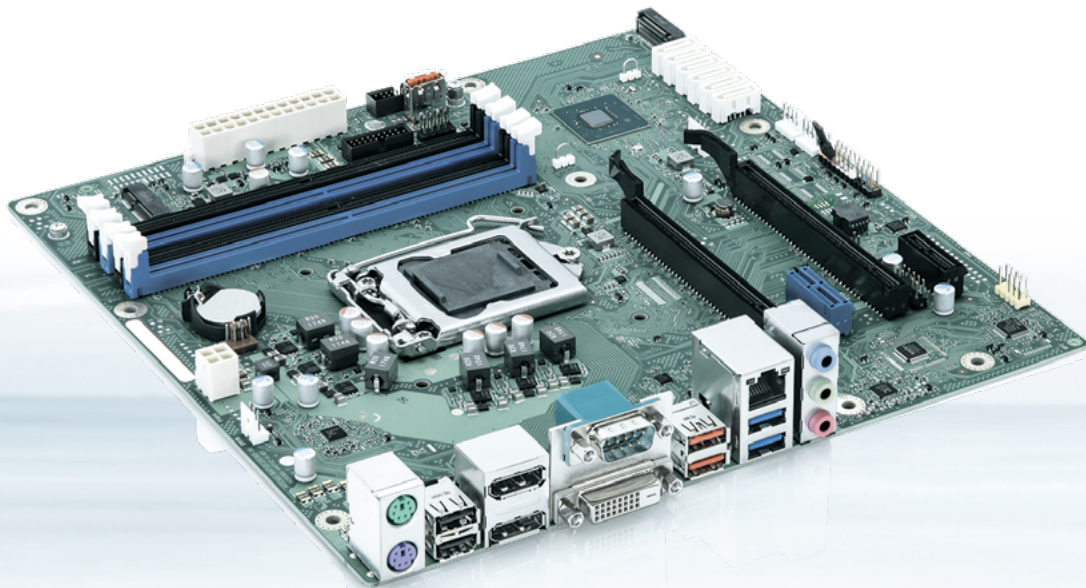


D3644-B μ ATX

Extended Lifecycle Series



Intel® C246 Express Chipset and Intel® Xeon®/Intel® 8th/9th Gen Core™ i3/i5/i7/i9 Processors

- ▶ cTDP – Easy & flexible reduction of CPU TDP
- ▶ Supporting Intel® AMT 12.0/vPro
- ▶ 6x SATA/RAID
- ▶ M.2 SSD & M.2 WLAN Slots onboard
- ▶ Powerful USB 3.1 Gen2

POSSIBILITIES START HERE

D3644-B µATX

Extended Lifecycle Series

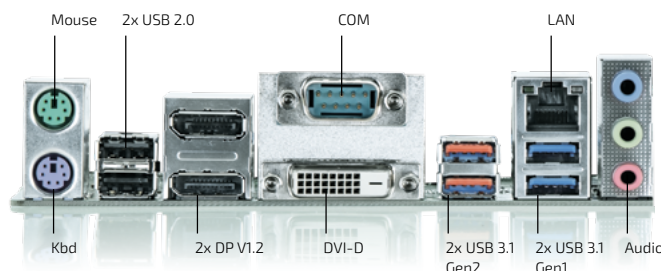
The Motherboard D3644-B µATX of the Extended Lifecycle Series is the best solution for demanding requirements. It supports the Intel® Xeon® E-21xx/E-22xx processor series, the Intel® Core™ i9/i7/i5/i3 (8th/9th Gen) and the Intel® Pentium®/Intel® Celeron®

processor series. The D3644-B µATX is made in Germany. Furthermore, it provides highest performance and functionality while keeping energy consumption at an extraordinary low level.

▶ 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 3.1 Gen1, 2x USB 3.1 Gen2, 1x USB 3.1 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



