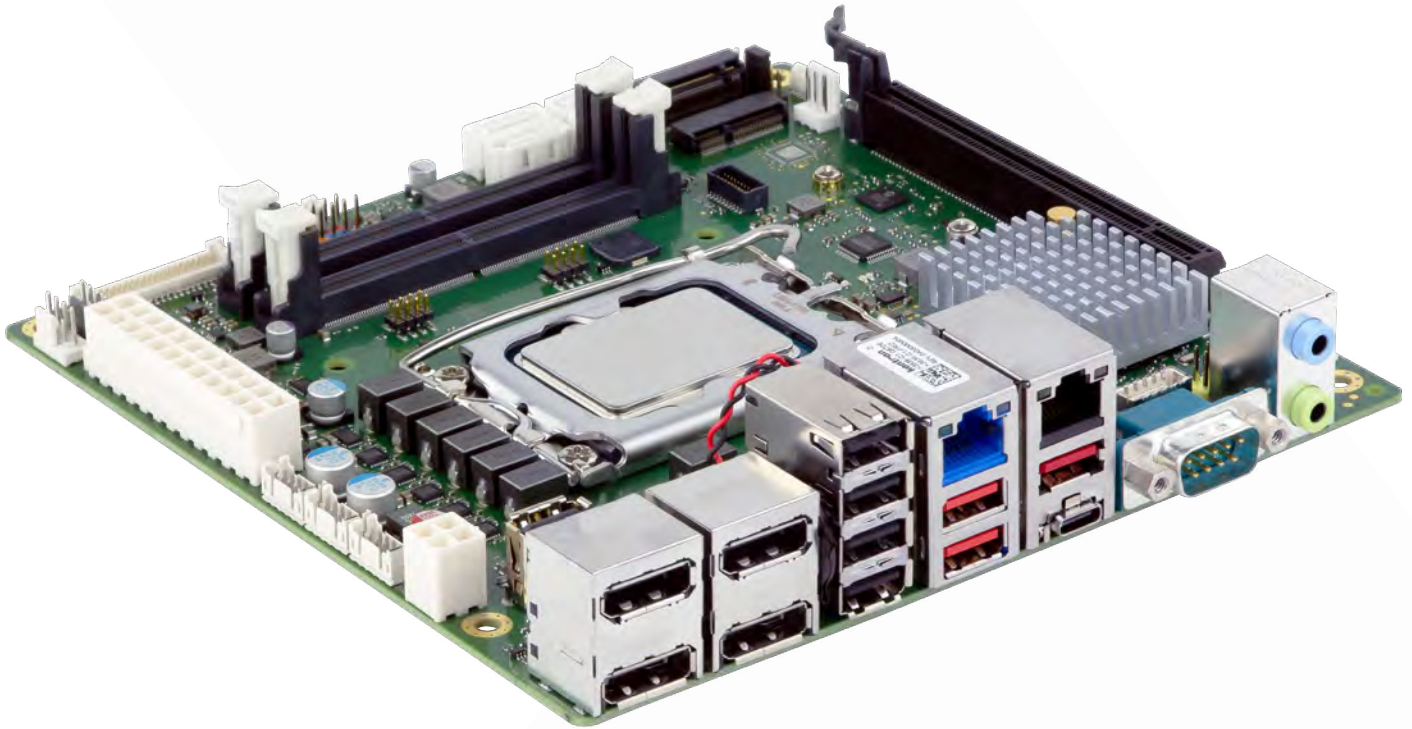


K3836-Q/R mITX

Industrial Series



Intel® Q670/R680E Chipset and Intel® Core™ Processors (12th, 13th, 14th gen)

- › 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

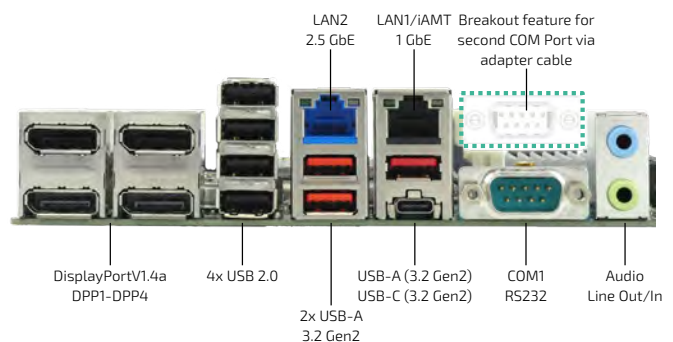
K3836-Q/R mITX Industrial Series

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)
- 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

