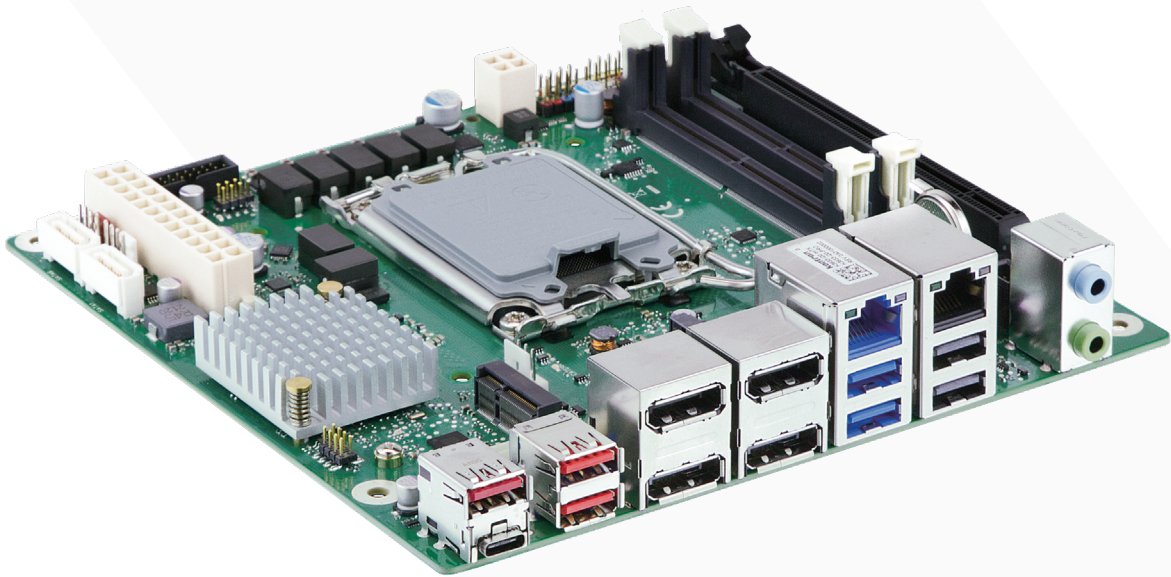


# K3833-Q mITX

## 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 X<sup>e</sup> Architecture
- ▶ Dual LAN 1GbE/2.5GbE incl. Teaming and TSN support
- ▶ M.2 Key-M SSD & M.2 Key-E WLAN sockets onboard
- ▶ Powerful USB 3.2 Gen 2/Type-C, and 8bit GPIO port

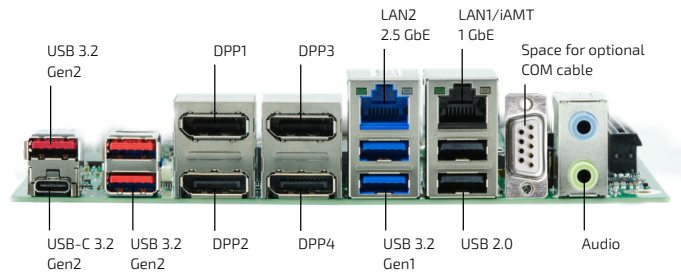
## K3931-N mITX Industrial Series

The Industrial Motherboard K3833-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 K3833-Q mITX fits perfectly with special requirements of certain markets.

- 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; 4x DisplayPort V1.4a up to 8K; 1x eDP V1.4b @4K
- Intel® High Definition 5.1 Audio; Intel® integrated TPM V2.0
- 8 Bit GPIO; 1x COM port
- 4x USB 3.2 Gen 2, 4x USB 3.2 Gen1, 2x USB 2.0
- 2x SATA 6G incl. RAID support

- 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

<b>SYSTEM</b>	<b>PROCESSOR</b>	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)
	<b>CHIPSET MEMORY</b>	Intel® Q670E Chipset 2 SODIMM Sockets DDR5-4800/5600****, max. 64 GByte, Dual Channel unbuffered, non-ECC
<b>VIDEO</b>	<b>GRAPHICS</b>	Intel® UHD Graphics 7xx (depends on installed processor), 4x DisplayPort V1.4a up to 8K; 1x eDP V1.4b @4K
<b>AUDIO</b>	<b>AUDIO CODEC AUDIO INTERFACE</b>	Tempo Semiconductor 92HD91B 5.1- channel**, High Definition Audio Codec
<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>	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) 1x (by header)* 1x 8-Bit GPIO
	<b>SERIAL PORT OTHER I/OS</b>	
<b>STORAGE &amp; EXPANSION</b>	<b>SATA M.2 PCIe/NVME M.2 WIRELESS PCIe/PCI SLOTS GPIO</b>	2x Serial ATA III 600 Interface (up to 6GBit/s), NCQ, AHCI, RAID 0/1 1x M.2 2242 (Key-M, PCIe/NVME SSD modules) 1x M.2 2230 ((Key-E, WLAN/Bluetooth modules, incl. CNVi support) PCIe x16: 1x 16 lanes, Gen5*** 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>POWER</b>	<b>CONNECTOR INPUT VOLTAGE</b>	ATX (Multirail) plus 4-pin socket (12 V for CPU)

