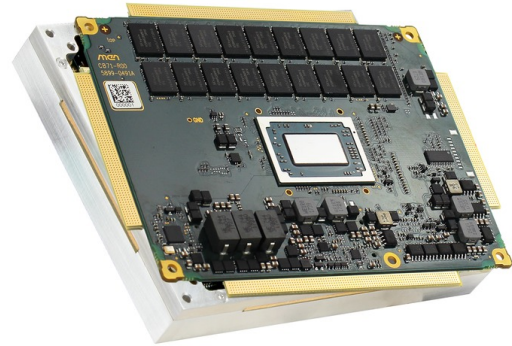


# CB71C

## Rugged COM Express Module with AMD V1000 ANSI-VITA 59 RCE Module

- » AMD V1000 APU
- » Up to 32 GB DDR4 RAM with ECC
- » Up to 4 Digital Display Interfaces (DP, eDP, HDMI, DVI)
- » Hardware memory encryption
- » Safety-relevant supervision functions
- » Virtualization-ready
- » Excellent price-performance ratio
- » -40°C to +85°C Tcase, depending on processor
- » Conduction cooling
- » VITA 59 in process, compliant with COM Express Basic, type 6
- » PICMG COM.0 COM Express version also available



### Ultra-rugged VITA 59 COM Express

The CB71C is an ultra-rugged COM Express module for rail, public transportation and industry applications, e.g. data acquisition, infotainment, transcoding, live 3D. It is 100% compatible to COM Express Type 6 Pin-Out and conforms to the VITA 59 standard which specifies the mechanics to ensure reliable operation even under the harshest environmental conditions.

### Perfect for Harsh Environments

The modules are embedded in a closed aluminum frame, which ensures optimum EMC protection and efficient conduction cooling. Direct air cooling is possible by placing a heat sink on the cover. The CB71C is designed for operation from -40°C to +85°C (housing). To withstand serious shock and vibration, only soldered components are used. The design is optimized for conformal coating.

### Powerful Processing and Graphics on a Single Chip

The CB71C is based on AMD's V1000 APU family. It is equipped with a Radeon Vega next-generation 3D graphics engine and supports up to 4 displays with a resolution of up to 4k without the need for additional graphics hardware. With up to four high-performance

processor cores and AMD-V extension, the CB71C is also suitable for virtualization.

### Excellent Price/Performance Ratio, Flexible Design

The CB71C can be equipped with a wide range of long-term available processors with scalable performance, all supporting ECC. Passive cooling is possible with low-power versions.

