

# ➤ Motherboards Product Facts

Quality made in Germany

**kontron**

## ➤ Kontron Motherboard Team

Sales, R&D, Product Management, Technical Support,  
Test, Marketing



## ➤ A strong partner worldwide

### Motherboards by Kontron

Kontron offers a comprehensive portfolio of high quality, long-term available and competitive motherboards – designed and made in Germany. The comprehensive line-up, from compact Mini-STX up to full-sized ATX form factor fulfills most different requirements for various applications from diverse vertical markets like Industrial Automation, POS/POI, KIOSK, Digital Signage, Medical, Casino Gaming, Video Surveillance or Transportation.

Kontron motherboards support latest processors and chipset platforms and utilize advanced technology components. They are designed for continuous operation (24/7) in an extended temperature range and on high system load. Kontron motherboards are specified for a temperature range between 0 °C and max. 60 °C and come up with an availability of up to 7 years from the release date, based on embedded key components. In addition, a corresponding portfolio on chassis kit solutions (SMARTCASE™), add on cards and related 3rd party accessories is also available. Furthermore, Kontron offers many value-added services like detailed documentation, a professional life-cycle management and customizing tools.

## ➤ Motherboards Overview

Kontron's wide product range helps you to meet today's requirements. The products offer highest reliability, security and ease of use of features. Motherboards from Kontron are designed to fulfill customer needs.

In order to have the perfect solutions for all clients, Kontron features two motherboard families:

## ➤ The Extended Lifecycle Series Semi-industrial Features

- D3642-B  $\mu$ ATX
- D3644-B  $\mu$ ATX
- D3674-B Thin mITX
- K3842-Q1 & K3842-Q2  $\mu$ ATX
- K3843-B & K3843-B2  $\mu$ ATX
- K3921-H mSTX

## ➤ The Industrial Motherboard Series Special Features for Industrial Needs

### AMD

- D3713-V/R mITX
- D3714-V/R mSTX
- D3723-R mITX
- D3724-R mSTX

### Intel®

- D3633-S mITX
- D3634-S mITX
- D3641-S  $\mu$ ATX
- D3646-S ATX
- K3831-H Thin mITX
- K3832-Q mITX
- K3833-Q mITX
- K3841-Q  $\mu$ ATX
- K3851-R ATX
- K3921-N mSTX
- K3931-N mITX





## ➤ Motherboards Designed and made in Germany

### Highest quality through German engineering and production

The design quality benefits from more than 30 years of experience in the development of motherboards. Comprehensive product validation and test as well as a modern manufacturing of the boards guarantee reliable function under all operating conditions.

### Comprehensive feature and tool set

Kontron provides unique features and tools, which enables our partners and customers to modify, adjust, test and produce their systems independent of the manufacturer.

### Excellent technical support

Our professional technical support team has direct access to experts in hardware and BIOS development as well as on-site production and is always happy to assist our customers and partners.

### Strict lifecycle management and reliable product maintenance

To ensure the highest possible revision stability, changes are only made when it is absolutely necessary. In this case, changes are communicated to customers at an early stage via a strict lifecycle management process.

### Beneficial total-cost-of-ownership

Kontron's customers benefit from short lead-times, least field failure rates and low transportation costs within the EU.





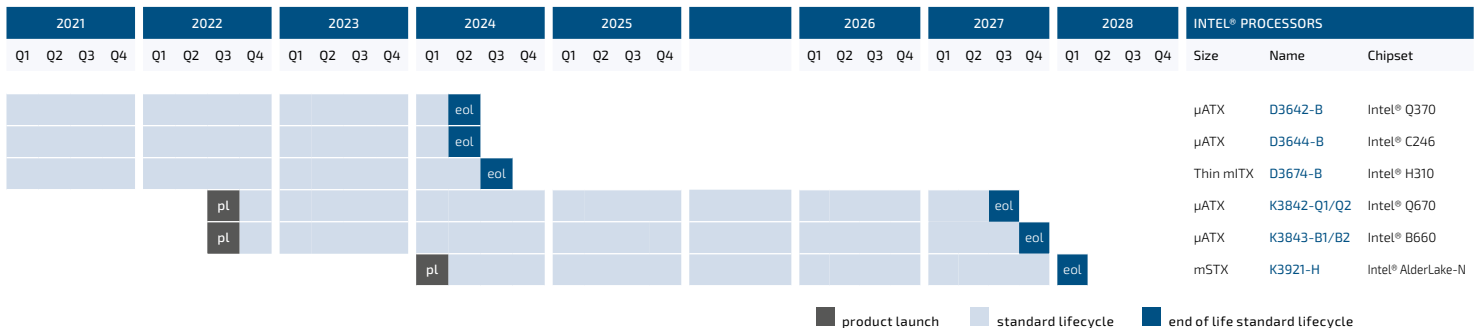
## ➤ The Extended Lifecycle Series

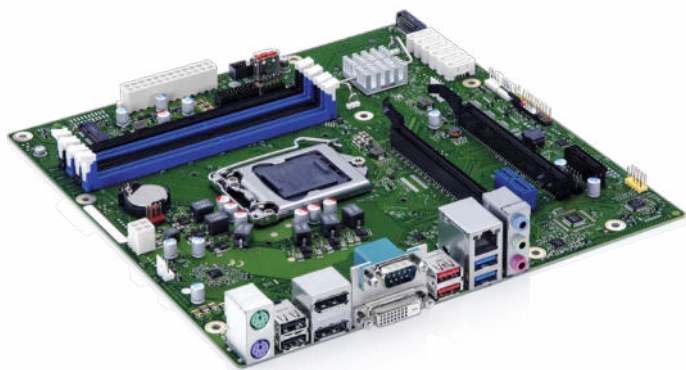
The standard lifecycle of desktop motherboards is 12 months to a maximum of 18 months. Taking into consideration the enormous expense necessary for certification and engineering, that time frame is too narrow for many commercial applications. To solve this problem, Kontron offers selected semi-industrial motherboards for an extended lifecycle with min. 36 months.

### Characteristic features

Motherboards of the Extended Lifecycle Series are designed for long-term, continuous operations (24/7) in advanced temperature environments. Nevertheless, these products will cover fast moving technology trends to be applicable in many vertical markets:

- Video Surveillance
- Medical Systems
- Webhosting
- CAD Workstations
- Vending/POS/ATM/KIOSK/Ticketing & Digital Signage

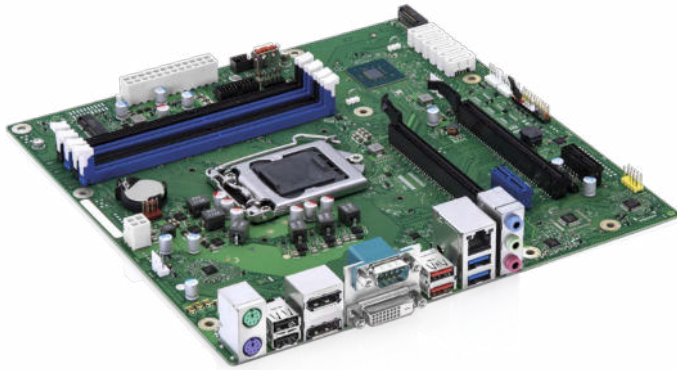




### Product Highlights

- Intel® 8th/9th Gen Core™ Processor Series
- DDR4 2666 SDRAM, max. 64 GByte
- cTDP – Easy & flexible reduction of CPU TDP
- Supporting Intel® AMT 12.0/vPro
- PCI Express® x16 (Gen.3)
- Intel® GbE LAN
- Intel® UHD Graphics (DX12)
- 1x DVI-D, 2x DP V1.2
- Intel® High Definition 5.1 Audio; Infineon TPM V2.0
- 1x COM port
- 4x USB 2.0, 6x USB 3.2 Gen1, 2x USB 3.2 Gen2, 1x USB 3.2 Gen2 stick socket
- 6x SATA 6G incl. RAID support
- M.2 2280 (PCIe-based SSD modules)
- M.2 2230 (WLAN/Bluetooth modules)
- BIOS-POST/-Boot & OS – HW Watchdog onboard

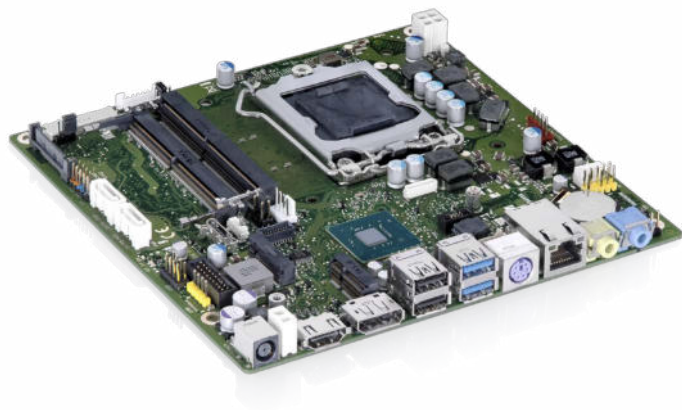
<b>BASEBOARD</b>	<b>DIMENSIONS</b> <b>CHIPSET</b>	9.6" x 9.6" (243.8 x 243.8 mm) Intel® Q370
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b> <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	Intel® Core™ 8th/9th Gen Processor Series Intel® LGA1151 95 W  yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	64 GByte 4 DDR4 2400/2666
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b> <b>GRAPHICS INTERFACES</b>	Intel® UHD Graphics; DX 12 1x DVI-D, 2x DP V1.2, Optional VGA-Ext. D3653
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b> <b>IAMT/VPRO</b>	1x Intel® i219LM yes/yes
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	5.1 Multich. Realtek ALC671 -/yes -
<b>EXTENSION SLOTS</b>	<b>PCIe X16/X8/X4/X1/PCI</b> <b>MINI-PCIe/MSATA</b> <b>M.2 SSD</b> <b>(PCIe AND/OR SATA)</b> <b>M.2 WLAN (KEY-E)</b>	2/-/-/2/- - 1x M.2 Key-M Socket (2280) for PCIe (4 lanes) based M.2 Modules yes
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/4 (2 x pin header) 2 (pin header)/1 (3.2 Gen2) 6/yes - -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	2/2 - 2 1
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	- ATX PSU (Multirail)
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	10 °C - 50 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (Infineon) yes yes -



### Product Highlights

- Intel® 8th/9th Gen Core™ & Intel® Xeon® Processor Series
- DDR4 2666 SDRAM, max. 64 GByte
- cTDP – Easy & flexible reduction of CPU TDP
- Supporting Intel® AMT 12.0/vPro
- PCI Express® x16 (Gen.3)
- Intel® GbE LAN
- Intel® UHD Graphics (DX12); 1x DVI-D, 2x DP V1.2
- Intel® High Definition 5.1 Audio; Infineon TPM V2.0
- 1x COM port
- 4x USB 2.0, 6x USB 3.2 Gen1, 2x USB 3.2 Gen2, 1x USB 3.2 Gen2 stick socket
- 6x SATA 6G incl. RAID support
- M.2 2280 (PCIe-based SSD modules)
- M.2 2230 (WLAN/Bluetooth modules)
- BIOS-POST/-Boot & OS – HW Watchdog onboard

