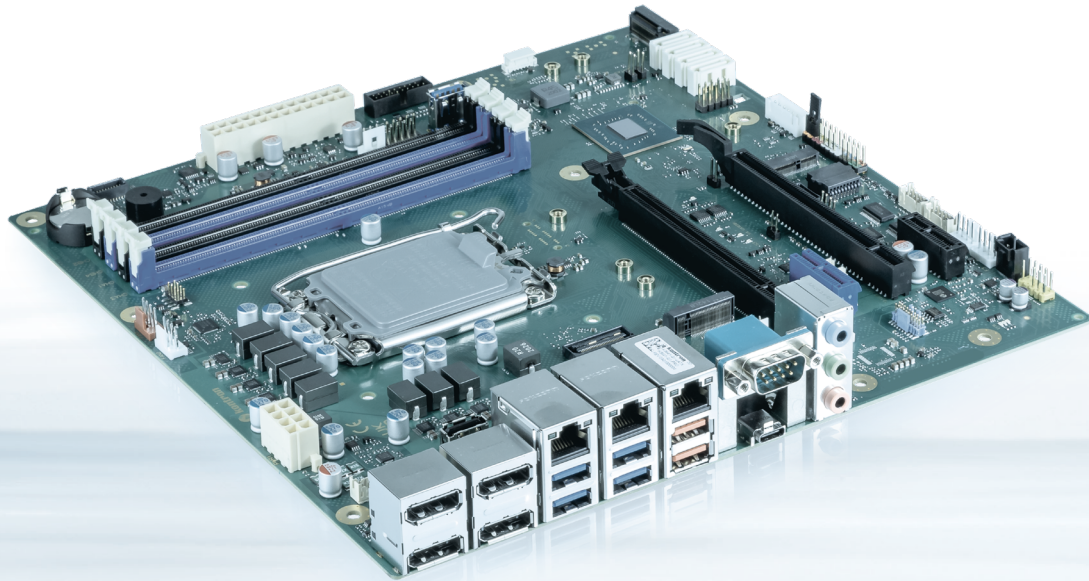


K3841-Q μ ATX

Industrial Series



Intel® Q670E Chipset and Intel® 12th 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

POSSIBILITIES START HERE



K3841-Q μATX

Industrial Series

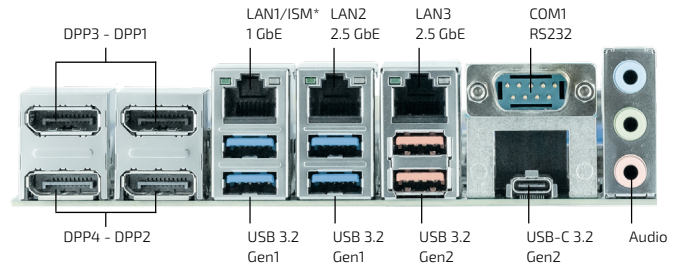
The Industrial Motherboard K3841-Q μATX is equipped with the highly performant Intel® Q670E Chipset. It also offers a multitude of supporting processors such as the Intel® Core™ i9/i7/i5/i3 (12th Gen) and the Intel® Pentium®/Intel® Celeron® processor series. Designed and approved for 24/7 continuous 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 basic manageability based on selected Intel® vPro® Essentials features. Besides, K3841-Q provides TSN and Realtime support (TCC) for specific industrial applications.

▶ PRODUCT HIGHLIGHTS

- ▶ Intel® 12th Gen Core™ Processor Series
- ▶ DDR5-4800 UDIMM, max. 128 GByte
- ▶ cTDP – Easy & flexible reduction of CPU TDP
- ▶ Supporting selected Intel® vPro® Essentials features and Intel® Time Coordinated Computing (TCC)
- ▶ PCI Express® x16 (Gen5 @ CPU, 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



