

## Intel® Q670/R680E Chipset and Intel® Core™ Processors (14th Gen/Series 2)

- ▶ 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 ATX Standard PSU or Single 12V Supply

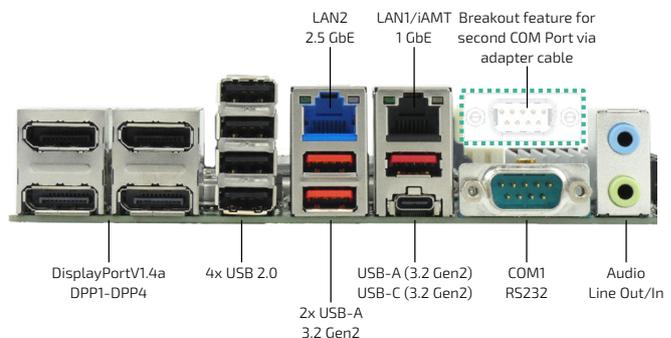
## K3836-Q/R mITX Industrial Series

The K3836 mITX motherboard is the successor to the prosperous D3633-S. It combines the proven functionality of its popular forerunner with the latest Intel® Core™ processor generation and latest standards. Developed and produced in Germany, this motherboard offers two configuration options: The K3836-R is equipped with the high-performance Intel® R680E chipset with ECC support for mission-critical applications. The K3836-Q has

the equally powerful Q670 chipset onboard. Unleash unparalleled connectivity with the K3836, featuring 2x Intel® LAN (1x 2.5 GbE), PCIe x16 Gen5, multiple USB ports, M.2 or Display Ports supporting graphics up to 8K resolutions and much more. It is particularly reliable thanks to 24/7 continuous operation at temperatures up to 60° C. Therefore, it can be used for various applications in the fields of industry, medicine, infotainment and more.

- Intel® Core™ processor series (12th/13th/14th Gen./Series 2)
- DDR5-4800/5600 SODIMM, max. 96 GByte
- ECC Support with R680E chipset
- 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;
- 4x DisplayPort V1.4a up to 8K; 1x eDP V1.4b @4K; 1x Dual Channel LVDS
- HD Audio onboard
- Intel® integrated TPM V2.0
- 8 Bit GPIO; 4x COM port

- 6x USB 3.2 Gen 2, 7x USB 2.0
- 1x M.2 2242/2280 (Key-M, PCIe/NVME SSD modules)
- M.2 2230 (Key-E, WLAN/Bluetooth modules)
- 4x SATA 6G incl. RAID support
- BIOS-POST/-Boot & OS – HW Watchdog onboard



## Technical Information

<b>SYSTEM</b>	<b>PROCESSOR</b>	Intel® Core™ processor series i9/i7/i5/i3 (12th, 13th, 14th gen) Intel® Core™ Processors Series 2 (Bartlett Lake-S <sup>6</sup> ) Intel® Pentium®/Intel® Celeron® processor series Socket LGA1700, max. 65 W TDP (For details on supported processors please refer to Kontron FTP Server) K3836-Q: Intel® Q670 K3836-R: Intel® R680E
	<b>CHIPSET</b>	K3836-Q: Intel® Q670 K3836-R: Intel® R680E
	<b>MEMORY</b>	2 SODIMM Sockets DDR5-4800/5600 <sup>1</sup> , max. 96 GByte, Dual Channel unbuffered
	<b>MEMORY ECC SUPPORT</b>	ECC supported by K3836-R with R680E only
<b>VIDEO</b>	<b>GRAPHICS</b>	Intel® UHD Graphics 7xx (depends on installed processor), 4x DisplayPort™ V1.4a up to 8K; 1x Embedded DP (eDP V1.4b up to 4K resolution) 1x Dual Channel LVDS (24 bit) Following max. display combinations are supported <sup>2</sup> : 4x DP, 3x DP + eDP, 3x DP + LVDS
<b>AUDIO</b>	<b>AUDIO CODEC</b> <b>AUDIO INTERFACE</b>	Realtek ALC256 High Definition Stereo Audio Codec <sup>3</sup>
<b>NETWORK CONNECTION</b>	<b>ETHERNET 1</b>	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
	<b>ETHERNET 2</b>	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
<b>PERIPHERAL CONNECTION</b>	<b>USB</b>	Rear I/O: 3x USB 3.2 Gen2 (Type-A), 1x USB 3.2 Gen 2 (Type-C), 4x USB 2.0 (Type-A) Internal: 2x USB 3.2 Gen2 (Key-B header), 2x USB 2.0 (by header), 1x USB 2.0 Stick socket
	<b>SERIAL PORT</b> <b>OTHER I/Os</b>	1x RS232/422/485, 3x RS232 (1x rear I/O, 3x by headers) <sup>4</sup> 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
<b>STORAGE &amp; EXPANSION</b>	<b>SATA</b> <b>M.2 PCIe/NVME</b> <b>M.2 WIRELESS</b> <b>PCIe/PCI SLOTS</b>	4x Serial ATA III 600 Interface (up to 6Gbit/s), NCQ, AHCI, RAID 0/1/5/10 1x M.2 2242/2280 (Key-M, PCIe/NVME SSD modules) 1x M.2 2230 (Key-E, WLAN/Bluetooth modules, PCIe + USB) PCIe x16: 1x 16 lanes, Gen5 <sup>5</sup> , Support for lane split (x16 or x8+x8)