<b>BASEBOARD</b>	<b>DIMENSIONS CHIPSET</b>	9.6" x 9.6" (243.8 x 243.8 mm) Intel® C246
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b> <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	Intel® Core™ 8th/9th Gen & Xeon® Processor Series Intel® LGA1151 95 W  yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	64 GByte 4 DDR4 2400/2666 ECC support
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b> <b>GRAPHICS INTERFACES</b>	Intel® UHD Graphics; DX 12 1x DVI-D, 2x DP V1.2, Optional VGA-Ext. D3653
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b> <b>IAMT/VPRO</b>	1x Intel® i219LM yes/yes
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	5.1 Multich. Realtek ALC671 -/yes -
<b>EXTENSION SLOTS</b>	<b>PCI E X16/X8/X4/X1/PCI</b> <b>MINI-PCIe/MSATA</b> <b>M.2 SSD</b> <b>(PCIe AND/OR SATA)</b> <b>M.2 WLAN (KEY-E)</b>	2/-/-/2/- - 1x M.2 Key-M Socket (2280) for PCIe (4 lanes) based M.2 Modules yes
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/4 (2 x pin header) 2 (pin header)/1 (3.2 Gen2) 6/yes - -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1/</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	2/2/ - 2 1
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	- ATX PSU (Multirail)
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	10 °C - 50 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (Infineon) yes yes -



### Product Highlights

- Intel® 8th/9th Gen Core™ i Processor Series
- DDR4 2666 SDRAM memory capacity up to 32GB
- cTDP – Easy & flexible reduction of CPU TDP
- Intel® HD Graphics (DX12, integrated in Processor)
- HDMI V1.4, DP V1.2 and Dual Channel LVDS support
- 8 Bit GPIO & multichannel Audio onboard
- USB 2.0 and USB 3.2 Gen1 onboard
- Onboard support for M.2 SSD (PCIe x4 based M.2 2280)
- Onboard support for M.2 WLAN/Bluetooth (M.2 2230)
- Realtek GbE LAN onboard
- Intel® integrated TPM V2.0 onboard
- Dual-Range DC Power Supply 12 V/19-24 V
- HW Watchdog onboard
- Motherboard operating temperature range (chassis inside)  
10 °C - 50 °C

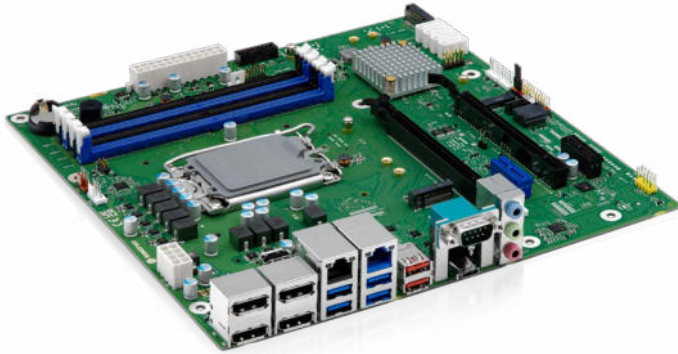
<b>BASEBOARD</b>	<b>DIMENSIONS CHIPSET</b>	6.7" x 6.7" (170 x 170 mm) Intel® H310
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b> <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	Intel® Core™ 8th/9th Gen Processor Series Intel® LGA1151 65 W  yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	32 GByte 2 DDR4 2400/2666
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b> <b>GRAPHICS INTERFACES</b>	Intel® UHD Graphics; DX 12 1x HDMI V1.4, 1x DP V1.2
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b> <b>IAMT/VPRO</b>	1x Realtek RTL 8111G -/-
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	5.1 Multich. Realtek ALC255 -/yes (Stereo) -
<b>EXTENSION SLOTS</b>	<b>PCIe X16/X8/X4/X1/PCI</b> <b>MINI-PCIe/MSATA</b> <b>M.2 SSD</b> <b>(PCIe AND/OR SATA)</b> <b>M.2 WLAN (KEY-E)</b>	-/-/-/-/-  1x M.2 Key-M Socket (2280) for PCIe based M.2 Modules (4 lanes) yes
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/2 (pin header) 3 (2 x pin header)/- 2/- 1 -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	-/2 - 2 -
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	19-24 V 12 V or 19-24 V
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	10 °C - 50 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (Intel®) yes yes Onboard LVDS 24bit, M.2 (WLAN/Bluetooth) Key E M.2 SSD - PCIe Key M, GPIO (8Bit) Dual-Range DC Power Supply 12 V/19-24 V



# Extended Lifecycle Motherboards

## K3842-Q1 & K3842-Q2 $\mu$ ATX

### Technical Information



### Product Highlights

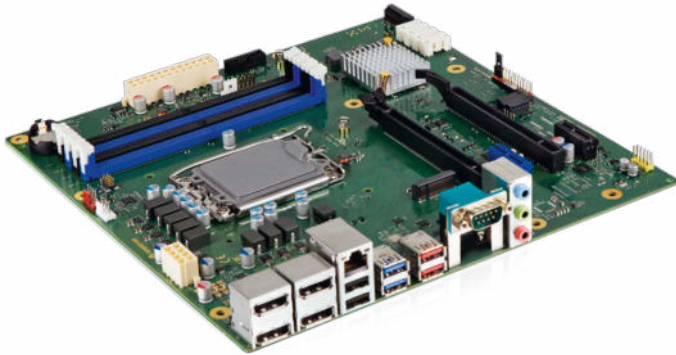
- Intel® Core™ Processor Series (12th/13th/14th Gen)
- DDR5 4800 UDIMM, max. 128 GByte
- cTDP – Easy & flexible reduction of CPU TDP
- Supporting Intel® AMT 16.0
- PCI Express® x16 (Gen5 @ CPU, Gen4 @ PCH)
- 1x Intel® GbE LAN, 1x Intel® 2.5GbE LAN (Only K3842-Q2)
- Intel® UHD Graphics 7xx driven by X<sup>e</sup> Architecture;  
4x DisplayPort V1.4a up to 8K
- Intel® High Definition 5.1 Audio; Intel® integrated TPM V2.0
- 1x COM port
- 3x USB 3.2 Gen 2, 6x USB 3.2 Gen1, 2x USB 2.0,  
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

<b>BASEBOARD</b>	<b>DIMENSIONS</b> <b>CHIPSET</b>	9.6" x 9.6" (243.8 x 243.8 mm) Intel® Q670
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b> <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	Intel® Core™ Processor Series (12th/13th/14th Gen) Intel® LGA1700 125 W  yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	128 GByte 4 DDR5 4800 non-ECC
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b>  <b>GRAPHICS INTERFACES</b>	Intel® UHD Graphics 7xx driven by X <sup>e</sup> Architecture 4x DP V1.4a up to 8K
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>  <b>IAMT/VPRO</b>	K3842-Q1: 1x Intel® i219LM K3842-Q2: 1x Intel® i219LM & 1x Intel® i225LM yes/-
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	5.1 Multich. Tempo Semiconductor 92HD91B yes/yes yes
<b>EXTENSION SLOTS</b>	<b>PCI E X16/X8/X4/X1/PCI MINI -PCIe/MSATA</b> <b>M.2 SSD (PCIe AND/OR SATA)</b>  <b>M.2 WLAN (KEY-E)</b>	2/-/-/2/- -/ 2x M.2 2230/2242/2280 (Key-M, PCIe/NVME SSD modules), incl. NVME RAID 1x incl. CNVi
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/2 (pin header) 2 (pin header)/1 4/yes - -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1/USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	2/4/ 1 - 1
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	- ATX PSU (Multirail)
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	10 °C - 50 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (Intel®) + TPM Socket yes yes -

# Extended Lifecycle Motherboards

## K3843-B1 & K3843-B2 $\mu$ ATX

### Technical Information

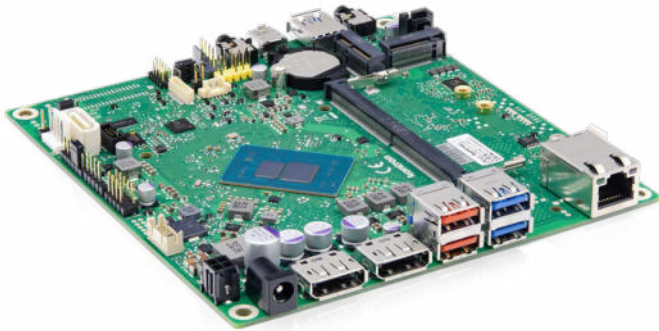


### Product Highlights

- Intel® Core™ Processor Series (12th/13th/14th Gen)
- DDR5 4800 UDIMM, max. 128 GByte
- cTDP – Easy & flexible reduction of CPU TDP
- PCI Express® x16 (Gen5 @ CPU, Gen4 @ PCH)
- 1x Intel® GbE LAN
- Intel® UHD Graphics 7xx driven by X<sup>e</sup> Architecture; Up to 4x DisplayPort V1.4a (up to 8K)
- Intel® High Definition Stereo Audio; Intel® integrated TPM V2.0
- 1x COM port
- 2x USB 3.2 Gen 2, 4x USB 3.2 Gen1, 4x USB 2.0
- Up to 4x SATA 6G incl. RAID support
- Up to 2x M.2 2280 (Key-M, PCIe/NVME SSD modules)

<b>BASEBOARD</b>	<b>DIMENSIONS</b> <b>CHIPSET</b>	9.6" x 9.6" (243.8 x 243.8 mm) Intel® B660
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b> <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	Intel® Core™ Processor Series (12th/13th/14th Gen) Intel® LGA1700 125 W  yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b>  <b>RAM SPEED</b>	128 GByte K3843-B1: 4 K3843-B2: 2 DDR5 4800 non-ECC
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b>  <b>GRAPHICS INTERFACES</b>	Intel® UHD Graphics 7xx driven by X <sup>e</sup> Architecture K3843-B1: 4x DP V1.4a up to 8K K3843-B2: 2x DP V1.4a up to 8K
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b> <b>IAMT/VPRO</b>	1x Intel® i219LM -/-
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	Stereo Tempo Semiconductor 92HD91B yes/yes -
<b>EXTENSION SLOTS</b>	<b>PCI E X16/X8/X4/X1/PCI MINI-PCIe/MSATA</b> <b>M.2 SSD (PCIe AND/OR SATA)</b>  <b>M.2 WLAN (KEY-E)</b>	2/-/-/(2*)/- -/- K3843-B1: 2x M.2 2280 (Key-M, PCIe/NVME SSD modules) K3843-B2: 1x M.2 2280 (Key-M, PCIe/NVME SSD modules) -
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/2 (pin header) 2 (pin header)/- K3843-B1: 4; K3843-B2: 2/yes - -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	2/2 - 2 1
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	- ATX PSU (Multirail)
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	10 °C – 50 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (Intel®) yes - -

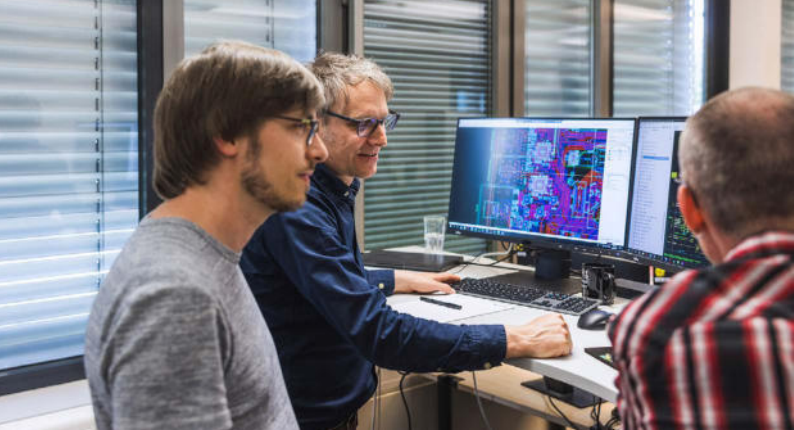
\*Only on K3843-B1



### Product Highlights

- Intel® Processor N100
- DDR5-4800 SODIMM, max 32 GByte
- Intel® UHD Gen12 Graphics (within SoC)
- 2x DisplayPort V1.4a + USB Type-C Alt mode (DPoC)
- eDP V1.4b
- HD Audio onboard
- 3x USB 2.0, 3x USB 3.2 Gen1, 2x USB 3.2 Gen2
- 1x USB 3.2 Gen1 (Front Type-C) with DP Alt mode
- 1x Realtek GbE LAN
- 1x SATA 6G
- 1x M.2 2230/2242/2280 (Key-M, PCIe x1 Gen3 NVMe SSD + SATA SSD)
- 1x M.2 2230 (Key-E, WLAN/Bluetooth modules, PCIe and CNVi support)
- Intel® integrated TPM V2.0
- 1x RS-232 support onboard
- DualRange internal/external DC input (12V / 19-28V), PowerDelivery Sink Mode (20V DC-In via USB-C)

