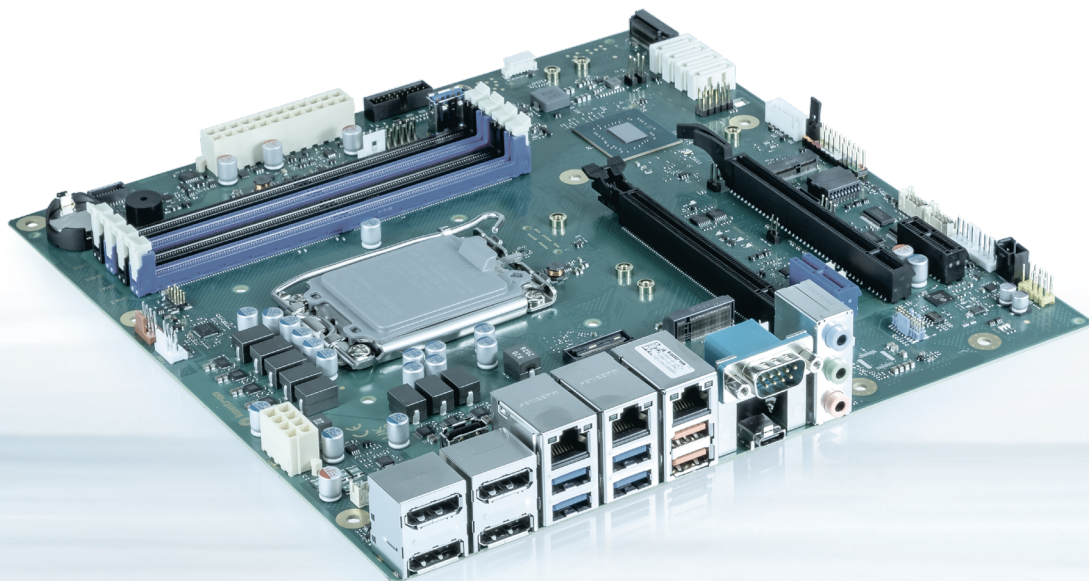


K3841-Q μ ATX

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
- ▶ Triple LAN 1GbE/2.5GbE incl. Teaming and TSN support
- ▶ Dual M.2 Key-M SSD & single M.2 Key-E WLAN sockets onboard
- ▶ Powerful USB 3.2 Gen 2/Type-C, 4x COM, GPIO

K3841-Q µATX

Industrial Series

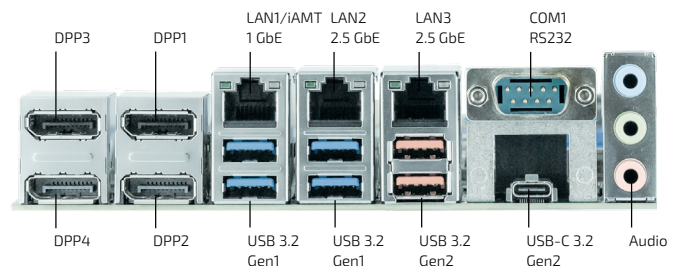
The Industrial Motherboard K3841-Q µATX is equipped with the highly performant Intel® Q670E Chipset. It also offers a multitude of supporting processors such as the Intel® Core™ i9/i7/i5/i3 (12th/13th Gen) and the Intel® Pentium®/Intel® Celeron® processor series. Designed and approved for 24/7 continuous operation and

an enhanced temperature range up to 60 °C the K3841-Q µATX provides high functionality and fits perfect with special requirements of certain markets. It offers iAMT-based Out-of-Band Management features. Besides, K3841-Q provides TSN and Realtime support (TCC) for specific industrial applications.

