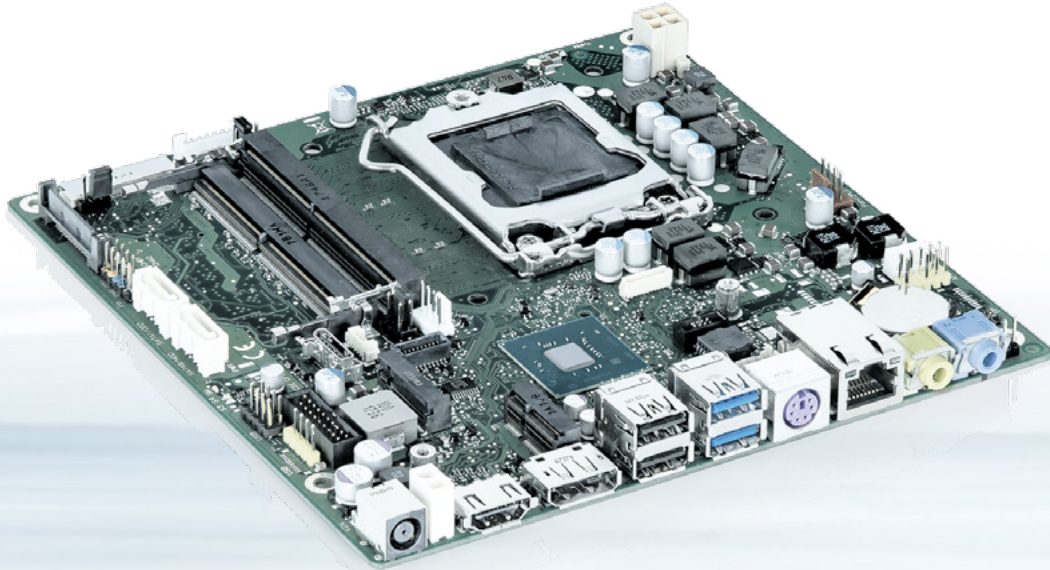


D3674-B Thin mITX

Extended Lifecycle Series



Intel® H310 Express Chipset supporting
8th/9th Gen Core™ i3/i5/i7/i9 Processors

- ▶ 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

POSSIBILITIES START HERE



D3674-B Thin mITX Extended Lifecycle Series

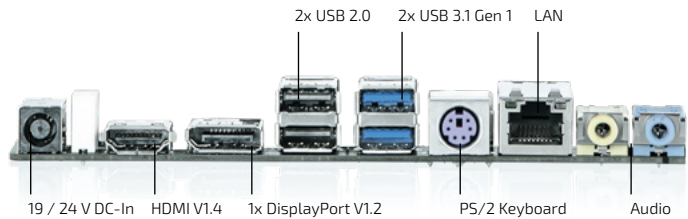
The Extended Lifecycle Motherboard D3674-B Thin mITX provides the highest performance and functionality for demanding requirements on a small and ultra thin form factor. It supports the Intel® Core™ i9/i7/i5/i3 – (8th/9th Gen) processor series as well as

the Intel® Pentium®/Intel® Celeron® processor series. Despite the limited space on this motherboard, the D3674-B is equipped with connectors for HDMI V1.4, Display Port V1.2, Dual Channel LVDS, LAN and 9x USB (2.0 and 3.1 Gen1).

▶ 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 3.1 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