<sup>1)</sup> Support for DDR5-5600 requires Intel® Core™ i7 or i9 processor (13th gen) and single rank SO-DIMM modules

<sup>2)</sup> Simultaneous use of LVDS and eDP is not supported.

<sup>3)</sup> 5.1 surround sound is supported via DisplayPort or S/PDIF

<sup>4)</sup> COM1 (Rear I/O), COM3 and COM4 (by header): Full RS232 feature support  
COM2 (by header): RS232/RS422/RS485 feature support

<sup>5)</sup> PCIe x16 slot: Gen5 ready

<sup>6)</sup> BIOS revision R2.20.0 or later is required to support Intel Bartlett Lake-S processors.

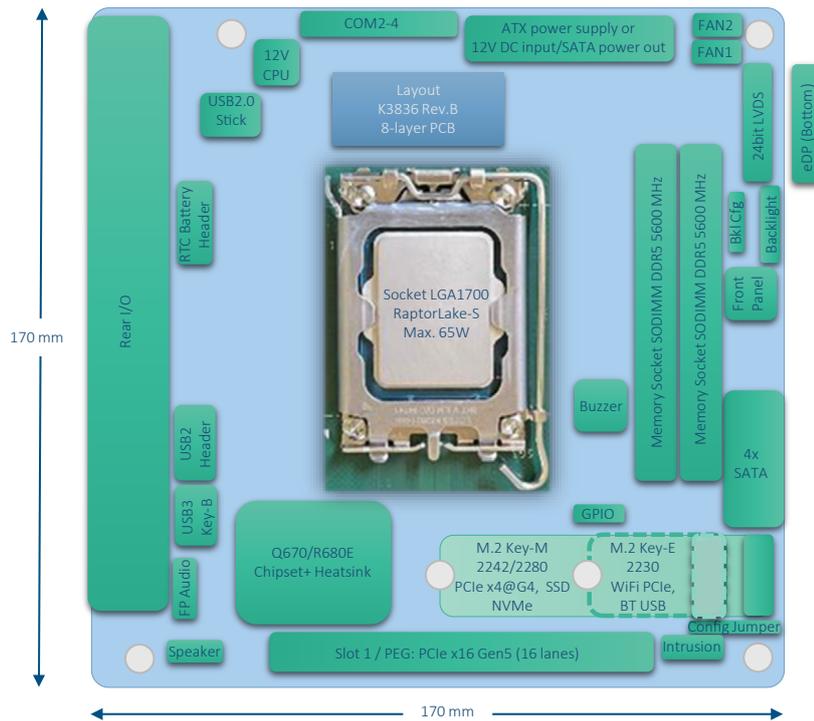
<b>POWER</b>	<b>INPUT VOLTAGE CONNECTOR</b>	Dual supply option: Single 12 V PSU ("DC In") or Standard ATX Multirail PSU 24-pin ATX socket plus 4-pin socket for CPU
<b>FIRMWARE</b>	<b>BIOS</b>	AMI Aptio 5.x (UEFI) BIOS modified and adapted by Kontron; Recovery BIOS, SM-BIOS (DMI), BIOS and CPU Microcode 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, Modern Standby S0ix, Wake on time from S5. No legacy OS support, no MBR installation (UEFI only) BIOS POST-/BIOS BOOT-/OS-HW Watchdog Integrated TPM V2.0 (Intel® integrated)
	<b>WATCHDOG REAL TIME CLOCK TPM</b>	
<b>SYSTEM CONTROL</b>	<b>FP HEADER SECURITY</b>	1x Intel compliant header for Power and Reset button, Power LED and HDD LED 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)
<b>SOFTWARE</b>	<b>OS SUPPORT</b>	MS Windows® 10, MS Windows® 10 IoT (LTSC), MS Windows® 11, MS Windows® 11 IoT (LTSC), Linux 64 Verified with MS Windows® Server 2022 and 2025 <sup>1</sup> No legacy OS support, no MBR installation (UEFI only)
<b>MECHANICAL</b>	<b>DIMENSIONS (L x W)</b>	Mini-ITX: 6.7" x 6.7" (170 x 170 mm)
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	0 °C - 60 °C
<b>CERTIFICATION</b>	<b>EMC &amp; SAFETY</b>	cTÜVus acc. IEC62368-1, CE Class B incl. Industrial Immunity, UKCA, FCC-B verified