SYSTEM	PROCESSOR	Intel® Core™ processor series i9/i7/i5/i3 (12th, 13th, 14th gen) Intel® Pentium®/Intel® Celeron® processor series Socket LGA1700, max. 65 W TDP (For details on supported processors please refer to Kontron FTP Server)
	CHIPSET	K3836-Q: Intel® Q670
	MEMORY	K3836-R: Intel® R680E
	MEMORY ECC SUPPORT	2 SODIMM Sockets DDR5-4800/5600 ¹⁾ , max. 96 GByte, Dual Channel unbuffered
VIDEO	GRAPHICS	ECC supported by K3836-R with R680E only
		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)
AUDIO	AUDIO CODEC	Following max. display combinations are supported ²⁾ : 4x DPP, 3x DPP + eDP, 3x DPP + LVDS
NETWORK CONNECTION	AUDIO INTERFACE	Realtek ALC256 High Definition Stereo Audio Codec ³⁾
	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	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
	SERIAL PORT	1x RS232/422/485, 3x RS232 (1x rear I/O, 3x by headers) ⁴⁾
	OTHER I/Os	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
STORAGE & EXPANSION	SATA	4x Serial ATA III 600 Interface (up to 6Gbit/s), NCQ, AHCI, RAID 0/1/5/10
	M.2 PCIe/NVME	1x M.2 2242/2280 (Key-M, PCIe/NVME SSD modules)
	M.2 WIRELESS	1x M.2 2230 (Key-E, WLAN/Bluetooth modules, PCIe + USB)
	PCIe/PCI SLOTS	PCIe x16: 1x 16 lanes, Gen5 ⁵⁾ , Support for lane split (x16 or x8+x8)

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

²⁾ Simultaneous use of LVDS and eDP is not supported.

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

⁴⁾ COM1 (Rear I/O), COM3 and COM4 (by header): Full RS232 feature support

COM2 (by header): RS232/RS422/RS485 feature support

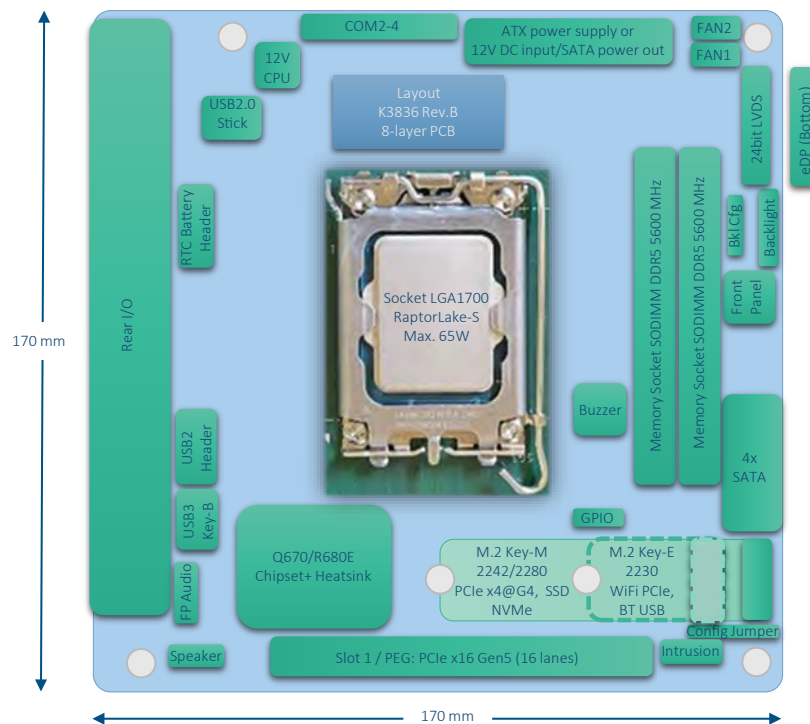
⁵⁾ PCIe x16 slot: Gen5 ready

POWER	INPUT VOLTAGE CONNECTOR	Dual supply option: Single 12 V PSU ("DC In") or Standard ATX Multirail PSU 24-pin ATX socket plus 4-pin socket for CPU
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, 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)
SYSTEM CONTROL	WATCHDOG REAL TIME CLOCK TPM	
	FP HEADER SECURITY	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)
SOFTWARE	OS SUPPORT	MS Windows® 10, MS Windows® 10 IoT (LTSC), MS Windows® 11, MS Windows® 11 IoT (LTSC), Linux 64 No legacy OS support, no MBR installation (UEFI only)
MECHANICAL	DIMENSIONS (L x W)	Mini-ITX: 6.7" x 6.7" (170 x 170 mm)
ENVIRONMENTAL	OPERATION TEMPERATURE	0 °C - 60 °C
CERTIFICATION	EMC & SAFETY	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)*
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 / DPP / 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) ¹	+ / + / + + / + / + + / + / + + / + / + + + + / - 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 ³ Fan CPU / AUX1 / AUX2 / AUX3 Intrusion (Case Open) / GPIO (8 Bit) / SM-Bus (Case Temp.) Serial Port Header ⁴ / 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 / (+) ² 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 -

¹) Forced cooling required, see technical documentation for details

²) ECC support only with R680E chipset on K3836-R

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

⁴) 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), Intel® Q670 Chipset
K3836-R mITX	F5120-V198	Intel® Core™ processor series (12th, 13th, 14th gen), 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	Box contains 40x cooler plus 40x backplate
M.2 KEY-E/A SATA ADDON	F5000-M004	AddOn for M.2 Key-E/A slot to provide two SATA 6G ports, Kit contains 40 x adapter K1201-A
INTERNAL USB KEY-B TO IDC20 HEADER CABLE	F5000-K020	Adapter cable for USB Key-B header to provide standard IDC20 USB3 frontpanel header.

Global Headquarters

Kontron Europe GmbH

Gutenbergstraße 2
85737 Ismaning, Germany
Tel.: + 49 821 4086-0
info@kontron.com

www.kontron.com