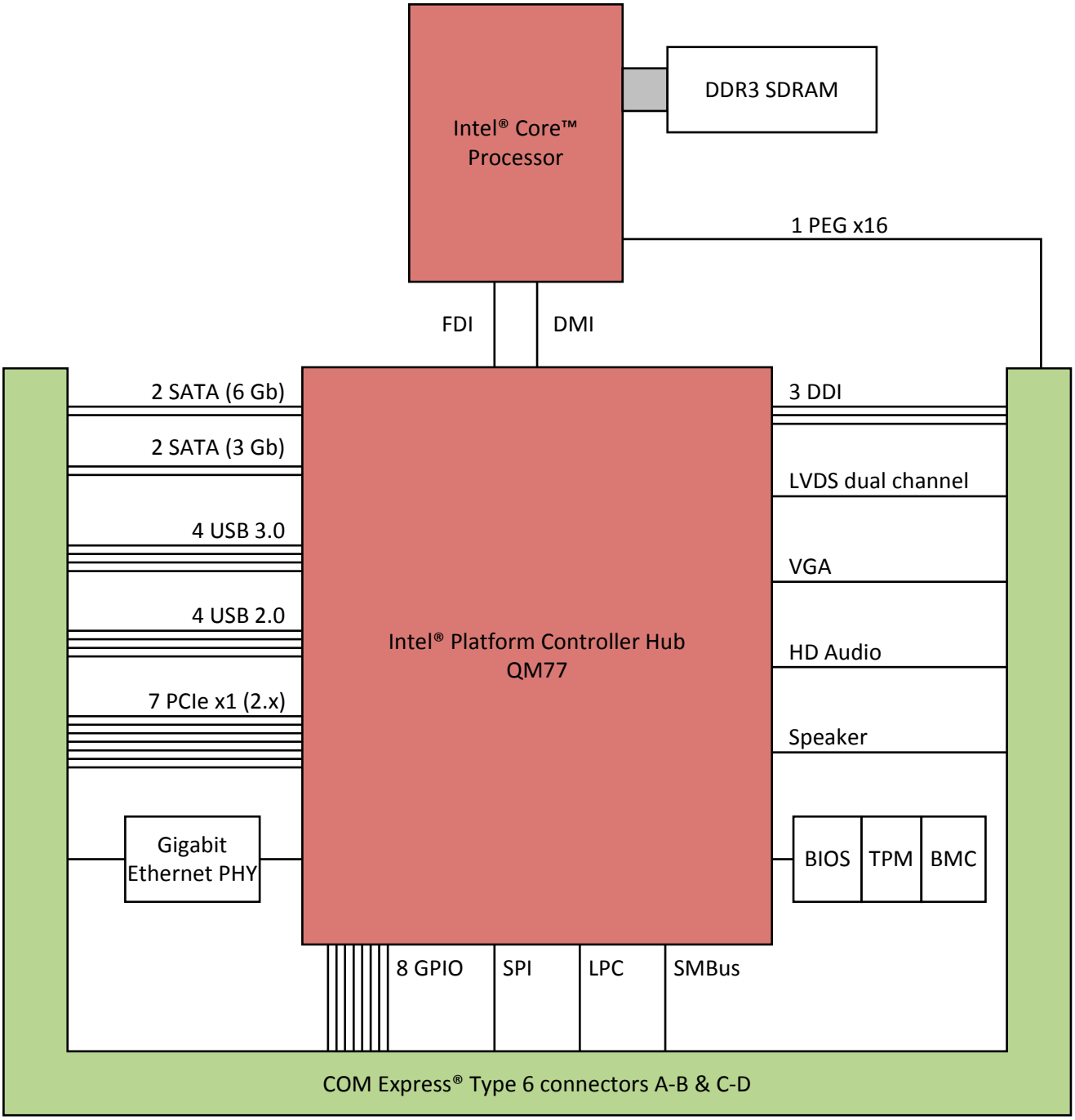
CB70C – Rugged COM Express® (VITA 59 RCE) with Intel® Core™ i7

- **Intel® Core™ i7, 3rd generation**
- **Quad-core 64-bit processor**
- **Up to 16 GB DDR3 DRAM, ECC, soldered**
- **Board Management Control**
- **Active Management Technology**
- **Open CL 1.1 support**
- **9 V to 16 V extended input range**
- **-40°C to +85°C Tcase screened, depending on processor**
- **Conduction cooling**
- **VITA 59 in process, compliant with COM Express® Basic, type 6**
- **PICMG COM.0 COM Express® version also available**