<sup>1</sup>) MS Windows Server 2022 requires Intel® Raptor Lake-S Refresh P-Core only CPU and R680 chipset  
MS Windows Server 2025 requires Intel® Bartlett Lake 12P CPU and R680E chipset

## Power Supply Requirements

SOURCE	VOLTAGE	MIN. PS LOAD	MAX. VOLTAGE TOLERANCE	MOTHERBOARD CAPACITIVE LOAD	MOTHERBOARD MAX. CURRENT (continuous)*
Main Power Supply (Multirail PSU)	+ 12 V	0.05 A	± 5 %	1.900 µF	10 A
	- 12 V	n.a.	n.a.	-	Not used
	+ 5 V	0.2 A	± 5 %	1800 µF	4.5 A
	+ 3.3 V	0 A	± 5 %	500 µF	0.5 A
	+ 5 Vaux	0 A	± 5 %	1800 µF	2.5 A
Single 12V DC	+ 12 V	0 A	± 5 %	1.900 µF	13 A

\* ) 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 = 19 A (full Turbo Mode)  
Processor 35 W TDP: Max. Cont. Current < 8 A; max. Surge Current = 13 A (full Turbo Mode)



## Technical Details

FEATURES	Board Size / Chipset VGA / DVI / DP / LVDS / eDP Stereo Audio / 5.1 Multichannel Audio / Front Panel Audio Buzzer / int Speaker Support Mono / Stereo 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 / Q670 or R680E - / - / + / + / + + / - / + + / - / + + / + / - + / + / + / + + / + / - + / + / + / + + / - / + / + + / + / - / - + / + / -
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) <sup>1</sup>	+ / + / + + / + / + + / + / + + / + / + + + + / - 0 °C – 60 °C
INTERNAL CONNECTORS	SODIMM Sockets (DDR5-4800/5600) / ECC-Support PCI Express® x16: 16 lanes - Gen5 / Support for lane split (x16 or x8+x8) 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 (Gen2) / USB 2.0 Stick / USB 3.2 (Gen2) Stick <sup>3</sup> Fan CPU / AUX1 / AUX2 / AUX3 Intrusion (Case Open) / GPIO (8 Bit) / SM-Bus (Case Temp.) Serial Port Header <sup>4</sup> / Parallel Port Header / PS2 Header Front Panel (Power Switch, Reset Switch, LEDs, Intel 10 pin compatible) SATA Drive Power Connector Multirail PSU (24 pin + 4 pin) / Single 12V PSU / ATX12VO	2 / (+) <sup>2</sup> 1 / + 4 / 1 / - 1 1 / - 1 2 / 2 / 1 / 0 1 / 1 / - / - 1 / 1 / 1 3 / - / - 1 Via ATX connector (Single 12V mode) + / + / -
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)	- / - / - / 4 - / 1 / 1 2 - / - 4 / 0 / 4 1 -

<sup>1</sup>) Forced cooling required, see technical documentation for details

<sup>2</sup>) ECC support only with R680E chipset on K3836-R

<sup>3</sup>) Each internal USB connector (pin header) provides two USB ports (except for USB stick socket)

<sup>4</sup>) COM2 with RS232/RS422/RS485 support, COM3+COM4 with RS232 support

ARTICLE	PART NO.	DESCRIPTION
K3836-Q mITX	F5120-V197	Intel® Core™ processor series (12th, 13th, 14th Gen./Series 2), Intel® Q670 Chipset
K3836-R mITX	F5120-V198	Intel® Core™ processor series (12th, 13th, 14th Gen./Series 2), Intel® R680E Chipset

## Accessories

RISERCARD	S26361- F5000-R006	1x PCIe x4 (D3318-A)
INTERNAL SERIAL CABLE	S26361- F5000-K010	400 mm; fullsize slot bracket
SLIM HEATSINK LGA1700 65W	F5000-C030	Active cooler with backplate for Intel® LGA1700 socket CPU up to 65W TDP
M.2 KEY-E/A SATA ADDON	F5000-M004	K1201-A; AddOn for M.2 Key-E/A slot to provide two SATA 6G ports.
INTERNAL USB KEY-B TO IDC20 HEADER CABLE	F5000-K020	Adapter cable for USB Key-B header to provide standard IDC20 USB3 frontpanel header.

## Your Contact

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