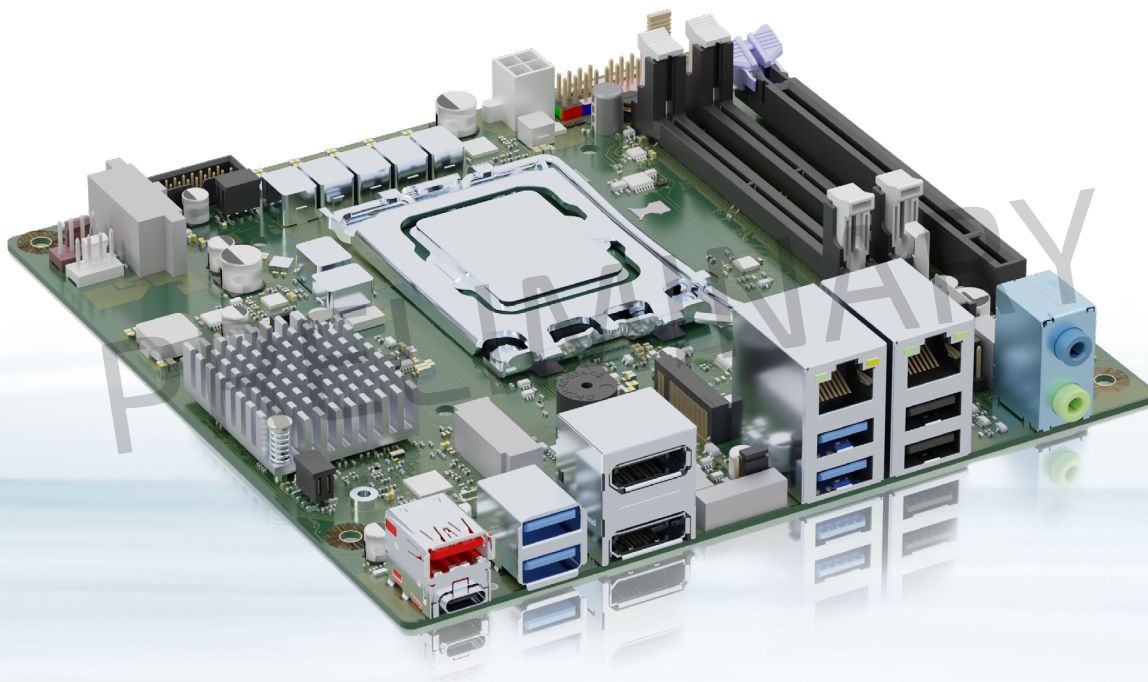


K3832-Q mITX

Industrial Series



Intel® Q670E Chipset and Intel® 12th & 13th Gen Core™ i3/i5/i7/i9 Processors

- ▶ Latest DDR5 memory technology for best-in-class system performance
- ▶ Intel® UHD Graphics 7xx driven by Xe Architecture; DPP-, eDP-, and LVDS- support
- ▶ Dual LAN 1GbE/2.5GbE incl. Teaming and TSN support
- ▶ M.2 Key-M & Key-E; Powerful USB 3.2 Gen2
- ▶ Combined Single 12 V PSU or ATX12VO (Intel-compliant) PSU

K3832-Q mITX

Industrial Series

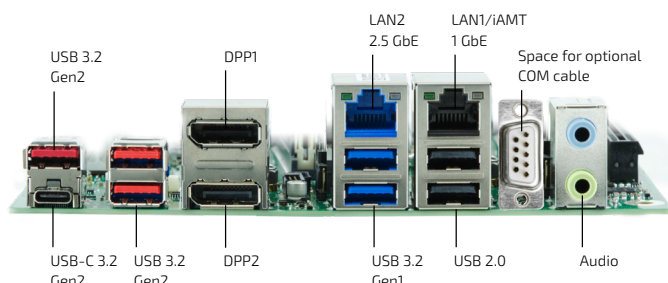
The Industrial Motherboard K3832-Q mITX is equipped with the highly performant Intel® Q670E Chipset. It also offers a multitude of supporting processors such as the Intel® Core™ i9/i7/i5/i3 (12th/13th Gen) and the Intel® Pentium®/Intel® Celeron® processor series. The motherboard impresses with iAMT-based out-of-band management features, TSN and real-time support (TCC) for specific

industrial applications, and support for the latest standards, such as PCI Express® Gen5 and DDR5 memory technology. Designed and approved for 24/7 continuous operation and an enhanced temperature range up to 60 °C the K3832-Q mITX fits perfectly with special requirements of certain markets.