The CB70C is a member of a new family of Rugged COM Express® modules which is controlled by a third generation Intel® Core™ i7 processor running at up to 3.1 GHz maximum turbo frequency bringing state-of-the-art PC technology onto a small form factor. This means a scalable performance with 1 up to 4 cores, integrated graphics, as well as support of Intel® AMT or Open CL 1.1.
The board can be controlled using a Board Management Controller and an adaptable BIOS which ensures flexibility in tailoring the complete system for the final application. Intel® AMT support is actively integrated in the BIOS adaptation.
The modules are 100% compatible to COM Express® modules of Pin-out Type 6. They conform to the new VITA-59 standard which specifies the mechanics to make COM Express® modules suitable for operation in harsh environments.
The modules are embedded in a covered frame ensuring EMC protection and allowing efficient conductive cooling. Air cooling is also possible by applying a heat sink on top of the cover.
The CB70C accommodates up to 16 GB of directly soldered main memory and supports other memory like USB Flash on the carrier board.
The interfaces include a combination of PCI Express® links, LVDS, DDI, VGA, high-definition audio, SATA, Ethernet and USB.
The CB70C is screened for operation from -40°C to +85°C (Tcase). Only soldered components are used to withstand shock and vibration, and the design is optimized for conformal coating.
For evaluation and development purposes a microATX carrier board is in preparation.

Diagram


Intel® Core™ Processor
DDR3 SDRAM
1 PEG x16
FDI
DMI
2 SATA (6 Gb)
2 SATA (3 Gb)
4 USB 3.0
4 USB 2.0
7 PCIe x1 (2.x)
Intel® Platform Controller Hub QM77
3 DDI
LVDS dual channel
VGA
HD Audio
Speaker
Gigabit Ethernet PHY
BIOS
TPM
BMC
8 GPIO
SPI
LPC
SMBus
COM Express® Type 6 connectors A-B & C-D

Technical Data

CPU	■ Intel® Core™ i7-3612QE □ 2.1 GHz processor core frequency □ 3.1 GHz maximum turbo frequency □ 1066 MHz system bus frequency ■ Chipset □ QM77 Platform Controller Hub (PCH)
Memory	■ 6 MB last level cache integrated in i7 processor ■ Up to 16 GB SDRAM system memory □ Soldered □ DDR3 with ECC support □ Up to 1066 MHz memory bus frequency ■ 16 MB boot Flash
Serial ATA (SATA)	■ Four ports via COM Express® connector ■ Two ports with SATA Revision 2.x support □ Transfer rates up to 300 MB/s (3 Gbit/s) ■ Two ports with SATA Revision 3.x support □ Transfer rates up to 600 MB/s (6 Gbit/s) ■ RAID level 0/1/5/10 support
Graphics	■ Integrated in processor and chipset ■ Maximum resolution: 2560 x 1600 pixels ■ One x16 link (PCI Express® graphics) ■ One VGA ■ Three DDI ports □ For DP, HDMI, DVI, SDVO ■ One LVDS dual channel □ Up to 48-bit RGB ■ Available via COM Express® connector
USB	■ Four USB 3.0 host ports □ Data rate up to 5 Gbit/s □ Downward compatible ■ Four USB 2.0 host ports □ Data rates up to 480 Mbit/s ■ Available via COM Express® connector
Ethernet	■ One 10/100/1000Base-T Ethernet channel ■ Three LED signals for LAN link, activity status and connection speed ■ Available via COM Express® connector
PCI Express®	■ Seven x1 links ■ PCIe® 2.x support ■ Data rate up to 500 MB/s in each direction (5 Gbit/s per lane) ■ Available via COM Express® connector
GPIO	■ 8 lines via COM Express® connector
HD Audio	■ Via COM Express® connector
Board Management Controller	■ Input voltage supervision ■ Power sequencing ■ Board monitoring ■ Watchdog ■ Accessible via SMBus

Technical Data

Miscellaneous	■ Real-time clock (with supercapacitor or battery backup on the carrier board) ■ SMBus interface ■ LPC ■ SPI ■ Speaker
Rugged COM Express® Specifications	■ In accordance with proposed standard VITA 59 RCE: Rugged COM Express® in process □ With conduction cooling cover and frame □ Rugged COM Express® Basic, Module Pin-out Type 6
Electrical Specifications	■ Supply voltage/power consumption: □ +12V (9 to 16 V), 48 W typ./ 70 W max. □ +5V (-5%/+5%) standby voltage, 1.1 W in standby operation
Mechanical Specifications	■ Dimensions: □ 135 mm x 105 mm x 18 mm (height) (conforming to VITA 59 RCE Basic format) ■ Rugged COM Express® PCB mounted between a cover and a frame ■ Weight: □ 460 g (incl. cover and frame) □ 90 g (without cover and frame)
Environmental Specifications	■ Temperature range (operation): -40..+85°C Tcase (Rugged COM Express® cover/frame) (screened) ■ Temperature range (storage): -40..+85°C ■ Relative humidity (operation): max. 95% non-condensing ■ Relative humidity (storage): max. 95% non-condensing ■ Altitude: -300 m to +3000 m ■ Shock: 50 m/s², 30 ms (EN 61373) ■ Vibration (function): 1 m/s², 5 Hz - 150 Hz (EN 61373) ■ Vibration (lifetime): 7.9 m/s², 5 Hz - 150 Hz (EN 61373) ■ Conformal coating on request
MTBF	■ 415 714 h @ 40°C according to IEC/TR 62380 (RDF 2000)
Safety	■ Flammability □ PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers
EMC	■ EMC behavior depends on the system and housing surrounding the COM Express® module. ■ The Rugged COM Express® module in its cover and frame supports the system to meet the requirements of □ EN 55022 (radio disturbance) □ IEC 61000-4-2 (ESD) □ IEC 61000-4-3 (electromagnetic field immunity) □ IEC 61000-4-4 (burst) □ IEC 61000-4-5 (surge) □ IEC 61000-4-6 (conducted disturbances)
BIOS	■ InsydeH2O™ UEFI Framework
Intel® Active Management Technology	■ Out of Band (OOB) Access □ Power off Access □ Independent of OS status □ Power status control □ Keyboard-Video-Mouse (KVM) Viewer (VNC-compatible) □ IDE-Redirect □ Serial-over-LAN ■ Manageability Engine in Chipset ■ Network Filters in Chipset ■ Dedicated Flash Storage Area

