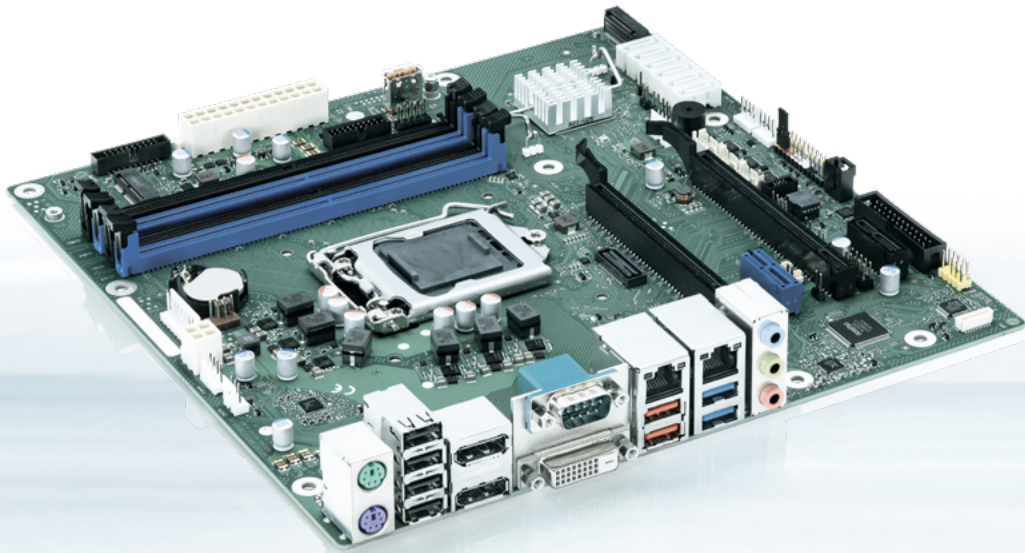


# D3641-S $\mu$ ATX

## Industrial Series

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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
- ▶ Dual LAN, 4x COM, GPIO
- ▶ M.2 SSD & M.2 WLAN slots onboard
- ▶ Powerful USB 3.1 Gen2

POSSIBILITIES START HERE



# D3641-S μATX

## Industrial Series

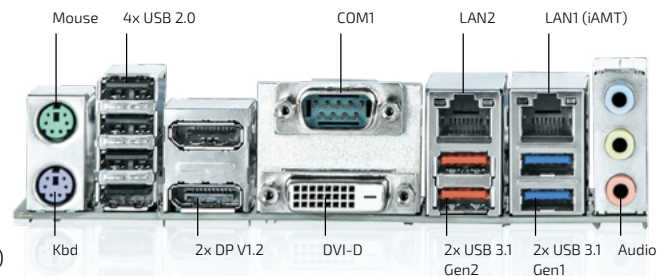
The Industrial Motherboard D3641-S μATX is equipped with the highly performant Intel® C246 Express Chipset. It also offers a multitude of supporting processors such as the Intel® Xeon® E-21xx/E-22xx processor series, as well as Intel® Core™ i9/i7/i5/i3 (8th/9th Gen) and the Intel® Pentium®/Intel® Celeron® processor

series. Designed and approved for 24/7 continuous operation and an enhanced temperature range up to 60 °C the D3641-S μATX provides high functionality and fits perfect with special requirements of certain markets. It offers extended manageability with the latest Intel® AMT 12.0 and vPro.

### ▶ 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; 4 x COM ports
- ▶ 6x USB 2.0, 4x USB 3.1 Gen1, 2x USB 3.1 Gen2, 1x USB 3.1 Gen2 stick socket
- ▶ 6x SATA 6G/s 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



### ▶ TECHNICAL INFORMATION

<b>SYSTEM</b>	<b>PROCESSOR</b>	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)
	<b>CHIPSET</b>	Intel® C246 Express Chipset
	<b>MEMORY</b>	4 DIMM Sockets DDR4-2666 (1.2 V), max. 64 GByte, Dual Channel DDR4 -2666 (CL19)/-2400 (CL17)/-2133 (CL15) SDRAM, unbuffered, ECC1/non-ECC Effective memory speed depends on installed processor
<b>VIDEO</b>	<b>GRAPHICS</b>	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
<b>AUDIO</b>	<b>AUDIO CODEC</b>	Realtek ALC671
	<b>AUDIO INTERFACE</b>	5.1- channel, High Definition Audio Codec
<b>NETWORK CONNECTION</b>	<b>ETHERNET</b>	Intel i219LM & i210AT with 10/100/1000 MBit/s, AMT 12.0/vPro 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>	6x USB 2.0, 4x USB 3.1 Gen1, 2x USB 3.1 Gen2, 1x USB 3.1 Gen2 stick socket
	<b>SERIAL PORT</b>	1x RS232 (by header)
	<b>OTHER I/Os</b>	1x 8-Bit GPIO
<b>STORAGE &amp; EXPANSION</b>	<b>SATA</b>	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)
	<b>PCIe/PCI SLOTS</b>	PCIe x16: 1x 16 lanes, Gen3/1x 4 lanes, Gen3 PCIe x1: 1x Gen3, "open"/1x 1 lane, Gen3, "closed"
<b>POWER</b>	<b>CONNECTOR</b>	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>FIRMWARE</b>	<b>BIOS</b>	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 due to Intel restrictions) Recovery BIOS, System and BIOS Password, Boot Sequence Control Integrated TPM V2.0 (Infineon SLB9670; TCG compliant)
	<b>WATCHDOG</b>	
	<b>REAL TIME CLOCK</b>	
	<b>TPM</b>	