PRODUCT HIGHLIGHTS

- ▶ Intel® 12th/13th Gen Core™ Processor Series
- ▶ DDR5-4800 UDIMM, max. 128 GByte
- ▶ cTDP – Easy & flexible reduction of CPU TDP
- ▶ Supporting Intel® iAMT features and Intel® Time Coordinated Computing (TCC)
- ▶ PCI Express® x16 (Gen5 @ CPU prepared, Gen4 @ PCH)
- ▶ 1x Intel® GbE LAN, 2x 2.5GbE incl. Teaming and TSN
- ▶ Intel® UHD Graphics 7xx driven by Xe Architecture; 4x DisplayPort V1.4a @4k
- ▶ Intel® High Definition 5.1 Audio; Intel® integrated TPM V2.0
- ▶ 8 Bit GPIO; 4 x COM ports
- ▶ 3x USB 3.2 Gen 2, 6x USB 3.2 Gen1, 2x USB 2.0, 1x USB 3.2 Gen2 stick socket, 1x USB 2.0 stick socket
- ▶ 4x SATA 6G incl. RAID support

- ▶ 2x M.2 2230/2242/2280 (Key-M, PCIe/NVME SSD modules), incl. NVME RAID support
- ▶ 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. 125 W TDP (For details on supported processors please refer to Kontron FTP Server) Intel® Q670E Chipset 4 DIMM Sockets DDR5-4800, max. 128 GByte, Dual Channel unbuffered, non-ECC Effective memory speed of DDR5-4800 modules according Intel® specification: 1x DIMM per channel = max. DDR5-4400***** 2x DIMM per channel (single rank) = max. DDR5-4000 2x DIMM per channel (dual rank) = max. DDR5-3600
VIDEO	GRAPHICS	Intel® UHD Graphics 7xx (depends on installed processor), 4x DPP V1.4a
AUDIO	AUDIO CODEC AUDIO INTERFACE	Tempo Semiconductor 92HD91B 5.1- channel*, High Definition 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/ETHERNET 3	Intel® i225LM 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	2x USB 3.2 Gen 2 (rear I/O, Type-A), 1x USB 3.2 Gen 2 (rear I/O, Type-C with locking option), 4x USB 3.2 Gen1 (rear I/O, Type-A), 2x USB 3.2 Gen1 (by header), 2x USB 2.0 (by header), 1x USB 3.2 Gen2 (internal Type-A stick socket), 1x USB 2.0 (internal Type-A stick socket) 1x RS232 (rear I/O), 3x RS232 (by header)*** 1x 8-Bit GPIO
	SERIAL PORT OTHER I/Os	
STORAGE & EXPANSION	SATA	4x Serial ATA III 600 Interface (up to 6Gbit/s), NCQ, AHCI, RAID 0/1/5/10
	M.2 PCIe/NVME	2x M.2 2230/2242/2280 (Key-M, PCIe/NVME SSD modules), incl. NVME RAID support
	M.2 WIRELESS PCIe/PCI SLOTS	1x M.2 2230 ((Key-E, WLAN/Bluetooth modules, incl. CNVi support) PCIe x16: 1x 16 lanes, Gen5****/1x 4 lanes, Gen4 PCIe x1: 1x Gen3, "open slot"/1x Gen4, "closed slot"
	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	ATX (Multirail) plus 8-pin socket (12 V for CPU)

*) 5.1 surround sound is possible via digital output ports like S/PDIF or DisplayPort

**) Requires HW Rev. ≥ 02xx

***) Internal ports (COM3/COM4): Reduced feature set without DCD/DTR/DSR/RI (flow control). Fully featured COM port available with HW Rev. ≥ 02xxx

****) PCIe x16 (PEG) slot: Gen5 support prepared, but not validated

*****) Modules DDR5-5600 can be installed, but the max. effective speed is limited to DDR5-4400 (Intel design limitation for 12th Gen/13th Gen processors @ 4 DIMM sockets)

*****) BIOS Revision 2.x.x must be installed before using a 13th gen processor.

► 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) BIOS POST-/BIOS BOOT-/OS-HW Watchdog*
SYSTEM CONTROL	WATCHDOG REAL TIME CLOCK TPM FP HEADER	Integrated TPM V2.0 (Intel® integrated); socket for optional TPM module 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)	µATX: 9.6" x 9.6" (243.8 x 243.8 mm)
CERTIFICATION	OPERATION TEMPERATURE	0 °C - 60 °C
	EMC & SAFETY	CE TÜVus acc. IEC62368-1, CE Class B incl. Industrial Immunity, UKCA, FCC-B verified