PRODUCT HIGHLIGHTS

- ▶ Intel® 12th/13th Gen Core™ Processor Series
- ▶ DDR5-4800/5600 SODIMM, max. 64 GByte
- ▶ cTDP – Easy & flexible reduction of CPU TDP
- ▶ Supporting Intel® iAMT features and Intel® Time Coordinated Computing (TCC)
- ▶ PCI Express® x16 (Gen5 prepared)
- ▶ 1x Intel® GbE LAN, 1x 2.5GbE incl. Teaming and TSN
- ▶ Intel® UHD Graphics 7xx driven by Xe Architecture; 2x DisplayPort V1.4a @4k; 1x Dual Channel LVDS; 1x eDP V1.4b
- ▶ Intel® High Definition 5.1 Audio; Intel® integrated TPM V2.0
- ▶ 8 Bit GPIO; 2x COM port
- ▶ 4x USB 3.2 Gen2, 4x USB 3.2 Gen1, 2x USB 2.0
- ▶ 1x M.2 2242 (Key-M, PCIe/NVME SSD modules)

- ▶ M.2 2230 (Key-E, WLAN/Bluetooth modules, incl. CNVi support)
- ▶ BIOS-POST/-Boot & OS – HW Watchdog onboard



TECHNICAL INFORMATION

| | | |
|--------------------------------|--------------------------------|---|
| SYSTEM | PROCESSOR | Intel® Core™ i9/i7/i5/i3 (12th/13th Gen) processor series Intel® Pentium®/Intel® Celeron® processor series Socket LGA1700, max. 65 W TDP (For details on supported processors please refer to Kontron FTP Server) |
| | CHIPSET | Intel® Q670E Chipset |
| | MEMORY | 2 SODIMM Sockets DDR5-4800/5600***, max. 64 GByte, Dual Channel unbuffered, non-ECC |
| VIDEO | GRAPHICS | Intel® UHD Graphics 7xx (depends on installed processor), 2x DisplayPort V1.4a @4k; 1x eDP V1.4b @4k; 1x Dual Channel (24Bit) LVDS @Full HD |
| AUDIO | AUDIO CODEC | Tempo Semiconductor 92HD91B |
| | AUDIO INTERFACE | High Definition Stereo Audio Codec |
| NETWORK CONNECTION | ETHERNET 1 | Intel® i219LM with 10/100/1000 MBit/s, iAMT features, Wake-on-LAN (WoL) by interesting Packets, Link Status Change and Magic Packet™, PXE Support, BIOS MAC Address Display, Teaming Support |
| | ETHERNET 2 | Intel® i226LM with 10/100/1000/2500 MBit/s, TSN Support, Wake-on-LAN (WoL) by interesting Packets, Link Status Change and Magic Packet™, PXE Support, BIOS MAC Address Display, Teaming Support |
| PERIPHERAL CONNECTION | USB | 3x USB 3.2 Gen 2 (rear I/O, Type-A), 1x USB 3.2 Gen 2 (rear I/O, Type-C with locking option), 2x USB 3.2 Gen1 (rear I/O, Type-A), 2x USB 2.0 (rear I/O, Type-A), 2x USB 3.2 Gen1 (by header) 2x (by header)* 1x 8-Bit GPIO |
| | SERIAL PORT | |
| | OTHER I/Os | |
| STORAGE & EXPANSION | SATA | n. a. |
| | M.2 PCIe/NVME | 1x M.2 2242 (Key-M, PCIe/NVME SSD modules) |
| | M.2 WIRELESS | 1x M.2 2230 ((Key-E, WLAN/Bluetooth modules, incl. CNVi support) |
| | PCIe/PCI SLOTS | PCIe x16: 1x 16 lanes, Gen5** |
| | GPIO | 8 Bit GPIO (Input/Output); WLAN LED support; WLAN enable/disable support 3.3 V/5 V/12 V supply voltage output; SMBus controller PCA9554A |
| POWER | CONNECTOR INPUT VOLTAGE | Dual supply option: Single 12 V PSU ("DC In") or ATX12VO (Intel-compliant) PSU 10-pin socket (Single DC 12 V or 12V1-DC/12V5B/PS-On/PWR_OK) plus 4-pin socket (12 V CPU power connector) |

*) COM1: Full RS-232 feature support; requires extension cable with integrated COM transceiver (signal level converter) e.g. F5000-K011

COM2: Reduced RS-232 feature set without DCD/DTR/DSR/RI (flow control)