## TECHNICAL INFORMATION

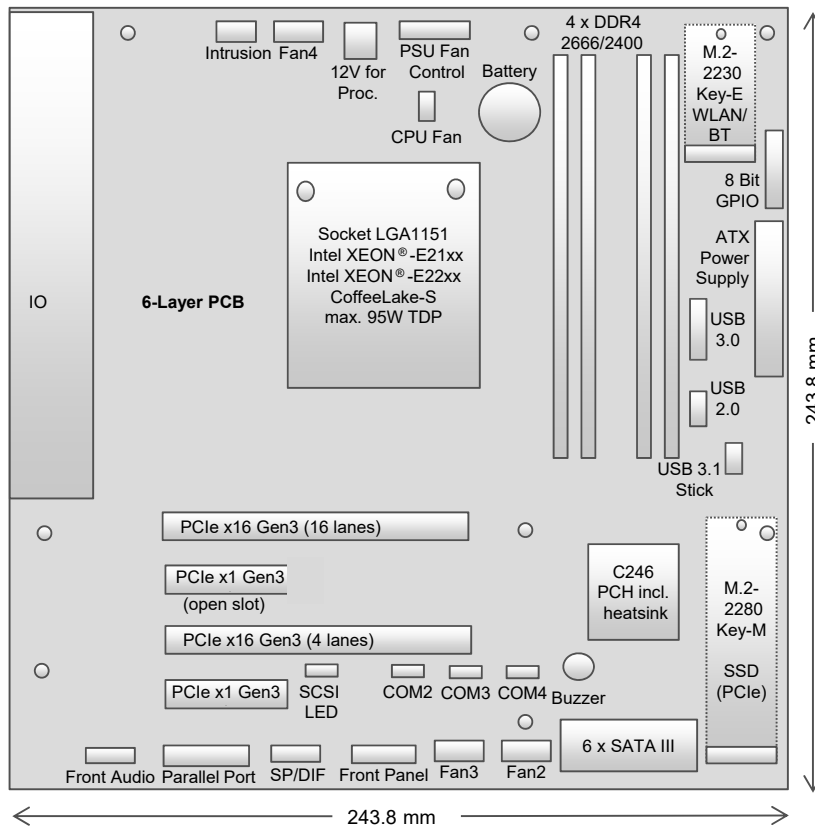
<b>SYSTEM CONTROL</b>	<b>FP HEADER</b>	1x Header for Reset button, HDD LED & External Speaker 1x Header for Power button, Power LED Recovery BIOS, System and BIOS Password, Boot Sequence Control, Serial/USB-Port Access Protection, Boot Sector Virus Warning, Write Protection for Flash BIOS, EraseDisk (optional BIOS Feature), Infineon Trusted Platform Module (TPM), Infineon SLB9670
	<b>SECURITY</b>	
<b>SOFTWARE</b>	<b>OS SUPPORT</b>	MS Windows 10 Linux-64
<b>MECHANICAL</b>	<b>DIMENSIONS (L x W)</b>	µATX: 9.6" x 9.6" (243.8 x 243.8 mm)
<b>ENVIRONMENTAL</b>	<b>OPERATION TEMPERATURE</b>	0 °C - 60 °C
<b>CERTIFICATION</b>	<b>EMC &amp; SAFETY</b>	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

<b>FEATURES</b>	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) Dual 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 - / - / + / + / + / - - / + / + + / + + / + / + / + / + / + + / + / + + / + / - / - / + + / + / + + / + / + / + / + + / + / -
<b>SPECIAL FEATURES</b>	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)***	+ / + / + + / + / + + / + / + + / + / + + + + / - 0 °C – 60 °C
<b>INTERNAL CONNECTORS</b>	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 1 / 1 / - / 1 1 / 1 / 1 / 1 / 1 1 / 1 / - 3 / 1 1 + / -
<b>EXTERNAL CONNECTORS</b>	VGA Sub D* / DVI-I / DVI-D / DisplayPort 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 2 1 / 1 4 / 2 / 2 1 -

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

\*\*\*) Not supported by standard Power Supplies

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

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

\*\*\*\*\*) External parallel port possible via optional connector cable

## ORDERING INFORMATION

ARTICLE	PART NO.	DESCRIPTION
D3641-S µATX	F5110-V163	Intel® 8th/9th Gen Core™ & Intel® Xeon® Processor Series, Intel® C246 Chipset
<b>ACCESSORIES</b>		
VGA EXTENSION CARD	F5000-R9	D3653-A
SERIAL PORT CABLE	F5000-K10	400 mm, fullsize slot bracket
M.2 CARRIER BOARD	F5000-M1	D3352-A1

## Global Headquarters

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