<b>BASEBOARD</b>	<b>DIMENSIONS</b>	5.5" x 5.8" (140 x 148 mm)
<b>CPU SUPPORT</b>	<b>CHIPSET</b>	Intel® Alder Lake N SoC
	<b>PROCESSOR</b>	H1: Quad-Core N100 (0.8 GHz, up to 3.4 GHz @6 W)
	<b>PROCESSOR SOCKET</b>	FCBGA1264
	<b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b>	6W
	<b>CPU TDP LIMITING OPTION</b>	-
	<b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b>	32 GByte
	<b>NUMBER OF SOCKETS</b>	1
	<b>RAM SPEED</b>	DDR5 4800
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b>	Intel® UHD Graphics 7xx driven by X <sup>e</sup> Architecture up to 3x DP (1x via USB Type-C), 1x eDP @ 4 lanes
	<b>GRAPHICS INTERFACES</b>	
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>	1x Realtek RTL8111H
	<b>IAMT/VPRO</b>	-/-
<b>AUDIO</b>	<b>TYPE</b>	Stereo
	<b>ONBOARD CONTROLLER</b>	Realtek ALC256
	<b>BUZZER/SPEAKER</b>	yes/yes
	<b>S/PDIF HEADER</b>	yes
<b>EXTENSION SLOTS</b>	<b>PCI E X16/X8/X4/X1/PCI MINI-PCIe/MSATA</b>	-/-/-/-/-
	<b>M.2 SSD (PCIe AND/OR SATA)</b>	-/-
	<b>M.2 WLAN (KEY-E)</b>	1x M.2 2230/2242/2280 (Key-M, 1x PCIe Gen3 + SATA, NVMe + SATA SSD)
		1x M.2 2230 (Key-E, WLAN PCIe and CNVi)
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b>	-/-
	<b>USB PORTS 2.0/STICK SOCKET</b>	3 (pin headers)/-
	<b>SATA PORTS/SATA RAID</b>	1/-
	<b>COM PORT INT. HEADER</b>	1
	<b>PARALLEL PORT INT. HEADER</b>	-
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b>	2/4
	<b>USB 3.2 GEN1 TYPE C</b>	1
	<b>USB PORTS 2.0</b>	-
	<b>COM PORTS</b>	-
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b>	12 V/19-28 V
	<b>INTERNAL SUPPLY</b>	
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	0 °C - 50 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b>	yes
	<b>TPM V2.0</b>	yes (Intel®)
	<b>CHASSIS INTRUSION SUPPORT</b>	yes
	<b>HW WATCHDOG</b>	yes
	<b>MISCELLANEOUS</b>	MS Windows 11 USB-C with DP Alt. Mode and PowerDelivery Sink



## ➤ The Industrial Series

### Characteristic features

Motherboards of the Industrial Series are designed for long-term, continuous operations (24/7) in an extended temperature range and high system load. Industrial motherboards are specified for a temperature range between 0 °C and 60 °C.

Kontron motherboards of the Industrial Series are applicable in many branches:

- Industrial Automation
- Medical Equipment
- Digital Signage
- Gaming / Gambling
- Vending / POS / ATM / Kiosk / Ticketing
- Video Surveillance

In addition to long-term availability Industrial Series motherboards offer a multitude of add-on functions and services. They combine the product maturity and production quality of high volume manufacturing base with the special requirements of industrial applications. Additionally, motherboards of the Industrial Series come with special hardware and service features and extensive software tools.

2021				2022				2023				2024				2025				2026				2027				2028				AMD PROCESSORS						
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Size	Name	Chipset				
						pl																																

## Socketed Motherboards - What is Next?



### 9th GEN INTEL® CORE i PROCESSOR TECHNOLOGY

#### D3633-S

miITX, 65 W TDP Support, Q370

#### D3641-S

μATX, 85 W TDP Support, C246

#### D3642-B/D3644-B

μATX, 85 W TDP Support, Q370/C246

#### D3643-H

μATX, 85 W TDP Support, B360

#### D3646-S/D3598-B/G

ATX, 85 W/165 W TDP Support, C246/C422/X299

#### D3674-B

Thin Mini-ITX, 85 W TDP Support, H310

### Intel® Core™ Processor Technology (12th/13th/14th Gen)

#### K3833-Q/K3832-Q

miITX, 65 W TDP Support, Q670E

#### K3841-Q

μATX, 125 W TDP Support, Q670E

#### K3842-Q

μATX, 125 W TDP Support, Q670

#### K3843-B

μATX, 125 W TDP Support, B660

#### K3851-R

ATX, 125 W TDP Support, R680E

#### K3831-H

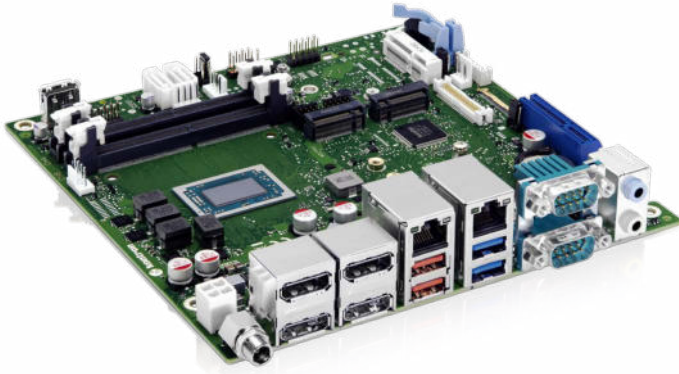
Thin Mini-ITX, 65 W TDP Support, H610



# Industrial Motherboards

## D3713-V/R mITX

### Technical Information



### Product Highlights



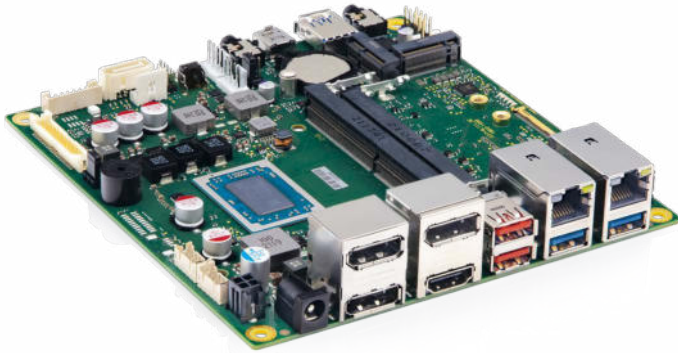
- ▶ AMD Radeon™ Vega Graphics (within SoC)
- ▶ Up to 4x DisplayPort V1.4
- ▶ Dual Channel LVDS (24Bit) and eDP V1.3 (4k) onboard
- ▶ PCI Express® x4 (Gen3)
- ▶ 8 Bit GPIO & HD Audio onboard
- ▶ USB 2.0 and USB 3.2 (Gen1/Gen2) onboard
- ▶ 2x SATA III; USB Stick Socket
- ▶ Onboard support for 1x M.2 SSD (Key-M: 2230/2242/2280)
- ▶ Onboard support for 1x M.2 (Key-B: 2242/3052/2260/2280)
- ▶ Onboard support for 1x Mini-PCIe (halfsize/fullsize)
- ▶ Dual GbE LAN onboard incl. Teaming Support
- ▶ AMD integrated TPM V2.0 onboard & socket for optional TPM Module
- ▶ WideRange internal/external DC Input (8 V - 34 V)
- ▶ HW Watchdog onboard
- ▶ RS-232/485/422 support onboard

<b>BASEBOARD</b>	<b>DIMENSIONS</b> <b>CHIPSET</b>	6.7" x 6.7" (170 x 170 mm) AMD Ryzen™ Embedded V1000/ R1000 Series SoC
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>	R1: R1102G Dual-Core 1.2/2.6 GHz R2: R1305G Dual-Core 1.5/2.8 GHz R4: R1606G Dual-Core 2.6/3.5 GHz V1: V1202B Dual-Core 2.3/3.2 GHz V2: V1605B Quad-Core 2.0/3.6 GHz V4: V1807B Quad-Core 3.35/3.8 GHz
	<b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR</b> <b>POWER CONSUMPTION (TDP)</b>	AMD FP5 R1: 6 W TDP R2: 8 W/10 W TDP R4: 12 W/15 W/25 W TDP V1: 12 W/15 W/25 W TDP V2: 12 W/15 W/25 W TDP V4: 35 W/45 W/54 W TDP
	<b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE</b> <b>VOLTAGE REGULATOR</b>	yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	32 GByte 2 DDR4 2400/3200 ECC Option
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b>  <b>GRAPHICS INTERFACES</b>	AMD Radeon™ Vega Graphics (within SoC) up to 4x DP V1.4, 1x eDP V1.4 @ 4 lanes, 1x LVDS
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>  <b>IAMT/VPRO</b>	1x Intel® i210AT 1x Realtek RTL8111H -/-
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	Stereo Realtek ALC256 yes/yes yes
<b>EXTENSION SLOTS</b>	<b>PCIe X16/X8/X4/X1/PCI</b> <b>MINI-PCIe/MSATA</b> <b>M.2 SSD</b> <b>(PCIe AND/OR SATA)</b>   <b>M.2 WLAN (KEY-E)</b>	-/-/1/-/ yes/- 1x M.2 Key-M (2230/2242/2280; PCIe x4) R-Series: M.2 Key-M socket shared with PCIe x4 slot (M.2 or PCIe slot usable; BIOS Setup option) 1x M.2 Key-B (2242/3052/2260/2280; SATA or PCIe) -
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/2 (pin header) 2 (pin header)/1 2/- 2 -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	2/2 - - 2
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	8 V - 34 V
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	-10 °C to +60 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (AMD); Infineon module yes yes No Legacy OS Support 1x COM incl. RS-232/-422/-485 Support; GPIO

# Industrial Motherboards

## D3714-V/R mSTX

### Technical Information

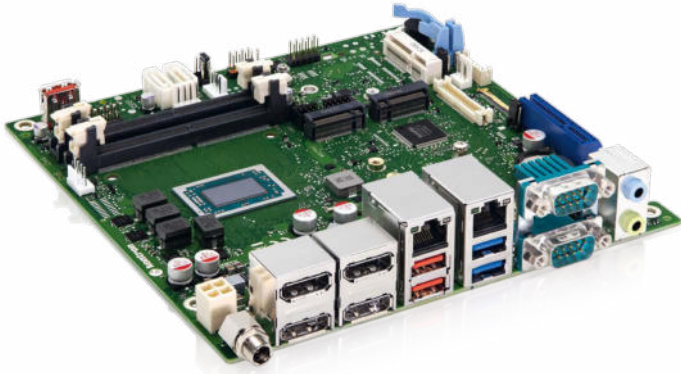


### Product Highlights



- AMD Radeon™ Vega Graphics (within SoC)
- Up to 3x DisplayPort V1.4 plus HDMI V2.0b
- Dual Channel LVDS (24Bit) and eDP V1.3 (4k) onboard
- 8 Bit GPIO & HD Audio onboard
- USB 2.0 and USB 3.2 (Gen1/Gen2) onboard
- 1x SATA III onboard
- Onboard support for 1x M.2 SSD (Key-M: 2230/2242/2280)
- Onboard support for 1x M.2 WLAN/Bluetooth (Key-E: 2230)
- Dual GbE LAN onboard incl. Teaming Support
- AMD integrated TPM V2.0 onboard
- Auto Dual Range internal/external DC Input (12 V or 19-28 V)
- HW Watchdog onboard
- RS-232/485/422 support onboard

