D3642-B µATX
Extended Lifecycle Series

Intel® Q370 Express Chipset and 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
D3642-B µATX
Extended Lifecycle Series

The Motherboard D3642-B µATX of the Extended Lifecycle Series is the optimal solution for demanding applications in semi-industrial environments. It is featured by the Intel® Core™ i9/i7/i5/i3 (8th/9th Gen) processor series as well as the Intel® Pentium®/Intel® Celeron® processor series. The D3642-B µATX is also equipped with extension slots for PCIe and M.2 and connectors like USB 3.1 Gen3, DVI-D and Display Port.

PRODUCT HIGHLIGHTS

- Intel® B9th/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 3.1 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® Core™ i9/i7/i5/i3 (8th/9th Gen) processor series1
| | Intel® Pentium®/Intel® Celeron® processor series
| | Socket LGA1151, max. 95 W TDP
| | (For details on supported processors please refer to Kontron FTP Server)
| | Intel® Q370 Express Chipset
| | 4 DIMM Sockets DDR4-2666 (1.2 V), max. 64 GByte, Dual Channel DDR4 -2666 (CL19)/-2400 (CL17)/-2133 (CL15) SDRAM, unbuffered, non-ECC
| | Note: 128 GByte memory configuration (4x 32 GByte modules) not supported
| | Effective memory speed depends on installed processor
| CHIPSET | MEMORY |
| 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 | Realtek ALC671
| | AUDIO INTERFACE | 5.1- channel, High Definition Audio Codec
| | 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 | 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, Gen3/4
| | PCIe x1: 1x Gen3 “open”/1x Gen3, “closed”
| POWER | CONNECTOR/PCI SLOTS | ATX: 2x Pin or ATX-20 Pin + 4 Pin (12 V) Power Connector required
| | POWER Supply Voltage on PCIe Slots
| | 3.3 V Auxiliary Supply Voltage on PCIe Slots (Wake-Up Function)
| FIRMWARE | BIOS | 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 5.1, 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)
| WATCHDOG REAL TIME CLOCK TPM |
## 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
- 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: cTUVus acc. IEC62368-1, CE Class B, FCC-B verified

## Power Supply Requirements

<table>
<thead>
<tr>
<th>Source</th>
<th>Voltage</th>
<th>Min. PS Load</th>
<th>Max. Voltage Tolerance</th>
<th>Motherboard Capacitive Load</th>
<th>Motherboard Max. Current (continuous)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Power Supply</td>
<td>+12 V</td>
<td>0.05 A</td>
<td>±5 %</td>
<td>5.000 µF</td>
<td>10 A / 18 A*</td>
</tr>
<tr>
<td></td>
<td>-12 V</td>
<td>0 A</td>
<td>±10 %</td>
<td>470 µF</td>
<td>0.3 A</td>
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<tr>
<td></td>
<td>+5 V</td>
<td>0.2 A</td>
<td>±5 %</td>
<td>3.000 µF</td>
<td>6.0 A</td>
</tr>
<tr>
<td></td>
<td>+3.3 V</td>
<td>0 A</td>
<td>±5 %</td>
<td>3.000 µF</td>
<td>0.5 A</td>
</tr>
<tr>
<td>Aux</td>
<td>+5 Vaux</td>
<td>0 A</td>
<td>±5% / -3%</td>
<td>3.000 µF</td>
<td>2.5 A</td>
</tr>
</tbody>
</table>

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

## Connector / Socket Diagram

4 x DDR4 2666/2400

- 12V for Proc.
- Battery
- CPU Fan
- 4 x DDR4
- M.2-2230 Key-E WLAN/BT
- ATX Power Supply
- USB 3.0
- USB 2.0
- USB 3.0
- Front Audio
- Front Panel
- M.2-2280 Key-M
- SSD (PCIe)
- 6 x SATA III
- PCIe x16 Gen3 (16 lanes)
- PCIe x4 Gen3 (open slot)
- PCIe x16 Gen3 (4 lanes)
- PCIe x1 Gen3
- Q370 PCH incl. heatsink

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TECHNICAL INFORMATION

FEATURES

Board Size / Chipset: µATX / iQ370
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 / Wan / LAN Boot
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

SPECIAL FEATURES

Silent Fan / System Guard / CTOP
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: gen3-1lane-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

EXTERNAL CONNECTORS

VGA Sub D2 / 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)

*) VGA output possible via optional VGA extension card D3653-A
***) 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

<table>
<thead>
<tr>
<th>ARTICLE</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>D3642-B µATX</td>
<td>F5110-V161</td>
<td>Intel® 8th/9th Gen Core™ Processor Series, Intel® Q370 Chipset</td>
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ACCESSORIES

<table>
<thead>
<tr>
<th>VGA EXTENSION CARD</th>
<th>F5000-R009</th>
<th>D3653-A</th>
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</thead>
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<tr>
<td>M.2 CARRIER BOARD</td>
<td>F5000-M001</td>
<td>D3352-A</td>
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GLOBAL HEADQUARTERS

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