*ISM = Intel Standard Manageability

▶ TECHNICAL INFORMATION

SYSTEM	PROCESSOR	Intel® Core™ i9/i7/i5/i3 (12th 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)
	CHIPSET	Intel® Q670E Chipset
	MEMORY	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	Tempo Semiconductor 92HD91B
	AUDIO INTERFACE	5.1- channel*, High Definition Audio Codec
NETWORK CONNECTION	ETHERNET 1	Intel® i219LM with 10/100/1000 MBit/s, basic manageability support, 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 2.0 Gen2 (internal Type-A stick socket), 1x USB 2.0 (internal Type-A stick socket)
	SERIAL PORT	1x RS232 (rear I/O), 3x RS232 (by header)
	OTHER I/Os	1x 8-Bit GPIO
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	1x M.2 2230 ((Key-E, WLAN/Bluetooth modules, incl. CNVi support)
	PCIe/PCI SLOTS	PCIe x16: 1x 16 lanes, Gen5/1x 4 lanes, Gen4
	GPIO	PCIe x1: 1x Gen3, "open slot"/1x Gen4, "closed slot"
		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 support via SPDIF output
**) Requires HW Rev. ≥ 02xx

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. HW Watchdog support*
SYSTEM CONTROL	WATCHDOG REAL TIME CLOCK TPM FP HEADER	No legacy OS support, no MBR installation (UEFI only) Recovery BIOS, System and BIOS Password, Boot Sequence Control 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, MS Windows Server Linux-64
ENVIRONMENTAL	DIMENSIONS (L x W)	No legacy OS support, no MBR installation (UEFI only) µATX: 9.6" x 9.6" (243.8 x 243.8 mm)
CERTIFICATION	OPERATION TEMPERATURE EMC & SAFETY	0 °C - 60 °C cTÜVus acc. IEC62368-1, CE Class B incl. Industrial Immunity, UKCA, FCC-B verified

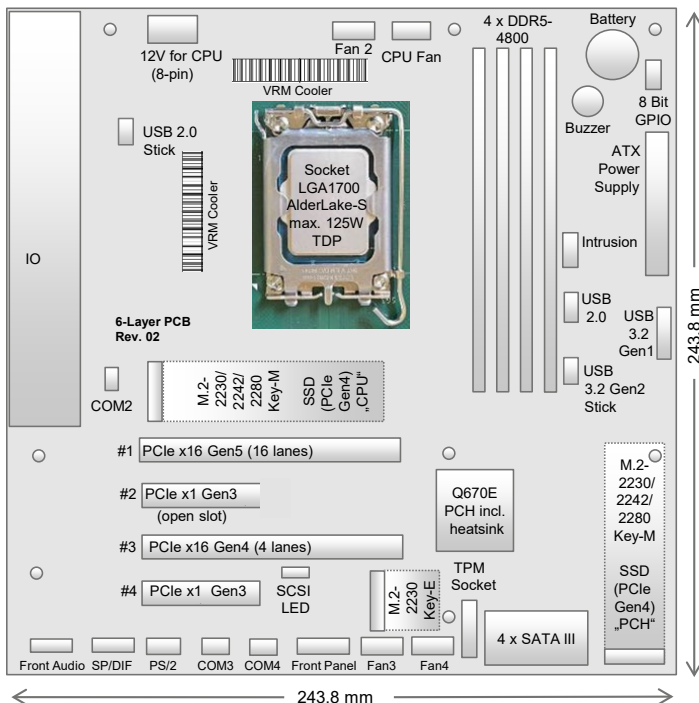
*) Requires HW Rev. ≥ 02xx

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-I / DVI-D / DPP / 2nd DPP / 3rd DPP / 4th DPP / LVDS / eDP Stereo Audio / 5.1 Multichannel Audio / Front Panel Audio Buzzer / int. Speaker Support (mono) Single GbE LAN / Dual 2.5GbE LAN / WoL / LAN Boot / Teaming / TSN Intel® Standard Manageability / vPro Essentials***** / iAMT 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 (either keyboard or mouse useable)

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

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

***** vPro Essentials: Selected features only

***** Requires HW Rev. ≥ 02xx

▶ ORDERING INFORMATION

ARTICLE	PART NO.	DESCRIPTION
K3841-Q µATX	F5110-V193	Intel® 12th 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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