\*) Requires extension cable with integrated COM transceiver (signal level converter) e.g. F5000-K011  
 \*\*) 5.1 surround sound is possible via digital output ports like S/PDIF or DisplayPort  
 \*\*\*) PCIe x16 slot: Gen5 support prepared, but not validated  
 \*\*\*\*) Support for DDR5-5600 pending. Requires Intel® Core™ i7 or i9 processor (13th gen) and single rank 50-DIMM modules

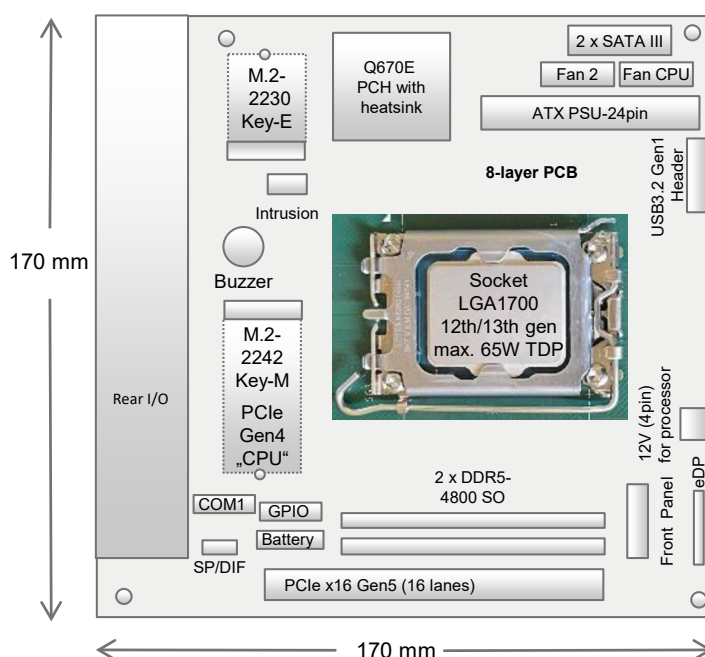
<b>FIRMWARE</b>	<b>BIOS</b>	AMI Aptio 5.x (UEFI) BIOS modified and adapted by Kontron; Recovery BIOS, SM-BIOS (DMI), BIOS and CPU Microcode Update, Quick Boot, Logo Boot, Quiet Boot, Plug & Play, Automatic DRAM and PCIe Configuration, BIOS Support for S.M.A.R.T., Advanced Power Management, ACPI S3/S4, Wake on time from S5.
	<b>WATCHDOG</b>	No legacy OS support, no MBR installation (UEFI only)
	<b>REAL TIME CLOCK</b>	BIOS POST-/BIOS BOOT-/OS-HW Watchdog
	<b>TPM</b>	Integrated
<b>SYSTEM CONTROL</b>	<b>FP HEADER</b>	1x Header for Reset button, HDD LED & External Speaker, Power button, Power LED
	<b>SECURITY</b>	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 11, MS Windows 10 IOTG, Linux-64
<b>MECHANICAL</b>	<b>DIMENSIONS (L X W)</b>	No legacy OS support, no MBR installation (UEFI only)
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	Mini-ITX: 6.7" x 6.7" (170 x 170 mm)
<b>CERTIFICATION</b>	<b>EMC &amp; SAFETY</b>	0 °C - 60 °C Planned: cTÜVus 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 (continous)*
Main Power Supply	+ 12 V	0 A	± 5 %	1.800 µF	< 10 A
	- 12 V	n.a.	n.a.	-	-
	+ 5 V	0 A	± 5 %	1.600 µF	5 A
	+ 3.3 V	0 A	± 5 %	500 µF	0.5 A
Aux	+ 5 Vaux	0 A	± 5 %	1.600 µF	2 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 < 10 A; max. Surge Current = 24 A (full Turbo Mode)  
 Processor 35 W TDP: Max. Cont. Current < 5 A; max. Surge Current = 12 A (full Turbo Mode)

## Connector/Socket Diagram



<b>FEATURES</b>	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 - / - / + / - / + - / + / - + / + + / + / - + / + / + / + + / + / - + / + / + / - + / + / + / + + / + / - / - + / + / -
<b>SPECIAL FEATURES</b>	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
<b>INTERNAL CONNECTORS</b>	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 12 V PSU	2 / - 1 2 / 1 / - 1 1 / - - 0 / 1 / 0 / 0 1 / 1 / - / - 1 / 1 / - 1 / - / - 1 + / -
<b>EXTERNAL CONNECTORS</b>	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 - / - 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)  
 \*\*\*\* ) Requires extension cable with integrated COM transceiver (signal level converter) e.g. F5000-K011  
 \*\*\*\*\* ) COM1: Connector within rear I/O area with COM cable F5000-K011

## Ordering Information

ARTICLE	PART NO.	DESCRIPTION
K3833-Q mITX	F5120-V196	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

## Global Headquarters

Kontron Europe GmbH

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

www.kontron.com