▶ TECHNICAL INFORMATION

| | | |
|--------------------------------|--|--|
| SYSTEM | PROCESSOR | Intel® Core™ i9/i7/i5/i3 (8th/9th Gen) processor series* Intel® Pentium®/Intel Celeron® processor series Socket LGA1151, max. 65 W TDP (For details on supported processors please refer to Kontron FTP Server) |
| | CHIPSET MEMORY | Intel® H310 Express Chipset 2x SO DIMM Socket (1.2 V), max. 32 GByte, Dual Channel, DDR4 - 2666 (CL19)/DDR4 - 2400 (CL17) SDRAM, unbuffered, non-ECC Effective memory speed depends on installed processor |
| VIDEO | GRAPHICS | Intel® HD Graphics (depends on installed processor), DX12 1x DisplayPort V1.2 1x HDMI V1.4, Dual-Channel 24bit LVDS Max. 2 independent displays |
| AUDIO | AUDIO CODEC AUDIO INTERFACE | Realtek ALC255 5.1-channel, High Definition Audio Codec, 2W@40hm stereo speaker support Line-In / Line-Out Front panel audio (by header) |
| NETWORK CONNECTION | ETHERNET | Realtek RTL8111E 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 | 2x USB 2.0 + 3x USB 2.0 (by header) 2x USB 3.1 Gen1 + 2x USB 3.1 Gen1 (by header) |
| | SERIAL PORT OTHER I/Os | 1x RS232 (by header) 1x 8-bit GPIO (by header) + PS/2 Keyboard |
| STORAGE & EXPANSION | SATA | 1x M.2 2230-Key E (WLAN/Bluetooth) 1x M.2 2280-Key M (PCIe Storage) 2x SATA-600 |
| POWER | INPUT VOLTAGE | External DC-in: 19-24 V Internal DC-in: 12 V/19-24 V |

* Appropriate BIOS version supporting CoffeeLake-Refresh processors required

TECHNICAL INFORMATION

| | | |
|--|--|---|
| 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 Configuration, BIOS Support for S.M.A.R.T., Advanced Power Management, ACPI S3/S4, Wake on time from S5. Boot support for M.2 SSD (PCIe x4-based M.2, NVME) BIOS integrated HW Diagnostic Tool, Watchdog Support No Legacy OS support, no MBR installation BIOS POST-/BIOS BOOT-/OS-HW Watchdog Integrated Intel Integrated TPM V2.0 (Infineon TPM module optional) |
| SYSTEM CONTROL & MONITORING | WATCHDOG REAL TIME CLOCK TPM | |
| | FP HEADER SECURITY | 1x Front Panel header (Power Button, Reset Button, Power LED, HDD 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 (BIOS Feature), Intel integrated TPM V2.0, optional Infineon TPM module (TCG compliant, socket prepared) |
| COOLING | FAN | 1x CPU-Fan (4Pin-Header, PWM) 1x System-Fan (4Pin-Header, PWM) |
| SOFTWARE | OS SUPPORT | MS Windows 10 Linux-64 Important Note: Legacy OS/MBR installation (DOS, MS Windows 7, ...) is not supported |
| MECHANICAL | DIMENSIONS (L x W) | Thin mITX: 6.7" x 6.7" (170 x 170 mm) |
| CERTIFICATION | EMC & SAFETY | CE Class B, FCC-B verified Safety Testreport acc. EN 62368-1 |
| SPECIAL FEATURES | CTDP SILENT FAN SYSTEM GUARD RECOVERY BIOS DESK UPDATE MULTI BOOT HDD PASSWORD ALWAYS ON NEVER OFF CSA / UL COMPLIANCE FCC COMPLIANCE | Easy and flexible reduction of CPU TDP (BIOS Setup) down to 10W TDP Independent temperature related processor fan and system fan supervision View Silent Fan features Restores a corrupted BIOS Simple driver update with Driver & Utilities DVD Comfortable boot from any boot device Access protection for disk drives Reliable power-on whenever voltage is connected Option to prevent the system from being shut down Upon request: cTÜVus acc. IEC62368-1 FCC-B verified |

POWER SUPPLY REQUIREMENTS

| SOURCE | VOLTAGE | MIN. PS LOAD | MAX. VOLTAGE TOLERANCE | MOTHERBOARD CAPACITIVE LOAD | MOTHERBOARD MAX. CURRENT |
|----------------------------|---------|--------------|------------------------|-----------------------------|---------------------------|
| External connector | 19-24 V | 0 A | + 10%/- 15% | 200 µF | max. 10 A max. 130 W** |
| Internal (2 pin) connector | 19-24 V | 0 A | + 10%/- 15% | 200 µF | max. 8 A max. 130 W** |
| Internal (4 pin) connector | + 12 V | 0 A | ± 5 % | 1.500 µF | max. 12 A max. 144 W |

For onboard components (worst case incl. processor, memory and any attached internal and external devices like M.2 devices, SATA devices, LVDS panels, USB devices).

** LVDS backlight (19/24V) not included in 130W limit. See TechNotes document for further details.
Possible surge current (CPU Turbo mode) must be considered for system design!