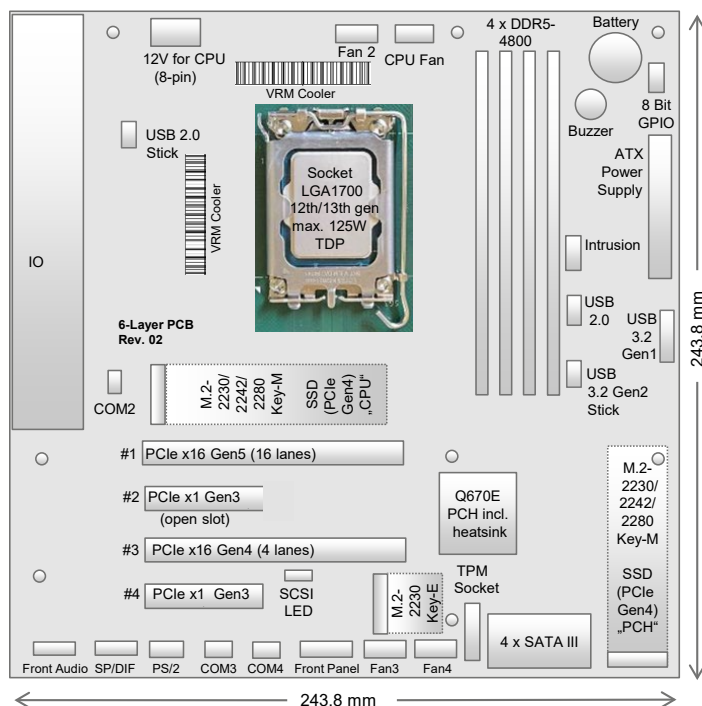
*) Requires HW Rev. ≥ 02xx

► POWER SUPPLY REQUIREMENTS

SOURCE	VOLTAGE	MIN. PS LOAD	MAX. VOLTAGE TOLERANCE	MOTHERBOARD CAPACITIVE LOAD	MOTHERBOARD MAX. CURRENT (continuous)*
Main Power Supply	+ 12 V	0 A	± 5 %	2.500 µF	26 A
	- 12 V	0 A	± 10 %	-	0.3 A
	+ 5 V	0 A	± 5 %	1.900 µF	6.0 A
	+ 3.3 V	0 A	± 5 %	1.100 µF	0.5 A
Aux	+ 5 Vaux	0 A	± 5 %	1.900 µF	2.5 A

*) Max. motherboard input current incl. processor and DRAM memory. Additional power for drives, USB devices, PCIe cards etc. is not included! Note: BIOS provides option to reduce CPU TDP/Turbo power in order to use PSU with limited loadability.
Processor 125 W TDP: Max. Cont. Current = 26 A; max. Surge Current = 39 A (< 10ms)
Processor 65 W TDP: Max. Cont. Current = 23 A; max. Surge Current = 34 A (< 10ms)
Processor 35 W TDP: Max. Cont. Current = 11 A; max. Surge Current = 19 A (< 10ms)

► 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	µATX / 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	DIMM Sockets (DDR5-4800) / ECC-Support PCI Express® x16: 16lanes-Gen5 / PCI Express® x16: 4lanes-Gen4 PCI Express® x1: Gen3-"open" / PCI Express® x1: Gen4-"closed" PCI Slots (32 Bit, 33 MHz, Rev. 2.3) / Mini-PCIe 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 + 8 pin) / Single 12 V PSU	4 / - 1 / 1 1 / 1 - / - 4 / 2 / - 1 1 / - 1 1 / 1 / 1 / 1 1 / 1 / 1 / 1 1 / 1 / - 3 / - / 1 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)	- / - / - / 4 1 / 1 / 1 3 - / - - / 4 / 3 1 -

*) VGA possible via DP-VGA-converter (dongle)

**) Internal PS/2 header available

***) Forced cooling required, see technical documentation for details

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

*****) Requires HW Rev. ≥ 02xx

► ORDERING INFORMATION

ARTICLE	PART NO.	DESCRIPTION
K3841-Q µATX	F5110-V193	Intel® 12th/13th Gen Core™ Processor Series, Intel® Q670E Chipset
ACCESSORIES		
SERIAL PORT CABLE	F5000-K010	400 mm, fullsize slot bracket
M.2 CARRIER BOARD	F5000-M001	D3352-A1

► GLOBAL HEADQUARTERS

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