Technical Data

Software Support	■ Windows® ■ Linux ■ For more information on supported operating system versions and drivers see Downloads.

Configuration & Options

Standard Configurations

Article No.	CPU Type	Clock	System RAM	AMT	Temperature	Cover
15CB70C00	Core i7-3612QE	3.1 GHz	8 GB	yes	-40..+85°C Tcase	yes
15CB70C01	Celeron 827E	1.4 GHz	2 GB	no	-40..+85°C Tcase	yes

Options

CPU	■ Intel® Core™ i7-3615QE □ Quad Core, 2.3 GHz, 6 MB Cache, 45 W ■ Intel® Core™ i7-3612QE □ Quad Core, 2.1 GHz, 6 MB Cache, 35 W ■ Intel® Core™ i7-3555LE □ Dual Core, 2.5 GHz, 4 MB Cache, 25 W ■ Intel® Core™ i7-3517UE □ Dual Core, 1.7 GHz, 4 MB Cache, 17 W ■ Intel® Core™ i5-3610ME □ Dual Core, 2.7 GHz, 3 MB Cache, 35 W ■ Intel® Core™ i3-3120ME □ Dual Core, 2.4 GHz, 3 MB Cache, 35 W ■ Intel® Core™ i3-3217UE □ Dual Core, 1.6 GHz, 3 MB Cache, 17 W ■ Intel® Celeron® 1020E □ Dual Core, 2.2 GHz, 2 MB Cache, 35 W ■ Intel® Celeron® 1047UE □ Dual Core, 1.4 GHz, 2 MB Cache, 17 W ■ Intel® Celeron® 927UE □ Single Core, 1.5 GHz, 1 MB Cache, 17 W ■ Intel® Celeron® 827E □ Single Core, 1.4 GHz, 1.5 MB Cache, 17 W
Memory	■ System RAM □ 2 GB, 4 GB, 8 GB or 16 GB
COM Express®	■ Also available in accordance with PICMG COM.0 COM Express® Module Base Specification □ Without conduction cooling wings, without cover and frame ■ COM Express® Basic (135 mm x 105 mm), Module Pin-out Type 6
Cooling Concept	■ Conduction-cooled versions according to VITA 59 RCE: Rugged COM Express® in process ■ Air-cooled versions according to PICMG COM.0 COM Express® standard

Please note that some of these options may only be available for large volumes. Please ask our sales staff for more information.

Ordering Information

Standard CB70C Models	**15CB70-00**	COM Express® "Basic", type 6, Intel® i7-3612QE, 2.3 GHz, 8 GB RAM, -40..+85°C Tcase screened; without VITA-59 conduction cooling frame
	15CB70C00	Rugged COM Express® "Basic", type 6, Intel® i7-3612QE, 2.3 GHz, 8 GB RAM, -40..+85°C Tcase screened; with VITA-59 conduction cooling frame
	15CB70C01	Rugged COM Express® "Basic", type 6, Intel® Celeron® 827E, 1.4. GHz, 2 GB RAM, -40..+85°C Tcase screened; with VITA-59 conduction cooling frame
Miscellaneous Accessories	**05CB70-00**	Heat spreader for COM Express® CB70
Software: Linux	This product is designed to work under Linux. See below for potentially available separate software packages from MEN.	
	13MM02-90	Linux driver (MEN) for RX8581 real-time clock for SC24, MM2 and F75P
For operating systems not mentioned here contact MEN sales.		
Documentation	Compare Chart Computer-On-Modules » Download You can find the official COM Express® Carrier Design Guide on www.comexpress-pnp.org or directly on www.picmg.org (PDF).	

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