***) Support for DDR5-5600 pending. Requires Intel® Core™ i7 or i9 processor (13th gen) and single rank SO-DIMM modules

▶ TECHNICAL INFORMATION

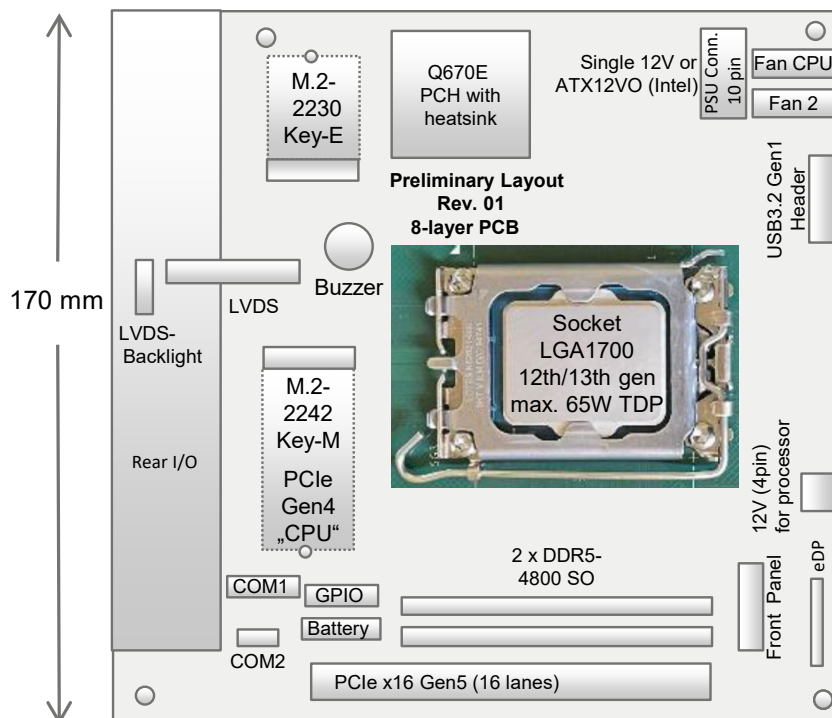
| | | |
|-----------------------|---|--|
| FIRMWARE | BIOS | AMI Aptio 5.x (UEFI) BIOS modified and adapted by Kontron; Recovery BIOS, SM-BIOS (DMI), BIOS and CPU Microcode Update, Quick Boot, Logo Boot, Quiet Boot, Plug & Play, Automatic DRAM and PCIe Configuration, BIOS Support for S.M.A.R.T., Advanced Power Management, ACPI S3/S4, Wake on time from S5. No legacy OS support, no MBR installation (UEFI only) |
| SYSTEM CONTROL | WATCHDOG REAL TIME CLOCK TPM FP HEADER | BIOS POST-/BIOS BOOT-/OS-HW Watchdog Integrated TPM V2.0 (Intel® integrated) 1x Header for Reset button, HDD LED & External Speaker, Power button, Power LED |
| SOFTWARE | SECURITY | Recovery BIOS, System and BIOS Password, Boot Sequence Control, Serial/USB- Port Access Protection, Write Protection for Flash BIOS, EraseDisk (BIOS Feature), Trusted Platform Module (TPM) |
| MECHANICAL | OS SUPPORT | MS Windows 10, MS Windows 11, MS Windows 10 IOTG, Linux-64 No legacy OS support, no MBR installation (UEFI only) |
| ENVIRONMENTAL | DIMENSIONS (L x W) | Mini-ITX: 6.7" x 6.7" (170 x 170 mm) |
| CERTIFICATION | OPERATION TEMPERATURE | 0 °C - 60 °C |
| | EMC & SAFETY | Planned: cTUVus acc. IEC62368-1, CE Class B incl. Industrial Immunity, UKCA, FCC-B verified |

▶ POWER SUPPLY REQUIREMENTS

| SOURCE | VOLTAGE | MIN. PS LOAD | MAX. VOLTAGE TOLERANCE | MOTHERBOARD CAPACITIVE LOAD | MOTHERBOARD MAX. CURRENT (continuous)* |
|-------------|-----------|--------------|------------------------|-----------------------------|--|
| Single 12 V | + 12 V | 0 A | ± 5 % | 1.800 µF (tbd) | 13 A (tbd) |
| ATX12VO | + 12 V | 0 A | + 5 %/-7 % | 1.800 µF (tbd) | 13 A (tbd) |
| | + 12 Vaux | 0 A | + 5 %/-7 % | 1.600 µF (tbd) | 1.5 A (tbd) |