<b>BASEBOARD</b>	<b>DIMENSIONS CHIPSET</b>	5.5" x 5.8" (140 x 148 mm) AMD Ryzen™ Embedded V1000/ R1000 Series SoC
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b>  <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE</b> <b>VOLTAGE REGULATOR</b>	R1: R1102G Dual-Core 1.2/2.6 GHz R2: R1305G Dual-Core 1.5/2.8 GHz V2: V1605B Quad-Core 2.0/3.6 GHz AMD FP5 R1: 6 W TDP R2: 8 W/10 W TDP V2: 12 W/15 W/25 W TDP yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	32 GByte 2 DDR4 2400 ECC Option
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b>  <b>GRAPHICS INTERFACES</b>	AMD Radeon™ Vega Graphics (within SoC) up to 3x DP V1.4, 1x HDMI V2.0b, 1x eDP V1.4 @ 4 lanes, 1x LVDS
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>  <b>IAMT/VPRO</b>	1x Intel® i210AT 1x Realtek RTL8111H -/-
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	Stereo Realtek ALC256 yes/yes -
<b>EXTENSION SLOTS</b>	<b>PCIe X16/X8/X4/X1/PCI</b> <b>MINI-PCIe/MSATA</b> <b>M.2 SSD</b> <b>(PCIe AND/OR SATA)</b> <b>M.2 WLAN (KEY-E)</b>	-/-/-/-/- -/- 1x M.2 Key-M (2230/2242/2280; PCIe x4) 1x M.2 WLAN/Bluetooth (Key-E: 2230, supports PCIe x1/ Gen3 + USB 2.0)
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/- 2 (pin header)/- 1/- 2 -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	2/3 1 - -
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	12 V or 19 - 28 V (Auto Dual Range)
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	-10 °C to +60 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (AMD integrated) - yes No Legacy OS Support 1x COM incl. RS-232/-422/-485 Support; GPIO



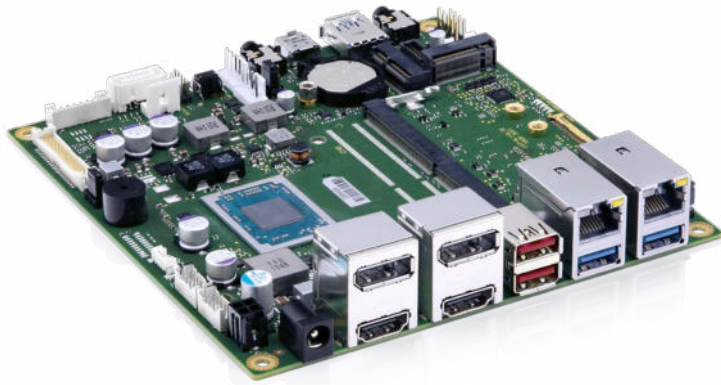
### Product Highlights



- AMD Radeon™ Vega Graphics (within SoC)
- Up to 4x DisplayPort V1.4
- Dual Channel LVDS (24Bit) and eDP V1.3 (4k) onboard
- PCI Express® x4 (Gen3)
- 8 Bit GPIO & HD Audio onboard
- USB 2.0 and USB 3.2 (Gen1/Gen2) onboard
- 2x SATA III; USB Stick Socket
- Onboard support for 1x M.2 SSD (Key-M: 2230/2242/2280)
- Onboard support for 1x M.2 (Key-B: 2242/3052/2260/2280)
- Onboard support for 1x Mini-PCIe (halfsize/fullsize)
- Dual GbE LAN onboard incl. Teaming Support
- AMD integrated TPM V2.0 onboard & socket for optional TPM Module
- WideRange internal/external DC Input (8 V - 34 V)
- HW Watchdog onboard
- RS-232/485/422 support onboard
- Windows 11 support

<b>BASEBOARD</b>	<b>DIMENSIONS CHIPSET</b>	6.7" x 6.7" (170 x 170 mm) AMD Embedded Ryzen™ R2000 Series SoC (Zen+ Core)
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET MAX. PROCESSOR POWER CONSUMPTION (TDP)</b>  <b>CPU TDP LIMITING OPTION HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	R1: R2312 Dual-Core 2.7/3.5 GHz R2: R2314 Quad-Core 2.1/3.5 GHz R3: R2514 Quad-Core 2.1/3.7 GHz R4: R2544 Quad-Core 3.35/3.7 GHz AMD FP5 R1: 12 W/15 W/25 W TDP R2: 12 W/15 W/25 W/35 W TDP R3: 12 W/15 W/25 W/35 W TDP R4: 35 W/45 W/54 W TDP yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY NUMBER OF SOCKETS RAM SPEED</b>	32 GByte 2 DDR4 2400/2666/3200 ECC Option
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS GRAPHICS INTERFACES</b>	AMD Radeon™ Vega Graphics (within SoC) up to 4x DP V1.4, 1x eDP @ 4 lanes, 1x LVDS
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER IAMT/VPRO</b>	1x Intel® i210AT 1x Realtek RTL8111H -/-
<b>AUDIO</b>	<b>TYPE ONBOARD CONTROLLER BUZZER/SPEAKER S/PDIF HEADER</b>	Stereo Realtek ALC256 yes/yes yes
<b>EXTENSION SLOTS</b>	<b>PCIe X16/X8/X4/X1/PCI MINI-PCIe/MSATA M.2 SSD (PCIe AND/OR SATA)</b>  <b>M.2 WLAN (KEY-E)</b>	-/-/1/-/- yes/- 1 x M.2 Key-M (PCIe x4) R1: M.2 Key-M socket shared with PCIe x4 slot (M.2 or PCIe slot usable; BIOS Setup option) 1 x M.2 Key-B (SATA or PCIe) -
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1 USB PORTS 2.0/STICK SOCKET SATA PORTS/SATA RAID COM PORT INT. HEADER PARALLEL PORT INT. HEADER</b>	-/2 (pin header) 2 (pin header)/1 2/- 2 -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1 USB 3.2 GEN2 TYPE C USB PORTS 2.0 COM PORTS</b>	2/2 - - 2
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY INTERNAL SUPPLY</b>	8 V - 34 V
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	-10 °C to +60 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING TPM V2.0 CHASSIS INTRUSION SUPPORT HW WATCHDOG MISCELLANEOUS</b>	yes yes (AMD integrated) yes yes MS Windows 11 No Legacy OS Support 4x COM (1x incl. RS-232/-422/-485 Support), GPIO



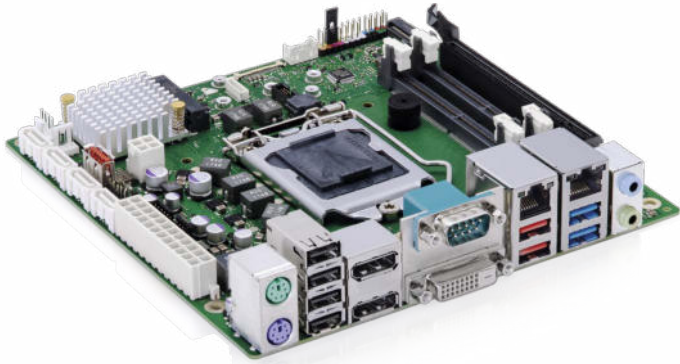


## Product Highlights



- AMD Radeon™ Vega Graphics (within SoC)
- Up to 3x DisplayPort V1.4 plus HDMI V2.0b
- Dual Channel LVDS (24Bit) and eDP V1.3 (4k) onboard
- 8 Bit GPIO & HD Audio onboard
- USB 2.0 and USB 3.2 (Gen1/Gen2) onboard
- 1x SATA III onboard
- Onboard support for 1x M.2 SSD (Key-M: 2230/2242/2280)
- Onboard support for 1x M.2 WLAN/Bluetooth (Key-E: 2230)
- Dual GbE LAN onboard incl. Teaming Support
- AMD integrated TPM V2.0 onboard
- Auto Dual Range internal/external DC Input (12 V or 19-28 V)
- HW Watchdog onboard
- RS-232/485/422 support onboard

BASEBOARD	DIMENSIONS CHIPSET	5.5" x 5.8" (140 x 148 mm) AMD Embedded Ryzen™ R2000 Series SoC (Zen+ Core)
CPU SUPPORT	PROCESSOR  PROCESSOR SOCKET MAX. PROCESSOR POWER CONSUMPTION (TDP) CPU TDP LIMITING OPTION HIGH EFFICIENCY CORE VOLTAGE REGULATOR	R1: R2312 Dual-Core 2.7/3.5 GHz R2: R2314 Quad-Core 2.1/3.5 GHz R3: R2514 Quad-Core 2.1/3.7 GHz AMD FP5 12 W/15 W/25 W  yes yes
MEMORY	MAX. CAPACITY NUMBER OF SOCKETS RAM SPEED	32 GByte 2 DDR4 2400/2666 ECC Option
GRAPHICS	ONBOARD GRAPHICS  GRAPHICS INTERFACES	AMD Radeon™ Vega Graphics (within SoC) up to 3x DP V1.4, 1x HDMI V2.0b, 1x eDP V1.4, 1x LVDS
ETHERNET	ONBOARD LAN CONTROLLER  IAMT/VPRO	1x Intel® i210AT 1x Realtek RTL8111H -/-
AUDIO	TYPE ONBOARD CONTROLLER BUZZER/SPEAKER S/PDIF HEADER	Stereo Realtek ALC256 yes/yes -
EXTENSION SLOTS	PCIe X16/X8/X4/X1/PCI MINI-PCIe/MSATA M.2 SSD (PCIe AND/OR SATA) M.2 WLAN (KEY-E)	-/-/-/-/- -/- 1x M.2 PCIe x4 (Key-M: 2230/2242/2280) 1x M.2 WLAN/Bluetooth (Key-E: 2230, supports PCIe x1/Gen3 + USB 2.0)
INTERNAL CONNECTORS	USB PORTS 3.2 GEN2/3.2 GEN1 USB PORTS 2.0/STICK SOCKET SATA PORTS/SATA RAID COM PORT INT. HEADER PARALLEL PORT INT. HEADER	-/- 2 (pin header)/- 1/- 2 -
EXTERNAL CONNECTORS	USB PORTS 3.2 GEN2/3.2 GEN1 USB 3.2 GEN1 TYPE C USB PORTS 2.0 COM PORTS	2/3 1 - -
POWER SUPPLY OPTIONS	EXTERNAL SUPPLY INTERNAL SUPPLY	12 V / 19 - 28 V
ENVIRONMENTAL	OPERATION TEMPERATURE	-10 °C to +60 °C
MISCELLANEOUS	FAN SPEED CUSTOMIZING TPM V2.0 CHASSIS INTRUSION SUPPORT HW WATCHDOG MISCELLANEOUS	yes yes (AMD integrated) - yes MS Windows 11 No Legacy OS Support 2x COM (1x incl. RS-232/-422/-485 Support) GPIO



