

BL72E

Rugged Embedded Box PC with AMD Ryzen for Transportation Maintenance-Free Industrial System for High-Performance Computing

- » AMD V1000 APU, up to 32 GB DDR4 DRAM
- » WLAN, 4G LTE, GNSS
- » 2.5" HDD/SSD, NVMe storage
- » Gigabit Ethernet, USB 3.0, DisplayPort, Audio
- » RS232, RS422/RS485, IBIS
- » 2 slots for CAN, MVB
- » Class S2 wide-range power supply, incl. ignition
- » -40 °C to +70 °C (+85 °C), fanless
- » Compliant to EN 50155 (railways)



For IoT or Storage-Intensive Applications

The BL72E is a fanless, maintenance-free box computer for embedded applications in transportation, e.g., in trains.

It offers a SATA HDD/SSD shuttle providing the storage capacity necessary for entertainment servers or video surveillance systems, plus eMMC memory and an M.2 slot for PCIe based storage (NVMe).

Cost-Efficient High-End Processor Performance

The BL72E is based on AMD's Ryzen V1000 APU family featuring excellent power-per-watt performance and a Radeon Vega next-generation 3D graphics engine. With up to four high-performance processor cores and AMD virtualization support, and up to 32 GB soldered-down DDR4 SDRAM, the BL72E offers powerful computing for handling data intensive work loads efficiently, e.g. for implementation of complex algorithms for deep learning or machine intelligence.

Multi-Talent for Wireless Communication

The BL72E can take over typical on-board wireless functions, such as an Internet connection for passengers or locating the vehicle. A GNSS positioning interface is available. Two PCI Express Mini Card slots and two M.2 slots provide maximum flexibility in implementing mobile service standards up to 4G LTE or WLAN IEEE 802.11, and derivatives.

A total of eight externally accessible micro-SIM card slots is available. As an option, the box can be delivered with a second I/O board offering additional LTE modems, storage and I/O.

Multitude of I/O

The BL72E supports one DisplayPort interface with maximum 4K resolution. A multitude of other I/O is available, including four Gigabit Ethernet, audio, two USB 3.0, RS232, RS422/RS485, IBIS, digital inputs and outputs. An MVB master or slave or a CAN interface can optionally be implemented.

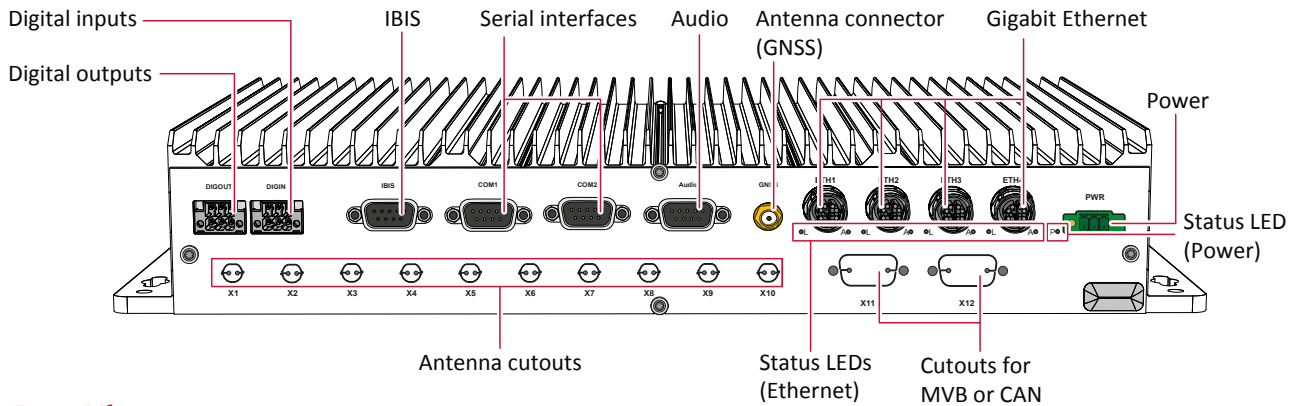
Railway-Compliant PSU with Ignition Function

The BL72E comes with a class S2 wide range power supply and complies to EN 50155. The power can be switched on and off using an ignition signal on the power connector.

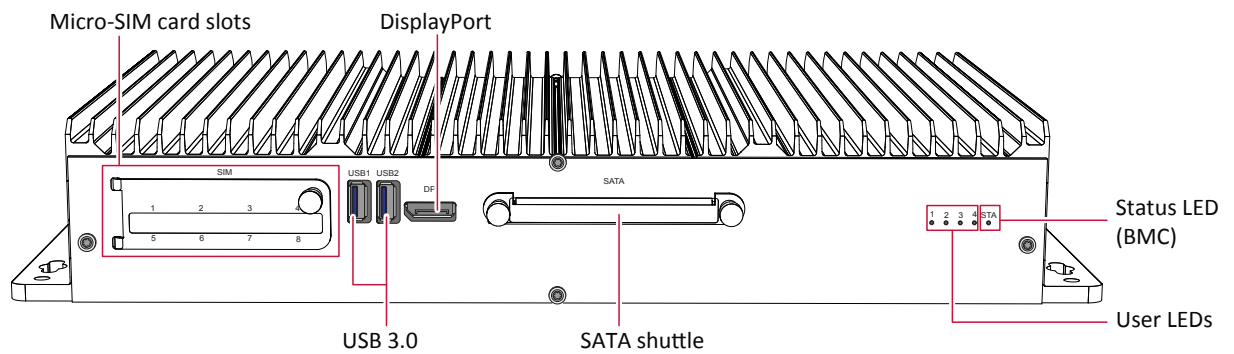
Fanless Operation for Mobile Applications

The system offers long-term availability for 10 years and is designed for fanless operation at temperatures from -40 °C to +70 °C (+85 °C for up to 10 minutes). Its rugged aluminum housing with cooling fins serves as a heat sink and provides conduction cooling.