▶ TECHNICAL INFORMATION

SYSTEM	PROCESSOR	Intel® Xeon® E-21xx/E-22xx processor series Intel® Core™ i9/i7/i5/i3 (8th/9th Gen) processor series** Intel® Pentium®/Intel® Celeron® processor series Socket LGA1151, max. 95 W TDP (For details on supported processors please refer to Kontron FTP Server)
	CHIPSET MEMORY	Intel® C246 Express Chipset 4 DIMM Sockets DDR4-2666 (1.2V), max. 64 GByte, Dual Channel DDR4 -2666 (CL19)/-2400 (CL17)/-2133 (CL15) SDRAM, unbuffered, ECC/non-ECC Note: 128 GByte memory configuration (4x 32 GByte modules) not supported Effective memory speed depends on installed processor
VIDEO	GRAPHICS	Intel® UHD Graphics (depends on installed processor), DX12 2x DP V1.2 1x DVI-D VGA output possible via optional VGA extension card D3653-A
AUDIO	AUDIO CODEC AUDIO INTERFACE	Realtek ALC671 5.1- channel, High Definition Audio Codec
NETWORK CONNECTION	ETHERNET	Intel® i219LM with 10/100/1000 MBit/s Wake-on-LAN (WoL) by interesting Packets, Link Status Change and Magic Packet™, PXE Support, BIOS MAC Address Display
PERIPHERAL CONNECTION	USB SERIAL PORT	4x USB 2.0, 6x USB 3.1 Gen1, 2x USB 3.1 Gen2, 1x USB 3.1 Gen2 stick socket 1x RS232 (by header)
STORAGE & EXPANSION	SATA PCIe/PCI SLOTS	6x Serial ATA III 600 Interface (up to 6GBit/s), NCQ, AHCI, RAID 0/1/5/10, 1x M.2 PCIe (2280), 1x M.2 Key-E (2230) PCIe x16: 1x 16 lanes, Gen3/1x 4 lanes, Gen3 PCIe x1: 1x Gen3, "open"/1x Gen3, "closed"
POWER	CONNECTOR INPUT VOLTAGE	ATX- 24 Pin or ATX- 20 Pin + 4 Pin (12 V) Power Connector required 12 V and 3.3 V Supply Voltage on PCIe Slots 3.3 V Auxiliary Supply Voltage on PCIe Slots (Wake-Up Function)
FIRMWARE	BIOS WATCHDOG REAL TIME CLOCK TPM	AMI Aptio 5.x (UEFI) BIOS modified and adapted by Fujitsu Technology Solutions; 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 & BIOS integrated HW Diagnostic Tool. No legacy OS support, no MBR installation (UEFI only) Recovery BIOS, System and BIOS Password, Boot Sequence Control Integrated TPM V2.0 (Infineon SLB9670; TCG compliant)

TECHNICAL INFORMATION

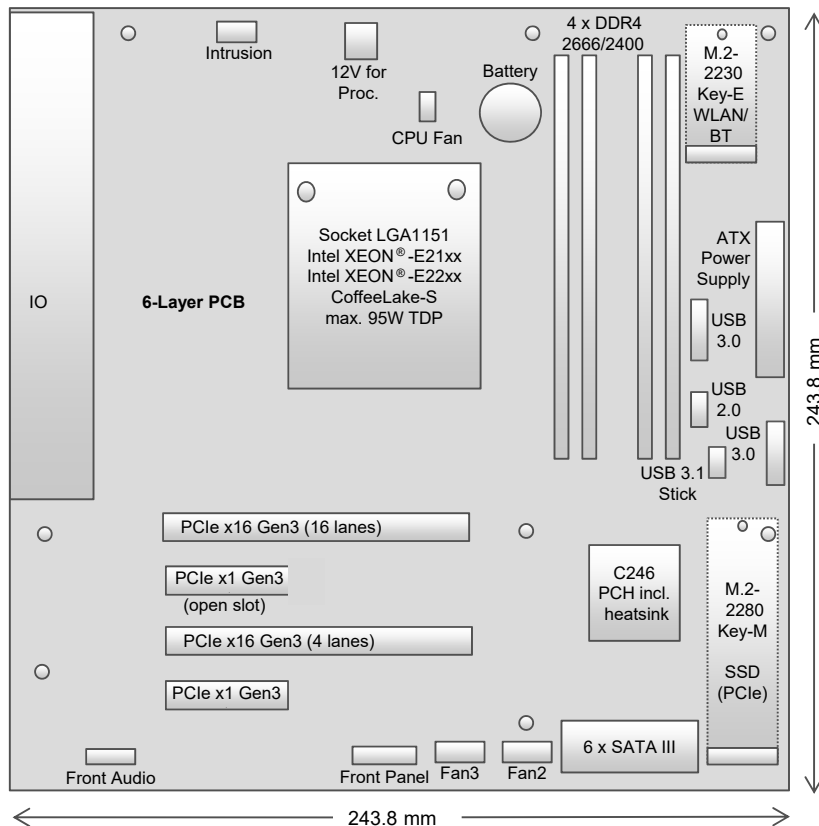
SYSTEM CONTROL	FP HEADER	1x Header for Reset button, HDD LED & External Speaker, Power button, Power LED Recovery BIOS, System and BIOS Password, Boot Sequence Control, Serial/USB- Port Access Protection, Boot Sector Virus Warning, Write Protection for Flash BIOS, EraseDisk (optional BIOS Feature), Infineon Trusted Platform Module (TPM)
	SECURITY	
SOFTWARE	OS SUPPORT	MS Windows 10 Linux-64
MECHANICAL	DIMENSIONS (L x W)	µATX: 9.6" x 9.6" (243.8 x 243.8 mm)
ENVIRONMENTAL	OPERATION TEMPERATURE	10 °C - 50 °C
CERTIFICATION	EMC & SAFETY	cTÜVus acc. IEC62368-1, CE Class B, FCC-B verified