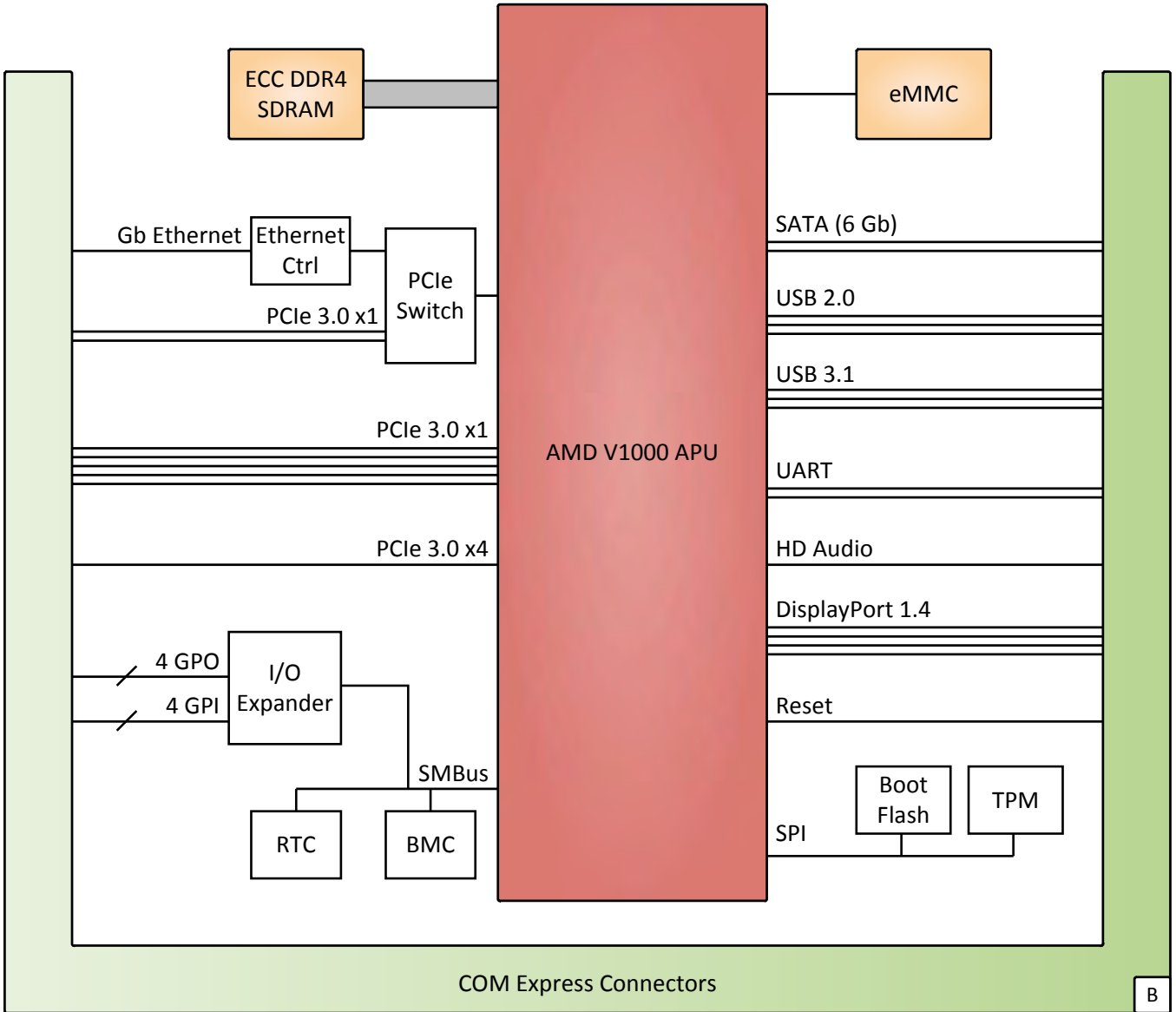
### Safety and Security

The board features an advanced board management controller with monitoring functions for safety-relevant applications. In addition, the CB71C has a Trusted Platform Module and supports hardware memory encryption, providing protection against both physical and inter-VM storage attacks. This is essential for security-critical applications such as payment and ticketing terminals, fleet management or monitoring.

### Memory and I/O

The CB71C can be equipped with up to 32 GB of directly soldered DDR4 main memory and a 16 GB eMMC. Available high-speed interfaces include PCI Express 3.0 links, DDI (DP, eDP, HDMI), SATA 3.0, Gigabit Ethernet and USB 3.0.

Onboard  Options



**Diagram**



**CPU**

- The following CPU types are supported:
  - AMD V1404I, 4 cores, 4 threads, tbd GHz, 15W, 2 MB cache
  - AMD V1807B, 4 cores, 8 threads, 3.35 GHz, 35-54W, 2 MB cache

**Memory**

- System RAM
  - Soldered DDR4, ECC
  - 32 GB max.

**Security**

- TPM (Trusted Platform Module 2.0)

**Mass Storage**

- The following mass storage devices are assembled:
  - eMMC (soldered); 16 GB max.

**Graphics**

- Processor graphics
- Maximum resolution: 4096x2160 pixels @ 60 Hz, 24 bpp (DisplayPort 1.4)

**Interfaces**

- SATA
  - 2x SATA Revision 3.x, board to board
- Video
  - 4x DisplayPort, board to board
- HD Audio
  - 1x, board to board
- USB
  - 3x USB 3.1, board to board
  - 3x USB 2.0, board to board
- PCI Express
  - 7x PCIe 3.0, x1, board to board
  - 1x PCIe 3.0, x4, board to board
- Ethernet
  - 1x 1000BASE-T, board to board
- Serial
  - 2x UART, board to board
  - Physical interfaces, e.g., RS232 or RS422/RS485, depending on implementation on carrier board
- GPIO
  - 4x GPI, board to board
  - 4x GPO, board to board
- Reset
  - 1x, board to board

**Supervision and Control**

- Board management controller
- Watchdog timer
- Temperature measurement
- Real-time clock

**Product Standard**

- VITA 59 RCE: Basic, Pin-out Type 6, VITA 59 RCE Rugged COM Express in process
- COM Express: Basic, Pin-out Type 6, PICMG COM.0 COM Express Module Base Specification

**Computer-On-Module Standard**

- CB71C: VITA 59 RCE: Rugged COM Express in process
  - With conduction cooling cover and frame
  - Rugged COM Express Basic, Module Pin-out Type 6
- CB71: PICMG COM.0 COM Express Module Base Specification
  - COM Express Basic, Module Pin-out Type 6

**Electrical Specifications**

- Supply voltage
  - +12 V (9.5 to 15.5 V)

**Mechanical Specifications**

- Dimensions
  - 135 mm x 105 mm x 18 mm (models conforming to VITA 59 RCE Basic format, PCB mounted between a cover and a frame)
  - 125 mm x 95 mm (models conforming to PICMG COM.0 COM Express Basic format)

**Environmental Specifications**

- Temperature range (operation)
  - -40°C to +85°C Tcase (VITA 59 cover/frame), compliant with EN 50155:2007, class TX (model 15CB71C00)
- Temperature range (storage): -40°C to +85°C, compliant with EN 50155:2007
- 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
- Humidity: EN 50155:2007 (+25/+55 °C, 90-100 %)
- Altitude: -300 m to +3000 m
- Shock: EN 61373:2010
  - Location: Vehicle body (Cat. 1; Class B)
- Vibration: EN 61373: 2010
  - Location: Vehicle body (Cat. 1; Class B)

**Safety**

- Electrical Safety
  - EN 50155:2007
  - EN 50153:2014
  - EN 50124-1:2001 + A1:2003 + A2:2005
- Fire Protection
  - EN 45545-2, hazard level HL3

**EMC (Railway)**

- EMC behavior depends on the system and housing surrounding the COM Express module.
- Radiated Emission: EN 50121-3-2:2015
- Conducted Emission: EN 50121-3-2:2015
- Immunity: EN 50121-3-2:2015

**EMC (Automotive)**

- ECE R10 Rev.5 (E-mark)

**BIOS**

- AMI UEFI Firmware

**Software Support**

- Linux
- Windows (on request)
- **For more information on supported operating system versions and drivers see Software.**

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**Up-to-date information, documentation and ordering information:**

[www.men.de/products/cb71c/](http://www.men.de/products/cb71c/)

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