### Product Highlights

- Intel® 8th/9th Gen Core™ Processor Series
- DDR4 2666 SDRAM, max. 64 GByte
- cTDP – Easy & flexible reduction of CPU TDP
- Supporting Intel® AMT 12.0/vPro
- PCI Express® x16 (Gen.3)
- 2x Intel® GbE LAN (incl. Teaming)
- Intel® UHD Graphics (DX12)
- 1x DVI-D, 2x DP V1.2, eDP V1.4 and Dual Channel LVDS
- Intel® High Definition 5.1 Audio; Infineon TPM V2.0
- 8 Bit GPIO; 2x COM port (incl. RS-422/RS-485 support)
- 6x USB 2.0, 4x USB 3.2 Gen1, 2x USB 3.2 Gen2, 1x USB 3.2 Gen2 stick socket
- 4x SATA-III incl. RAID support & M.2 (PCIe-based SSD modules 2242, 2260, or 2280)
- Mini-PCIe socket (halfsize/fullsize support)
- Dual Power Supply (ATX compliant or single 12 V DC)
- BIOS-POST/-Boot & OS – HW Watchdog onboard

<b>BASEBOARD</b>	<b>DIMENSIONS</b> <b>CHIPSET</b>	6.7" x 6.7" (170 x 170 mm) Intel® Q370
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b> <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	Intel® Core™ 8th/9th Gen. Processor Series Intel® LGA1151 95 W  yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	64 GByte 2  DDR4 2400/2666
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b> <b>GRAPHICS INTERFACES</b>	Intel® UHD Graphics; DX 12 1x DVI-D, 2x DP V1.2, 1x LVDS, 1x eDP V1.4 @ 2 lanes
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>  <b>IAMT/VPRO</b>	1x Intel® i219LM 1x Intel® i210AT yes/yes
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	5.1 Multich. Realtek ALC671 yes/yes yes
<b>EXTENSION SLOTS</b>	<b>PCIe X16/X8/X4/X1/PCI</b> <b>MINI-PCIe/MSATA</b> <b>M.2 SSD (PCIe AND/OR SATA)</b>  <b>M.2 WLAN (KEY-E)</b>	1/-/-/-/- yes/- 1x M.2 Key-M Socket (2242/2260/2280) for PCIe (4 lanes) based M.2 Modules -
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/2 (pin header) 2 (pin header)/1 (3.2 Gen2) 4/yes 1 -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	2/2 - 4 1
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	- ATX PSU (Multirail) or single 12 V
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	0 °C - 60 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (Infineon) yes yes yes Onboard LVDS 24bit & eDP Mini-PCIe (Halfsize/Fullsize Support) & M.2 SSD (PCIe), GPIO (8Bit) COM: RS-232/-422/-485 Supported



## Product Highlights

- Intel® 8th/9th Gen Core™ Processor Series
- DDR4 2666 SDRAM, max. 64 GByte
- cTDP – Easy & flexible reduction of CPU TDP
- PCI Express® x16 (Gen.3)
- 2x Intel® GbE LAN (incl. Teaming)
- Intel® UHD Graphics (DX12)
- 1x DVI-D, 1x DP V1.2, eDP V1.4 and Dual Channel LVDS
- Intel® High Definition 5.1 Audio; Intel® integrated TPM V2.0
- 8 Bit GPIO; 2 x COM port (incl. RS-422/RS-485 support)
- 5x USB 2.0, 4x USB 3.2 Gen1
- 4x SATA-III & M.2  
(PCIe-based SSD modules 2242, 2260, or 2280)
- Mini-PCIe socket (halfsize/fullsize support)
- Dual Power Supply (ATX compliant or single 12V DC)
- BIOS-POST/-Boot & OS – HW Watchdog onboard

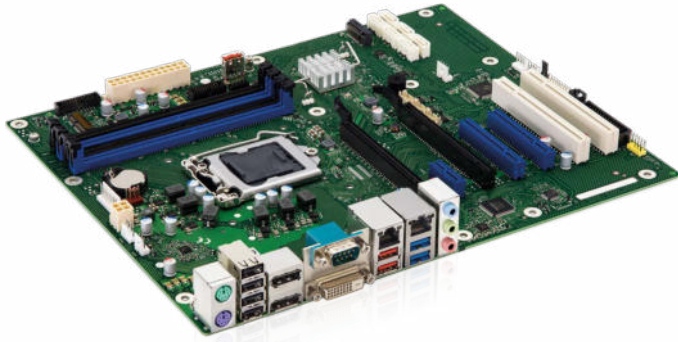
<b>BASEBOARD</b>	<b>DIMENSIONS</b> <b>CHIPSET</b>	6.7" x 6.7" (170 x 170 mm) Intel® H310
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b> <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	Intel® Core™ 8th/9th Gen. Processor Series Intel® LGA1151 95 W  yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	32 GByte 2 DDR4 2400/2666
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b> <b>GRAPHICS INTERFACES</b>	Intel® UHD Graphics; DX 12 1x DVI-D, 1x DP V1.2, 1x LVDS, 1x eDP V1.4 @ 2 lanes
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>  <b>IAMT/VPRO</b>	1x Intel® i219LM 1x Intel® i210AT -/-
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	5.1 Multich. Realtek ALC671 yes/yes yes
<b>EXTENSION SLOTS</b>	<b>PCIe X16/X8/X4/X1/PCI MINI-PCIe/MSATA</b> <b>M.2 SSD (PCIe AND/OR SATA)</b>  <b>M.2 WLAN (KEY-E)</b>	1/-/-/-/- yes/- 1x M.2 Key-M Socket (2242/2260/2280) for PCIe (2 lanes) based M.2 Modules -
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/2 (pin header) 2 (pin header)/- 4/- 1 -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	-/2 - 3 1
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	- ATX PSU (Multirail) or single 12 V
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	0 °C - 60 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (Intel®) yes yes Onboard LVDS 24bit & eDP Mini-PCIe (Halfsize/Fullsize Support) & M.2 SSD (PCIe), GPIO (8Bit) COM: RS-232/-422/-485 Supported



### Product Highlights

- Intel® 8th/9th Gen Core™ & Intel® Xeon® Processor Series
- DDR4 2666 SDRAM, max. 64 GByte
- cTDP – Easy & flexible reduction of CPU TDP
- Supporting Intel® AMT 12.0/vPro
- PCI Express® x16 (Gen.3)
- 2x Intel® GbE LAN (incl. Teaming)
- Intel® UHD Graphics (DX12); 1x DVI-D, 2x DP V1.2
- Intel® High Definition 5.1 Audio; Infineon TPM V2.0
- 8 Bit GPIO; 4x COM ports
- 6x USB 2.0, 4x USB 3.2 Gen1, 2x USB 3.2 Gen2, 1x USB 3.2 Gen2 stick socket
- 6x SATA 6G incl. RAID support, parallel port (internal pin header)
- M.2 2280 (PCIe-based SSD modules)
- M.2 2230 (WLAN/Bluetooth modules)
- BIOS-POST/-Boot & OS – HW Watchdog onboard

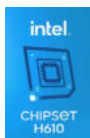
<b>BASEBOARD</b>	<b>DIMENSIONS CHIPSET</b>	9.6" x 9.6" (243.8 x 243.8 mm) Intel® C246
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b> <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	Intel® Core™ 8th/9th Gen & Xeon® Processor Series Intel® LGA1151 95 W  yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	64 GByte 4 DDR4 2400/2666 ECC support
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b> <b>GRAPHICS INTERFACES</b>	Intel® UHD Graphics; DX 12 1x DVI-D, 2x DP V1.2, Optional VGA-Ext. D3653
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>  <b>IAMT/vPRO</b>	1x Intel® i219LM 1x Intel® i210AT yes/yes
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	5.1 Multich. Realtek ALC671 yes/yes yes
<b>EXTENSION SLOTS</b>	<b>PCIe X16/X8/X4/X1/PCI MINI-PCIe/MSATA M.2 SSD (PCIe AND/OR SATA)</b>  <b>M.2 WLAN (KEY-E)</b>	2/-/-/2/- - 1x M.2 Key-M Socket (2280) for PCIe (4 lanes) based M.2 Modules yes
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/2 (pin header) 2 (pin header)/1 (3.2 Gen2) 6/yes 3 yes
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	2/2 - 4 1
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	- ATX PSU (Multirail)
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	0 °C - 60 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (Infineon) yes yes GPIO (8Bit)



### Product Highlights

- Intel® 8th/9th Gen Core™ & Intel® Xeon® Processor Series
- DDR4 2666 SDRAM, max. 64 GByte
- cTDP – Easy & flexible reduction of CPU TDP
- Supporting Intel® AMT 12.0/vPro
- PCI Express® x16 (Gen.3) & 2x PCI (32 Bit/33 MHz Rev. 2.3)
- 2x Intel® GbE LAN (incl. Teaming)
- Intel® UHD Graphics (DX12); 1x DVI-D, 2x DP V1.2
- Intel® High Definition 5.1 Audio; Infineon TPM V2.0
- 8 Bit GPIO; 4x COM ports, HW watchdog
- 6x USB 2.0, 4x USB 3.2 Gen1, 2x USB 3.2 Gen2, 1x USB 3.2 Gen2 stick socket
- 6x SATA 6G incl. RAID support, parallel port (internal pin header)
- M.2 2280 (PCIe-based SSD modules)
- M.2 2230 (WLAN/Bluetooth modules)
- BIOS-POST/-Boot & OS – HW Watchdog onboard

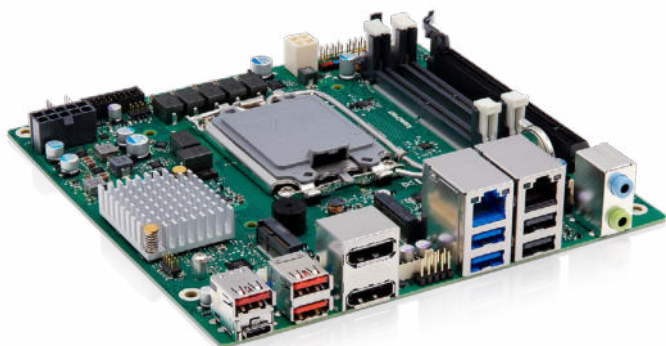
<b>BASEBOARD</b>	<b>DIMENSIONS</b> <b>CHIPSET</b>	9.6" x 12" (243.8 x 304.8 mm) Intel® C246
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b> <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	Intel® Core™ 8th/9th Gen & Xeon® Processor Series Intel® LGA1151 95 W  yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	64 GByte 4 DDR4 2400/2666 ECC support
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b> <b>GRAPHICS INTERFACES</b>	Intel® UHD Graphics; DX 12 1x DVI-D, 2x DP V1.2, Optional VGA-Ext. D3653
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>  <b>IAMT/vPRO</b>	1x Intel® i219LM 1x Intel® i210AT yes/yes
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	5.1 Multich. Realtek ALC671 yes/yes yes
<b>EXTENSION SLOTS</b>	<b>PCIe X16/X8/X4/X1/PCI</b> <b>MINI-PCIe/MSATA</b> <b>M.2 SSD</b> <b>(PCIe AND/OR SATA)</b>  <b>M.2 WLAN (KEY-E)</b>	2/2/-/1/2 - 1x M.2 Key-M Socket (2280) for PCIe (4 lanes) based M.2 Modules yes
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/2 (pin header) 2 (pin header)/1 (3.2 Gen2) 6/yes 3 yes
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	2/2 - 4 1
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	- ATX PSU (Multirail)
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	0 °C - 60 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (Infineon) yes yes GPIO (8Bit)