Front View



Rear View



CPU

- The following CPU types are supported:
 - AMD V1404I, 4 cores, 4 threads, tbd GHz, 15W, 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 can be assembled:
 - SSD/HDD 2.5" (SATA)
 - SSD M.2 (NVMe)
- The following mass storage devices are assembled:
 - eMMC (soldered); 16 GB

Graphics

- Processor graphics
- Maximum resolution: 4096 x 2160 pixels @ 60 Hz, 36 bpp

Wireless Functionality

- Possible wireless functions:
 - GNSS
 - LTE
 - WLAN

Interfaces

- Video
 - 1x DisplayPort 1.4
- Audio
 - 1x, D-Sub, 9-pin, plug
 - Stereo line input, single-ended
 - Stereo line output, differential
 - S/PDIF output
- USB
 - 2x USB 3.0, Type A
- Ethernet
 - 4x 1000BASE-T, M12 X-coded
- Wireless
 - GNSS antenna connector: 1x, SMA receptacle
- PCI Express Mini Card
 - 2x PCI Express Mini Card slot
 - Slot 1: PCIe Full-Mini; PCIe x1, USB 2.0
 - Slot 2: PCIe Full-Mini; PCIe x1, USB 2.0
- M.2 Card
 - 2x M.2 Card slot
 - Slot 3: M.2 3042 (LTE) socket 2 Key B; USB 2.0, USB 3.0
 - Slot 4: M.2 3042 (LTE) socket 2 Key B; USB 2.0, USB 3.0
- SIM card
 - 8x micro-SIM card slot, externally accessible
- Digital I/O
 - 4x digital input, isolated, PCB plug, 6-pin
 - 4x digital output, isolated, PCB plug, 6-pin
 - 1x odometer input, isolated, PCB plug, 6-pin
- Serial
 - 2x RS422/RS485, isolated, D-Sub, 9-pin, plug
 - 2x RS232, isolated, D-Sub, 9-pin, plug
- IBIS
 - 1x IBIS Slave, isolated, D-Sub, 9-pin, receptacle
- LED
 - Status: board status (BMC), power status
 - Mass storage: power, activity
 - Ethernet: link, activity
 - User configurable: 4x
- Cutout
 - Antenna connector options: RP-SMA receptacle, RP-SMA plug, SMA receptacle, SMA plug
 - D-Sub options: CAN bus, MVB
- Power
 - 1x power inlet
 - Ignition input
 - Earthing connection

Supervision and Control

- Board management controller
- Temperature measurement
- Watchdog timer
- Real-time clock, buffered by supercapacitor (3 days)

Electrical Specifications

- Supply voltage
 - 24 V DC to 110 V DC nom. (EN 50155)
- Power consumption: 40 W max.

Mechanical Specifications

- Dimensions
 - (W) 390 mm, (D) 215 mm, (H) 66 mm
- Weight: 5.5 kg max.
- Mounting possibilities
 - Wall-mount
 - Rack-mount in 19" cabinet
- Cooling
 - Air cooling, natural convection, airflow 0.4 m/s
- Protection rating
 - IP20

Product Compliance: Rail - Rolling Stock

- Operating temperature: -40 °C to +70 °C (EN 50155:2017, class OT4, ST1)
- Storage temperature: -40 °C (EN 50155:2017) to +85 °C (EN 60068-2-2, Bb)
- Humidity: +55 °C and +25 °C, 100 % max. (EN 50155:2017)
- Shock: 30 ms @ 50 m/s² (EN 61373:2010/AC:2017-09, vehicle body, cat. 1, class B)
- Vibration: 10 min @ 2.02 m/s² and 5 h @ 11.44 m/s² (EN 61373:2010/AC:2017-09, cat. 1, class B x 2)
- Power supply
 - General compliance with power supply requirements of EN 50155:2017
 - Interruption of voltage supply: 10 ms (EN 50155:2017, class S2)
- Electrical Safety
 - EN 50155:2017
 - EN 50153:2014 + A1:2017
 - EN 50124-1:2017
 - EN ISO 13732-1:2008
- Fire protection: EN 45545-2:2013 + A1:2015, HL3
- EMC emission: EN 50121-3-2:2016
- EMC immunity: EN 50121-3-2:2016

Reliability

- MTBF: 210 067 h @ 40 °C according to IEC/TR 62380 (RDF 2000)

BIOS

- AMI Aptio UEFI Firmware

Software Support

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

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