POWER SUPPLY REQUIREMENTS

SOURCE	VOLTAGE	MIN. PS LOAD	MAX. VOLTAGE TOLERANCE	MOTHERBOARD CAPACITIVE LOAD	MOTHERBOARD MAX. CURRENT (continuous)
Main Power Supply	+ 12 V	0.05 A	± 5 %	5.000 µF	10 A / 18 A*
	- 12 V	0 A	± 10 %	470 µF	0.3 A
	+ 5 V	0.2 A	± 5 %	3.000 µF	6.0 A
	+ 3.3 V	0 A	± 5 %	3.000 µF	0.5 A
Aux	+ 5 Vaux	0 A	+ 5 % / - 3 %	3.000 µF	2.5 A

*) Processor 95 W TDP: Max. Cont. Current = 10 A; max. Surge Current = 16 A (< 100sec) / 18 A (< 10ms)
 Processor 65 W TDP: Max. Cont. Current = 7 A; max. Surge Current = 14 A (< 100sec) / 18 A (< 10ms)
 Processor 35 W TDP: Max. Cont. Current = 4 A; max. Surge Current = 10 A (< 100sec) / 14 A (< 10ms)

CONNECTOR / SOCKET DIAGRAM



▶ TECHNICAL INFORMATION

FEATURES	Board Size / Chipset VGA* / DVI-I / DVI-D / DP V1.2 / 2nd DP V1.2 / LVDS Stereo Audio / 5.1 Multichannel Audio / Front Panel Audio Buzzer / int. Speaker Support (mono) LAN Gbit / 100 Mbit / 10 Mbit / WoL / LAN Boot / Teaming AMT 12.0 vPro / Intel Standard Manageability / DASH V1.1 SATA / SATA RAID / eSATA Support / mSATA / M.2 SSD (PCIe) USB 2.0 / USB 3.1 Gen1 / USB 3.1 Gen2 FAN controlled & monitored PSU** / CPU / AUX1 / AUX2 / AUX3 TEMP monitored CPU / Onboard Sensors / External Sensor	µATX / iC246 - / - / + / + / + / - - / + / + - / + + / + / + / + / + / - + / + / + + / + / + / - / + + / + / + - / + / + / + / - + / + / -
SPECIAL FEATURES	Silent Fan / System Guard / cTDP Recovery BIOS / Desk 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)****	+ / + / + + / + / + + / + / + + / + / + + + + / - 10 °C – 50 °C
INTERNAL CONNECTORS	DIMM Sockets (DDR4 2666MHz) PCI Express® x16: 16lanes-gen3 / PCI Express® x16: 4lanes-gen3 PCI Express® x1: gen3-"open" / PCI Express® x1: gen3-1 lane-"closed" PCI Slots (32 Bit, 33 MHz, Rev. 2.3) / Mini-PCIe SATA-600 / mSATA / M.2 SSD 2280 (Key-M, PCIe/NVME) 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 3.1 (Gen1) / USB 3.1 (Gen2) / USB 3.1 (Gen2) Stick***** FAN PSU / CPU / AUX1 / AUX2 / Aux3 Intrusion (Case Open) / GPIO (8Bit) / SM-Bus (Case Temp.) Serial (COM, RS-232) / Parallel Port Pin Header Front Panel (Power Switch, Reset Switch, LEDs, Intel 10 pin compatible) ATX Power Supply (24 pin + 4 pin) / 12 V-only Power Supply	4 1 / 1 1 / 1 - / - 6 / - / 1 1 - / - 1 1 / 2 / - / 1 - / 1 / 1 / 1 / - 1 / - / - - / - 1 + / -
EXTERNAL CONNECTORS	VGA Sub D* / DVI-I / DVI-D / DP V1.2 Audio Mic. In / Line in / Line out (or driver configuration) LAN (RJ-45) PS/2 Mouse / Keyboard USB 2.0 / USB 3.1 (Gen1) / USB 3.1 (Gen2) Serial (COM1, RS-232) Parallel (EPP/ECP)	- / - / 1 / 2 1 / 1 / 1 1 1 / 1 2 / 2 / 2 1 -

*) VGA possible via optional Extension Card D3653-A or DP-VGA-converter (dongle)

***) Not supported by standard Power Supplies

****) Planned for factory shipments from 05/2019

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

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

▶ ORDERING INFORMATION

ARTICLE	PART NO.	DESCRIPTION
D3644-B µATX	F5110-V162	Intel® 8th/9th Gen Core™ & Intel® Xeon® processor series, Intel® C246 Chipset
ACCESSORIES		
VGA EXTENSION CARD	F5000-R009	D3653-A
M.2 CARRIER BOARD	F5000-M001	D3352-A1

▶ GLOBAL HEADQUARTERS

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