## Product Highlights

- ▶ Intel® Core™ Processor Series (12th/13th/14th Gen)
- ▶ DDR5-5600 SODIMM, max. 64 GByte
- ▶ cTDP – Easy & flexible reduction of CPU TDP
- ▶ Intel® UHD Graphics 7xx driven by Xe Architecture
- ▶ HDMI 2.0b, DP V1.4a and USB Type-C Alt mode (DPoC)  
Dual Channel LVDS support
- ▶ 8 Bit GPIO & multichannel Audio onboard
- ▶ USB 2.0, USB 3.2 Gen1 and USB 3.2 Gen2 onboard
- ▶ Onboard support for M.2 SSD  
(PCIe x4 Gen 4 based M.2 2242)
- ▶ Onboard support for M.2 WLAN/Bluetooth (M.2 2230)
- ▶ 1x Intel® GbE LAN, 1x Realtek GbE LAN
- ▶ Intel® integrated TPM V2.0 onboard
- ▶ Dual-Range DC Power Supply 12 V/19-24 V
- ▶ HW Watchdog onboard

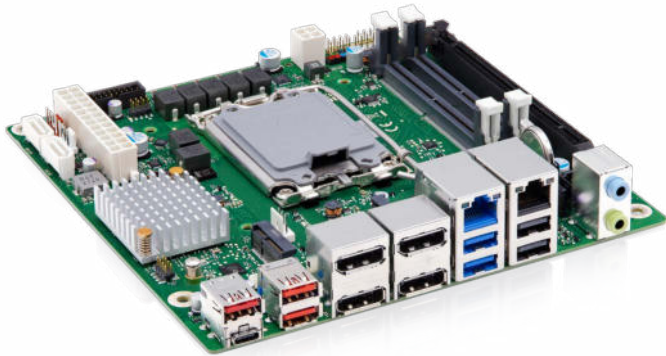
<b>BASEBOARD</b>	<b>DIMENSIONS</b> <b>CHIPSET</b>	6.7" x 6.7" (170 x 170 mm) Intel® H610 Chipset
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b> <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	Intel® Core™ Processor Series (12th/13th/14th Gen) LGA 1700 65 W TDP  yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	64 GByte 2  DDR5 5600
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b>  <b>GRAPHICS INTERFACES</b>	Intel® UHD Graphics 7xx driven by X <sup>e</sup> Architecture 1x DP V1.4a, 1x HDMI V2.0b, 1x DP via USB Type-C, 1x Dual-Channel (24Bit) LVDS
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>  <b>IAMT/VPRO</b>	1x Realtek RTL8111H 1x Intel® i219LM -/-
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	Stereo Realtek ALC256 yes/yes -
<b>EXTENSION SLOTS</b>	<b>PCIe X16/X8/X4/X1/PCI MINI-PCIe/MSATA</b> <b>M.2 SSD (PCIe AND/OR SATA)</b> <b>M.2 WLAN (KEY-E)</b>	-/-/-/-/- -/- 1x M.2 2242 (Key-M, Gen 4, PCIe/ NVME SSD modules) 1x M.2 2230 (Key-E, WLAN/ Bluetooth modules, incl. CNVi support)
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/2 (pin header) 3 (pin headers)/- 2/- 1 -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	1/- 1 2 -
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	19-24 V 12 V/19-24 V
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	0 °C - 60 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (Intel®) yes yes MS Windows 11 GPIO (8 Bit) Thin design



### Product Highlights

- Intel® Core™ Processor Series (12th/13th/14th Gen)
- 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)
- 1x Intel® GbE LAN, 1x 2.5GbE incl. Teaming and TSN
- Intel® UHD Graphics 7xx driven by X<sup>e</sup> Architecture; 2x DisplayPort V1.4a up to 8K; 1x Dual Channel LVDS; 1x eDP V1.4b
- Intel® High Definition Stereo Audio; Intel® integrated TPM V2.0
- 8 Bit GPIO; 2x COM port
- 4x USB 3.2 Gen 2, 4x USB 3.2 Gen1, 2x USB 2.0
- 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

<b>BASEBOARD</b>	<b>DIMENSIONS</b> <b>CHIPSET</b>	6.7" x 6.7" (170 x 170 mm) Intel® Q670E
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b> <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	Intel® Core™ Processor Series (12th/13th/14th Gen) Intel® LGA1700 65 W TDP  yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	64 GByte 2 DDR5 4800/5600
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b>  <b>GRAPHICS INTERFACES</b>	Intel® UHD Graphics 7xx driven by X <sup>e</sup> Architecture 2x DP V1.4 up to 8K, 1x eDP V1.4b @4K, 1x Dual-Channel (24Bit) LVDS @Full HD
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>  <b>IAMT/VPRO</b>	1x Intel® i219LM 1x Intel® i226LM yes/-
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	Stereo Tempo Semiconductor 92HD91B yes/yes -
<b>EXTENSION SLOTS</b>	<b>PCI E X16/X8/X4/X1/PCI MINI-PCIe/MSATA</b> <b>M.2 SSD (PCIe AND/OR SATA)</b> <b>M.2 WLAN (KEY-E)</b>	1/-/-/-/- -/ 1x M.2 2242 (Key-M, PCIe/NVME SSD modules) 1x M.2 2230 (Key-E incl. CNVi)
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/2 (pin header) 2/- -/- 2 -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	3/2 1 2 -
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	- Dual supply option: Single 12 V PSU ("DC In") or ATX 12V0 (Intel®-compliant) PSU; 10-pin socket plus 4-pin socket (12 V CPU power connector)
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	0 °C - 60 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (Intel®) - yes yes GPIO (8Bit)

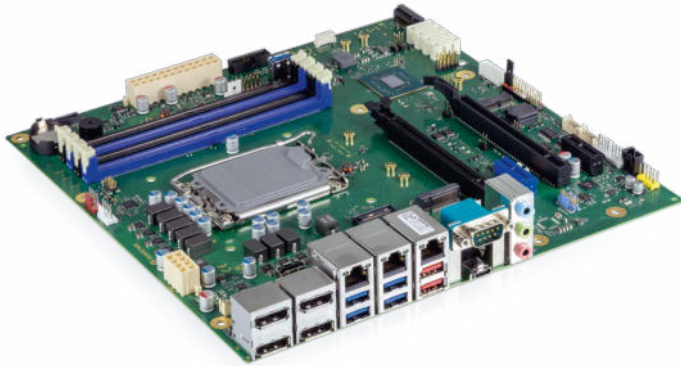


## Product Highlights

- Intel® Core™ Processor Series (12th/13th/14th Gen)
- 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)
- 1x Intel® GbE LAN, 1x 2.5GbE incl. Teaming and TSN
- Intel® UHD Graphics 7xx driven by X<sup>e</sup> Architecture; 4x DisplayPort V1.4a up to 8K; 1x eDP V1.4b
- 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

<b>BASEBOARD</b>	<b>DIMENSIONS</b> <b>CHIPSET</b>	6.7" x 6.7" (170 x 170 mm) Intel® Q670E
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b> <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	Intel® Core™ Processor Series (12th/13th/14th Gen) Intel® LGA1700 65 W TDP  yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	64 GByte 2 DDR5 4800/5600
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b>  <b>GRAPHICS INTERFACES</b>	Intel® UHD Graphics 7xx driven by X <sup>e</sup> Architecture 4x DP V1.4a up to 8K, 1x eDP V1.4b @4K
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>  <b>IAMT/VPRO</b>	1x Intel® i219LM 1x Intel® i226LM yes/-
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	5.1 Multich. Tempo Semiconductor 92HD91B yes/yes yes
<b>EXTENSION SLOTS</b>	<b>PCIe X16/X8/X4/X1/PCI</b> <b>MINI-PCIe/MSATA</b> <b>M.2 SSD</b> <b>(PCIe AND/OR SATA)</b> <b>M.2 WLAN (KEY-E)</b>	1/-/-/-/- -/- 1x M.2 2242 (Key-M, PCIe/NVME SSD modules) 1x M.2 2230 (Key-E incl. CNVi)
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/2 (pin header) -/- 2/yes 1 -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	3/2 1 2 -
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	- ATX PSU (Multirail); 24-pin socket plus 4-pin socket (12 V CPU power connector)
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	0 °C - 60 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (Intel®) yes yes GPIO (8Bit)

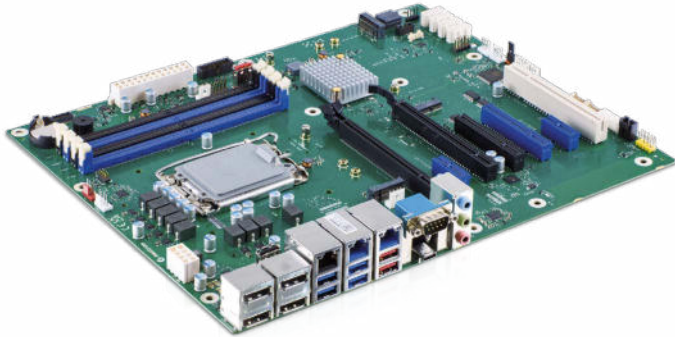




### Product Highlights

- Intel® Core™ Processor Series (12th/13th/14th Gen)
- DDR5 4800 UDIMM, max. 128 GByte
- cTDP – Easy & flexible reduction of CPU TDP
- Supporting Intel® AMT 16.0 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 X<sup>e</sup> Architecture; 4x DisplayPort V1.4a up to 8K
- Intel® High Definition 5.1 Audio; Intel® integrated TPM V2.0
- 8 Bit GPIO; 4x 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

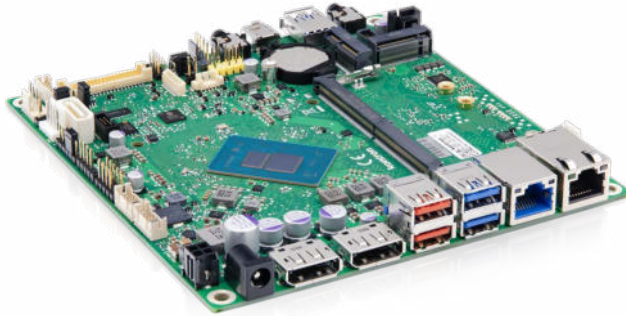
<b>BASEBOARD</b>	<b>DIMENSIONS</b> <b>CHIPSET</b>	9.6" x 9.6" (243.8 x 243.8 mm) Intel® Q670E
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b> <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	Intel® Core™ Processor Series (12th/13th/14th Gen) Intel® LGA1700 125 W  yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	128 GByte 4 DDR5 4800 non-ECC
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b>  <b>GRAPHICS INTERFACES</b>	Intel® UHD Graphics 7xx driven by X <sup>e</sup> Architecture 4x DP V1.4ak up to 8K
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>  <b>IAMT/VPRO</b>	1x Intel® i219LM 2x Intel® i225LM yes/-
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	5.1 Multich. Tempo Semiconductor 92HD91B yes/yes yes
<b>EXTENSION SLOTS</b>	<b>PCI E X16/X8/X4/X1/PCI MINI-PCIe/MSATA</b> <b>M.2 SSD (PCIe AND/OR SATA)</b>  <b>M.2 WLAN (KEY-E)</b>	2/-/-/2/- -/- 2x M.2 2230/2242/2280 (Key-M, PCIe/NVME SSD modules), incl. NVME RAID 1x incl. CNVi
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/2 (pin header) 2 (pin header)/2 (2.0/3.2 Gen2) 4/yes 3 -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	2/4 1 - 1
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	- ATX PSU (Multirail)
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	0 °C - 60 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (Intel®) + TPM Socket yes yes GPIO (8Bit)



### Product Highlights

- Intel® Core™ Processor Series (12th/13th/14th Gen)
- DDR5 4800 UDIMM, max. 128 GByte, ECC support
- cTDP – Easy & flexible reduction of CPU TDP
- Supporting Intel® AMT 16.0 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 X<sup>e</sup> Architecture; 4x DisplayPort V1.4a up to 8K
- Intel® High Definition 5.1 Audio; Intel® integrated TPM V2.0
- 8 Bit GPIO; 4x 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)
- PCI Slot (32 Bit)
- BIOS-POST/-Boot & OS – HW Watchdog onboard