*) Max. motherboard input current incl. processor and DRAM memory. Additional power for drives, USB devices, PCIe cards, eDP etc. is not included!
 Note: BIOS provides option to reduce CPU TDP/Turbo power in order to use PSU with limited loadability.
 Processor 65 W TDP: Max. Cont. Current = 13 A; max. Surge Current = 20 A (<10 ms)
 Processor 35 W TDP: Max. Cont. Current = 7 A; max. Surge Current = 14 A (<10 ms)

▶ CONNECTOR / SOCKET DIAGRAM



▶ TECHNICAL INFORMATION

| FEATURES | Board Size / Chipset VGA* / DVI / DPP / LVDS / eDP Stereo Audio / 5.1 Multichannel Audio / Front Panel Audio Buzzer / int. Speaker Support (mono) GbE LAN / 2.5GbE LAN / Dual 2.5GbE LAN WoL / LAN Boot / Teaming / TSN Intel® Standard Manageability / iAMT / vPro SATA / SATA RAID / M.2 SSD (NVME) / NVME RAID USB 2.0 / USB 3.2 Gen1 / USB 3.2 Gen2 / USB 3.2 Type-C FAN controlled & monitored / CPU / AUX1 / AUX2 / AUX3 TEMP monitored CPU / Onboard Sensors / External Sensor | Mini-ITX / Q670E - / - / + / + / + + / - / - + / + + / + / - + / + / + / + + / + / - - / - / + / - + / + / + / + + / + / - / - + / + / - |
|---------------------|--|--|
| SPECIAL FEATURES | Silent Fan / System Guard / cTDP Recovery BIOS / Flash Update / Multi Boot HDD Password / EraseDisk / TPM V2.0 BIOS POST Watchdog / BIOS Boot Watchdog / OS HW Watchdog Logo Boot Option High Efficiency Core Voltage Regulator Design Operating Mode 24-7 / 8-5 (hrs per day - days per week) Motherboard operating temperature range (chassis inside)** | + / + / + + / + / + + / + / + + / + / + + + + / - 0 °C – 60 °C |
| INTERNAL CONNECTORS | SODIMM Sockets (DDR5-4800/5600) / ECC-Support PCI Express® x16: 16 lanes - Gen5 SATA-600 / M.2 Key-M (NVME SSD) / M.2 Key-B M.2 2230 (Key-E, PCIe & USB2.0 for WLAN/Bluetooth) S/PDIF (digital Audio) OUT / IN Front Panel Audio (9-Pin, HD Audio) USB 2.0 / USB 3.2 (Gen1) / USB 2.0 Stick / USB 3.2 (Gen2) Stick*** Fan CPU / AUX1 / AUX2 / AUX3 Intrusion (Case Open) / GPIO (8Bit) / SM-Bus (Case Temp.) Serial Port Header (COM, RS-232)**** / Parallel Port Header / PS2 Header Front Panel (Power Switch, Reset Switch, LEDs, Intel 10 pin compatible) Multirail PSU (24 pin + 4 pin) / Single 12V PSU / ATX12VO ***** | 2 / - 1 - / 1 / - 1 - / - - 0 / 1 / 0 / 0 1 / 1 / - / - - / 1 / - 2 / - / - 1 - / + / + |
| EXTERNAL CONNECTORS | VGA Sub D* / DVI-I / DVI-D / DisplayPort V1.4a Audio Mic. In / Line in / Line out (or driver configuration) LAN (RJ-45) PS/2 Mouse / Keyboard USB 2.0 / USB 3.2 (Gen1) / USB 3.2 (Gen2) Serial (COM1, RS-232) Parallel (EPP/ECP) | - / - / - / 2 - / 1 / 1 2 - / - 2 / 2 / 4 (1) ***** - |

*) VGA possible via DP-VGA-converter (dongle)
**) Forced cooling required, see technical documentation for details
***) Each internal USB connector (pin header) provides two USB ports (except for USB stick socket)
****) COM1 requires extension cable with integrated COM transceiver (signal level converter) e.g. F5000-K011
*****) Single 12 V or ATX12VO: 10 pin + 4 pin PSU connectors
*****) COM1: Connector within rear I/O area with COM cable F5000-K011

▶ ORDERING INFORMATION

| ARTICLE | PART NO. | DESCRIPTION |
|----------------------|------------|---|
| K3832-Q mITX | F5120-V195 | Intel® 12th/13th Gen Core™ Processor Series, Intel® Q670E Chipset |
| ACCESSORIES | | |
| RISERCARD | F5000-R006 | 1x PCIe x4 (D3318-A) |
| COM1 EXTENSION CABLE | F5000-K011 | Cable with integrated COM transceiver; length = 75 mm |
| INTERNAL COM2 CABLE | F5000-K010 | 400 mm; fullsize slot bracket |

▶ GLOBAL HEADQUARTERS

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