<b>BASEBOARD</b>	<b>DIMENSIONS</b> <b>CHIPSET</b>	9.6" x 12" (243.8 x 304.8 mm) Intel® R680E
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>  <b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b> <b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	Intel® Core™ Processor Series (12th/13th/14th Gen) Intel® LGA1700 125 W TDP  yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	128 GByte 4 DDR5 4800 ECC Option
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b>  <b>GRAPHICS INTERFACES</b>	Intel® UHD Graphics 7xx driven by X <sup>e</sup> Architecture 4x DP V1.4a up to 8K, Optional VGA-Ext. D3653
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>  <b>IAMT/VPRO</b>	1x Intel® i219LM 2x Intel® i225LM yes/-
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	5.1 Multich. Tempo Semiconductor 92HD91B yes/yes yes
<b>EXTENSION SLOTS</b>	<b>PCIe X16/X8/X4/X1/PCI</b> <b>MINI-PCIe/MSATA</b> <b>M.2 SSD (PCIe AND/OR SATA)</b>  <b>M.2 WLAN (KEY-E)</b>	2/2/-/2/1 -/- 2x M.2 2230/2242/2280 (Key-M, PCIe/NVME SSD modules), incl. NVME RAID 1x incl. CNVi
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	-/1 2 (pin header)/2 (2.0/3.2 Gen2) 4/yes 3 -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	2/4 1 - 1
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	- ATX PSU (Multirail)
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	0 °C - 60 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	yes yes (Intel®) + TPM Socket yes yes yes GPIO (8 Bit); PCI Slot



## Product Highlights

- Intel® Core™ i3/Intel® Processors N Series
- DDR5-4800 SODIMM, max 32 GByte
- Intel® UHD Gen12 Graphics (within SoC)
- 2x DisplayPort V1.4a + USB Type-C Alt mode (DPoC)
- Dual Channel LVDS (24 bit) and eDP V1.4b
- 8 Bit GPIO & HD Audio onboard
- 3x USB 2.0, 3x USB 3.2 Gen1, 2x USB 3.2 Gen2
- 1x USB 3.2 Gen1 (Front Type-C) with DP Alt mode
- 1x Realtek GbE LAN, 1x 2.5GbE incl. Teaming
- 1x SATA 6G
- 1x M.2 2230/2242/2280 (Key-M, PCIe x2 Gen3/NVMe SSD modules)
- 1x M.2 2230 (Key-E, WLAN/Bluetooth modules, PCIe and CNVi support)
- Intel® integrated TPM V2.0
- 2x RS-232 support onboard (1x incl. R5485/422)
- HW Watchdog onboard
- DualRange internal/external DC input (12V / 19-28V) PowerDelivery Sink Mode (20V DC-In via USB-C)

<b>BASEBOARD</b>	<b>DIMENSIONS</b>	5.5" x 5.8" (140 x 148 mm)
<b>CPU SUPPORT</b>	<b>CHIPSET</b>	Intel® Alder Lake N SoC
	<b>PROCESSOR</b>	N6: Octa-Core i3-N305 (1.0 GHz, up to 3.8 GHz @9 W; 1.8 GHz, up to 3.8 GHz @15 W) N4: Quad-Core N200 (1.0 GHz, up to 3.7 GHz @6 W) N2: Quad-Core N97 (2.0 GHz, up to 3.6 GHz @12 W) N1: Dual-Core N50 (1.0 GHz, up to 3.4 GHz @6 W) FCBGA1264 N6: 9 W / 15 W N1, N4: 6 W N2: 12 W
	<b>PROCESSOR SOCKET</b>	yes
	<b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b>	yes
	<b>CPU TDP LIMITING OPTION</b>	yes
	<b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b>	32 GByte
	<b>NUMBER OF SOCKETS</b>	1
	<b>RAM SPEED</b>	DDR5 4800
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b>	Intel® UHD Graphics 7xx driven by X <sup>e</sup> Architecture up to 3x DP (1x via USB Type-C), 1x Dual-Channel LVDS, 1x eDP @ 4 lanes
	<b>GRAPHICS INTERFACES</b>	
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>	1x Realtek RTL8111H 1x Realtek RTL8125BG-CG
	<b>IAMT/VPRO</b>	-/-
<b>AUDIO</b>	<b>TYPE</b>	Stereo
	<b>ONBOARD CONTROLLER</b>	Realtek ALC256
	<b>BUZZER/SPEAKER</b>	yes/yes
	<b>S/PDIF HEADER</b>	yes
<b>EXTENSION SLOTS</b>	<b>PCIe X16/X8/X4/X1/PCI MINI-PCIe/MSATA</b>	-/-/-/-/-
	<b>M.2 SSD (PCIe AND/OR SATA)</b>	-/-
	<b>M.2 WLAN (KEY-E)</b>	1x M.2 2230/2242/2280 (Key-M, 2x PCIe Gen3, NVMe) 1x M.2 2230 (Key-E, WLAN PCIe and CNVi)
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b>	-/-
	<b>USB PORTS 2.0/STICK SOCKET</b>	3 (pin headers)/-
	<b>SATA PORTS/SATA RAID</b>	1/-
	<b>COM PORT INT. HEADER</b>	2
	<b>PARALLEL PORT INT. HEADER</b>	-
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b>	2/4
	<b>USB 3.2 GEN1 TYPE C</b>	1
	<b>USB PORTS 2.0</b>	-
	<b>COM PORTS</b>	-
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b>	12 V/19-28 V
	<b>INTERNAL SUPPLY</b>	
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	0 °C - 60 °C
<b>MISCELLANEOUS</b>	<b>FAN SPEED CUSTOMIZING</b>	yes
	<b>TPM V2.0</b>	yes (Intel®)
	<b>CHASSIS INTRUSION SUPPORT</b>	yes
	<b>HW WATCHDOG</b>	yes
	<b>MISCELLANEOUS</b>	MS Windows 11, 2x COM (1x incl. RS-232/-422/-485 Support) USB-C with DP Alt. Mode and PowerDelivery Sink



## Product Highlights

- ▶ Intel® Core™ i3 processors & Intel® Processors N Series (Alder Lake N)
- ▶ DDR5-4800 SODIMM, max 32 GByte
- ▶ Gen12 UHD Graphics - driven bei X<sup>e</sup> architecture
- ▶ Up to 3x DisplayPort V1.4a
- ▶ Dual Channel LVDS (24 bit) and eDP V1.4b
- ▶ PCI Express® x1 (Gen3, mechanical x4)
- ▶ 8 Bit GPIO & HD Audio onboard
- ▶ 4x USB 2.0, 4x USB 3.2 Gen1, 3x USB 3.2 Gen2
- ▶ Internal USB3 Key-A for USB-C extension cable
- ▶ Internal USB2 Stick socket
- ▶ 1x Realtek GbE LAN, 1x Intel® 2.5GbE incl. Teaming
- ▶ 1x SATA 6G
- ▶ 1x M.2 2230/2242/2280 (Key-M, PCIe x1 Gen3/NVMe SSD modules)
- ▶ 1x M.2 2242/2280 (Key-B, PCIe x1 Gen3/SATA SSD modules)
- ▶ 1x M.2 2230 (Key-E, WLAN/Bluetooth modules, CNVi support only)
- ▶ Intel® integrated iTPM V2.0
- ▶ Up to 4x RS-232 support onboard (1x with RS485/422 optional)
- ▶ HW Watchdog onboard
- ▶ WideRange internal/external DC input (8 V - 34 V)

<b>BASEBOARD</b>	<b>DIMENSIONS</b> <b>CHIPSET</b>	6.7" x 6.7" (170 x 170 mm) Intel® Alder Lake-N SoC
<b>CPU SUPPORT</b>	<b>PROCESSOR</b>	N6: Octa-Core i3-N305 (1.0 GHz, up to 3.8 GHz @9 W; 1.8 GHz, up to 3.8 GHz @15 W) N4: Quad-Core N200 (1.0 GHz, up to 3.7 GHz @6 W) N2: Quad-Core N97 (2.0 GHz, up to 3.6 GHz @12 W) N1: Dual-Core N50 (1.0 GHz, up to 3.4 GHz @6 W) FCBGA1264
	<b>PROCESSOR SOCKET</b> <b>MAX. PROCESSOR POWER CONSUMPTION (TDP)</b>	N6: 9 W/15 W N1, N4: 6 W N2: 12 W
	<b>CPU TDP LIMITING OPTION</b> <b>HIGH EFFICIENCY CORE VOLTAGE REGULATOR</b>	yes yes
<b>MEMORY</b>	<b>MAX. CAPACITY</b> <b>NUMBER OF SOCKETS</b> <b>RAM SPEED</b>	32 GByte 1 DDR5 4800
<b>GRAPHICS</b>	<b>ONBOARD GRAPHICS</b> <b>GRAPHICS INTERFACES</b>	Intel® Gen12 UHD Graphics 3x DP, 1x Dual-Channel LVDS, 1x eDP @ 4 lanes
<b>ETHERNET</b>	<b>ONBOARD LAN CONTROLLER</b>	1x Intel® i226 1x Realtek RTL8111H
	<b>IAMT/VPRO</b>	-/-
<b>AUDIO</b>	<b>TYPE</b> <b>ONBOARD CONTROLLER</b> <b>BUZZER/SPEAKER</b> <b>S/PDIF HEADER</b>	Stereo Realtek ALC256 yes/yes yes
<b>EXTENSION SLOTS</b>	<b>PCIe X16/XB/X4/X1/PCI</b> <b>MINI-PCIe/MSATA</b> <b>M.2 SSD</b> <b>(PCIe AND/OR SATA)</b>	-/-/1/-/ -/ 1x M.2 2230/2242/2280 (Key-M, 2x PCIe, NVMe) 1x M.2 2242/2280 (Key-B, 1x PCIe, SATA) 1x M.2 Key-E (CNVi, USB)
	<b>M.2 WLAN (KEY-E)</b>	
<b>INTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB PORTS 2.0/STICK SOCKET</b> <b>SATA PORTS/SATA RAID</b> <b>COM PORT INT. HEADER</b> <b>PARALLEL PORT INT. HEADER</b>	1 (pin header)/2 (pin header) 3 (pin headers)/1 1/- 2 -
<b>EXTERNAL CONNECTORS</b>	<b>USB PORTS 3.2 GEN2/3.2 GEN1</b> <b>USB 3.2 GEN2 TYPE C</b> <b>USB PORTS 2.0</b> <b>COM PORTS</b>	2/2 - - 2
<b>POWER SUPPLY OPTIONS</b>	<b>EXTERNAL SUPPLY</b> <b>INTERNAL SUPPLY</b>	8 V - 34 V
<b>ENVIRONMENTAL MISCELLANEOUS</b>	<b>OPERATION TEMPERATURE</b> <b>FAN SPEED CUSTOMIZING</b> <b>TPM V2.0</b> <b>CHASSIS INTRUSION SUPPORT</b> <b>HW WATCHDOG</b> <b>MISCELLANEOUS</b>	0 °C - 60 °C yes yes (Intel®) yes yes MS Windows 11, No Legacy OS Support, 4x COM (1x incl. RS-232/-422/-485 Support, 1x cTalk), GPIO



## ▶ SMARTCASE™ Family

Besides the industrial motherboard portfolio we provide the small and stylish SMARTCASE™ solutions. Approved for EMC according to CE and FCC/B, the chassis family is applicable in different areas with high demands, e.g. industry or digital signage. It's a modularized, compact and flexible IPC chassis family. In addition, they are thermally approved up to 45 °C and integrate a 2.5" drive bay for HDD/SDD with cooler as well as further expansion options such as graphics cards or Bluetooth/WiFi.

SMARTCASE™ solutions are applicable in many branches:

- ▶ Digital Signage
- ▶ Gambling
- ▶ Vending/POS/ATM/Kiosk/Ticketing
- ▶ Industrial Automation





### Product Highlights

- Ultra-Compact Design
- 36 x 147 x 165 mm
- Front & Rear USB
- Horizontal or Vertical Operation
- VESA- and Wall Mount Option

<b>CHASSIS DATA</b>	<b>FORMFACTOR DIMENSIONS</b>	Mini-STX 36 x 147 x 165 mm (W x H x D) 0.87 l black ~ 0.4 kg
<b>CPU SUPPORT</b>	<b>PROCESSOR SOCKET</b>	Intel® BGA
<b>SUPPORTED MOTHERBOARDS</b>		K3921-N, K3921-H
<b>ENVIRONMENTAL CONDITIONS</b>	<b>OPERATING TEMPERATURE</b>	Passive Cooling (fanless)*: -10°C ... +35°C (max. 12W TDP) -10°C ... +45°C (max. 10W TDP, vertical position) Active Cooling (with Fan): -10°C ... +45°C (up to 15W TDP)
	<b>HUMIDITY</b>	5 % - 85 %
<b>CHASSIS/ SYSTEM FAN SPECIFICATION</b>	<b>MTBF OPERATING TEMPERATURE</b>	no chassis fan -
<b>REQUIREMENTS FOR AC ADAPTER</b>	<b>DC INPUT</b>	12 V or 19-28 V (5 A max./65 W max.)
	<b>DC PLUG</b>	Ø 2.5 mm/5.5 mm
<b>APPROVALS &amp; CERTIFICATIONS</b>	<b>CE CLASS B INDUSTRIAL IMMUNITY FCC CLASS B (VERIFIED)</b>	yes yes yes
<b>CHASSIS FEATURES</b>	<b>THEFT PROTECTION MOUNTING OPTIONS</b>	Kensington lock support Intrusion Support Integrated WLAN antennas Wall Mount VESA Kit DC-in holder Cooling solution Rear COM port (incl. RS-232, RS-422, RS-485)

\* Limited cooling performance in horizontal operating mode; possible system performance reduction. Vertical operating position recommended for most favorable cooling & system performance



### Product Highlights

- Ultra-Compact Design
- Perfect fit for mini-STX motherboard D3714-V/R and D3724-R
- Small Size (36 x 147 x 165 mm)
- Front & Rear USB
- Horizontal or Vertical Operation
- VESA- and Wall Mount Option

<b>CHASSIS DATA</b>	<b>FORMFACTOR DIMENSIONS</b>	Mini-STX 36 x 147 x 165 mm (W x H x D) 0.87 l black ~ 0.4 kg
<b>CPU SUPPORT</b>	<b>PROCESSOR SOCKET</b>	AMD® BGA
<b>SUPPORTED MOTHERBOARDS</b>		D3714-R, D3714-V, D3724-R
<b>ENVIRONMENTAL CONDITIONS</b>	<b>OPERATING TEMPERATURE</b>	Passive heatsink (fanless): -10 °C ... +40°C (max. 10W TDP, vertical position) Active heatsink (with Fan): -10 °C ... +40°C (up to 25W TDP)
	<b>HUMIDITY</b>	5 % - 85 %
<b>CHASSIS/ SYSTEM FAN SPECIFICATION</b>	<b>MTBF OPERATING TEMPERATURE</b>	no chassis fan -
<b>REQUIREMENTS FOR AC ADAPTER</b>	<b>DC INPUT DC PLUG</b>	12 V +/-10 %/19-28 V +/-10 %/-15 % Ø 2.5 mm/5.5 mm
<b>APPROVALS &amp; CERTIFICATIONS</b>	<b>CE CLASS B INDUSTRIAL IMMUNITY FCC CLASS B (VERIFIED)</b>	yes yes yes
<b>CHASSIS FEATURES</b>	<b>THEFT PROTECTION MOUNTING OPTIONS</b>	Kensington lock support Internal WLAN antenna kit (2 antennas - integrated in chassis front) Wall Mount VESA Kit DC-in holder Rear COM port* (incl. RS-232, RS-422, RS-485)

\* Available for motherboard versions up to 3 rear graphics ports only



### Product Highlights

- Mini-ITX Chassis for industrial applications, digital signage, etc.
- Perfect fit for mini-ITX motherboard D3633-S & D3634-S
- 12 V DC in, lockable, max. 60 W (System)/35 W (CPU TDP)
- Fully CE and FCC/B approved on system level
- Thermally approved up to 45 °C
- HDD/system fan (4 pin PWM), HDD SATA and power cable included
- Intrusion switch and Kensington lock
- Small size (250 x 52 x 191 mm)
- Usable in horizontal and vertical mode
- High expandability within a small-sized box: Intel® CPU/PCIe riser card/mSATA/miniPCIe/M.2 (SSD)/2.5" drive bay

CHASSIS DATA	<b>FORMFACTOR DIMENSIONS</b>  <b>COLOUR WEIGHT</b>	Mini-ITX 250 x 52 x 191 mm (W x H x D) 2.48 l black ~ 1 kg
CPU SUPPORT	PROCESSOR SOCKET	Intel® LGA
SUPPORTED MOTHERBOARDS		D3633-S, D3634-S
ENVIRONMENTAL CONDITIONS	<b>OPERATING TEMPERATURE HUMIDITY</b>	0 °C – 45 °C* 5 % - 85 %
CHASSIS/SYSTEM FAN SPECIFICATION	<b>MTBF OPERATING TEMPERATURE</b>	70.000 hours @ 40 °C PWM (4 pin), 40 x 40 x 10 mm 900 – 5.000 rpm (nominal) Two ball bearing
REQUIREMENTS FOR AC ADAPTER	<b>DC INPUT DC PLUG</b>	12 V +/- 5 % 5.5 x 2.5 x 12 mm Lockable DC Plug (optional)
APPROVALS & CERTIFICATIONS	<b>CE CLASS B INDUSTRIAL IMMUNITY FCC CLASS B (VERIFIED)</b>	yes yes yes
CHASSIS FEATURES	<b>THEFT PROTECTION</b>  <b>MOUNTING OPTIONS</b>	Two front USB ports Kensington lock support Mechanical lock for DC-In connector Intrusion Support WLAN antenna via (RP-) SMA connector PCIe riser (PCIe x4, low profile) Additional serial port 2.5" Drive

\*Chassis ambient temperature; upper limit depends on system configuration





### Product Highlights

- Compact Design with Dual Front USB 3.2 Gen1
- Perfect fit for mini-ITX motherboards K3931-N & D3723-R
- Low Profile Extension Slot
- Option for Internal 65W PSU Module
- Horizontal and Vertical Stand plus Wall Mount Bracket
- Option for rear USB-C 3.2 Gen2 extension
- Thermally approved up to 45 °C
- Small size (250 x 52 x 191 mm)
- High expandability within a small-sized box: Intel® CPU/PCIe riser card/mSATA/miniPCIe/M.2 (SSD)/2.5" drive bay

<b>CHASSIS DATA</b>	<b>FORMFACTOR DIMENSIONS</b>	Mini-ITX 250 x 52 x 191 mm (W x H x D) 2.48 l black ~ 1 kg
<b>CPU SUPPORT</b>	<b>PROCESSOR SOCKET</b>	Intel® BGA or AMD BGA
<b>SUPPORTED MOTHERBOARDS</b>		K3931-Nx, D3713-V/R, D3723-R
<b>ENVIRONMENTAL CONDITIONS</b>	<b>OPERATING TEMPERATURE</b>	Passive heatsink (fanless): -10 °C ... +35 °C (max. 15 W TDP, vertical/horizontal position)* -10 °C ... +40 °C (max. 12 W TDP, vertical position only)* Active heatsink (with Fan): -10 °C ... +45 °C (max. 35 W TDP, vertical/horizontal position)* 5% - 85%
<b>CHASSIS/SYSTEM FAN SPECIFICATION</b>	<b>HUMIDITY</b>	
<b>REQUIREMENTS FOR AC ADAPTER</b>	<b>MTBF OPERATING TEMPERATURE</b>	70.000 hours @ 40 °C PWM (4 pin), 40 x 40 x 10 mm 900 - 5.000 rpm (nominal) Two ball bearing
<b>APPROVALS &amp; CERTIFICATIONS</b>	<b>DC INPUT DC PLUG</b>	8 V-34 V (5 A max./65 W max.) Ø 2.5 mm/5.5 mm
<b>CHASSIS FEATURES</b>	<b>CE CLASS B INDUSTRIAL IMMUNITY FCC CLASS B (VERIFIED)</b>	yes yes yes
	<b>THEFT PROTECTION</b>	Two front USB ports Kensington lock support Mechanical lock for DC-In connector Intrusion Support WLAN antenna via (RP-) SMA connector PCIe riser (PCIe x4, low profile)
	<b>MOUNTING OPTIONS</b>	Two rear COM ports (COM3, COM4) 2.5" Drive (HDD/SSD) Rear USB-C 3.2 Gen2 extension

\* Chassis ambient temperature; upper limit depends on system configuration

# Accessories

## Important parts for more functionality

CABLE		GRAPHICS	
	<b>DRIVE POWER CABLE</b> provides power for SATA HDD and SATA slimline DVD	<b>Compatibility</b> all mSTX & mITX models	
	<b>SERIAL PORT CABLE</b>	refer to data sheet	<b>DISPLAY PORT TO HDMI ADAPTER</b> all models with a free DP interface
	<b>USB-C CABLE</b>	refer to data sheet	<b>DISPLAY PORT TO DVI ADAPTER</b> for usage of DVI monitor on Display Port output
	<b>ACTIVE COOLER</b> (alu cooler, 4 pin PWM fan)	<b>Compatibility</b> D3674-B mITX (@35 W TDP) D3633-S mITX (@35 W TDP) D3634-S mITX (@35 W TDP) D3713-V/R mITX D3723-R mITX D3714-V/R mSTX D3724-R mSTX K383x mITX K384x µATX K3851-R ATX K3921-N/-H mSTX K3931-N mITX	
	<b>PASSIVE HEATSINK</b> (alu heatsink)	D3713-V/R mITX D3723-R mITX D3714-V/R mSTX K3921-N/-H mSTX K3931-N mITX	<b>D3627-A</b> TPM-Upgrade-Modul
	<b>1X PCIe RISER CARD D3318-A</b> 1 PCIe Slot	<b>Compatibility</b> D3713-V/R mITX D3723-R mITX K3931-N mITX D3633-S mITX D3634-S mITX suitable for SMARTCASE™ S7xx Series	<b>D3352-A1x</b>
			<b>D3436-S</b> Adapter for Mini PCIe to M.2 Wi-Fi modules
			<b>19 V AC ADAPTER</b> 65 W
			
			<b>20 V AC ADAPTER</b> 120 W
			
			<b>12 V INTEGRATED POWER SUPPLY</b> 65 W
			
			<b>Compatibility</b> D3713-V/R mITX D3723-R mITX K3921-N/-H mSTX K3931-N mITX
			<b>Compatibility</b> All motherboards providing a PCIe x8 or x16 slot (≥ 4 lanes)
			<b>Compatibility</b> All industrial models with a fullsize Mini PCIe socket
			D3674-B mITX D3654-B mSTX D3664-B mSTX D3713-V/R mITX D3723-R mITX K3921-N/-H mSTX K3931-N mITX D3714-V/R mSTX D3724-R mSTX

\*Example photo. Further cables and cooling solutions available