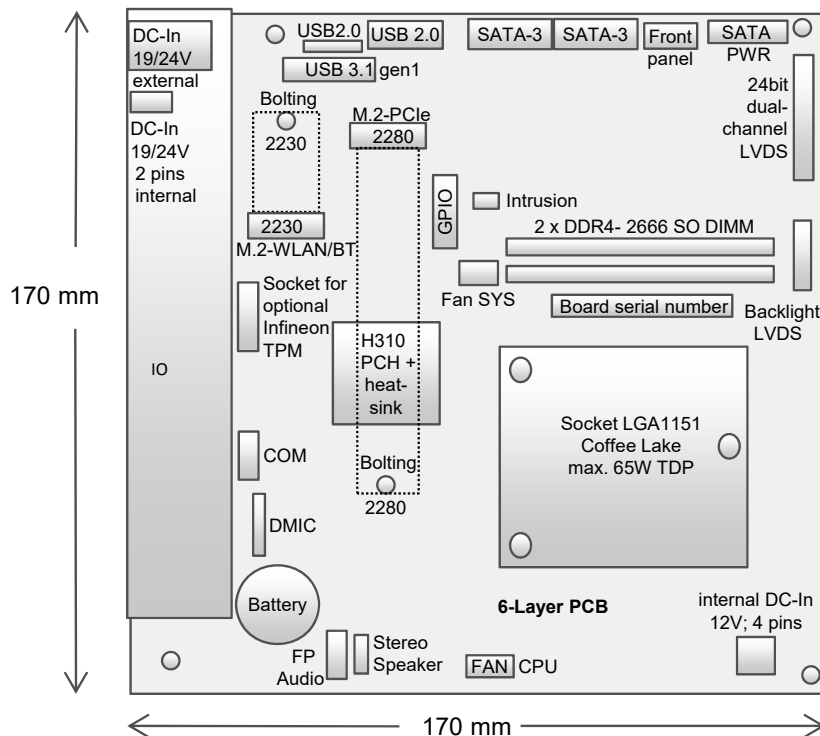
▶ TECHNICAL INFORMATION

| FEATURES | Chipset Board Size DP V1.2 / 2nd DP V1.2 / LVDS / HDMI 1.4 / eDP Buzzer / int. Speaker Support (stereo) / 5.1 Multichannel Audio LAN Gbit / 100 Mbit / 10 Mbit / WoL / LAN Boot iAMT 12.0 vPro / Intel Standard Manageability / DASH V1.1 SATA / RAID / eSATA-Support / mSATA / M.2 SSD (PCIe) USB 2.0 / USB 3.1 gen1 / USB 3.1 gen2 FAN monitored & controlled PSU / CPU / AUX1 / AUX2 TEMP monitored CPU / onboard sensors / external sensor | iH310 Thin Mini-ITX + / - / + / + / - - / + / + + / + / + / + / + - / - / - + / - / + / - / + + / + / - - / + / + / - + / + / - |
|---------------------|---|--|
| SPECIAL FEATURES | Silent Fan / System Guard / cTDP Recovery BIOS / Desk Update / Multi Boot HDD Password / EraseDisk* / TPM V2.0 Logo Boot Option High Efficiency Core Voltage Regulator Design BIOS POST- / BIOS Boot- / OS- HW Watchdog Operating Mode 24-7 / 8-5 (hrs per day - days per week) Mainboard operating temperature range (chassis inside)** | + / + / + + / + / + + / + / + + + + / + / + + / - 10 °C – 50 °C |
| INTERNAL CONNECTORS | SO DIMM Sockets (DDR4-2666) SATA-600 / mSATA / M.2 SSD 2280 (Key-M, PCIe/NVME) M.2 2230 (Key-E, PCIe & USB2.0 for WLAN/Bluetooth) Frontpanel Audio (9-Pin, HD Audio) USB 2.0 channels / USB 3.1 Gen1 channels / USB 3.1 Gen2 / USB Stick Serial (COM1, RS232) / Parallel Port Connector LVDS / LVDS Backlight / Embedded DisplayPort FAN PSU / CPU (PWM) / AUX1 (PWM) / AUX2 Intrusion (Case Open) / GPIO (8Bit) / SMBus (Case Temp.) Internal Stereo Speakers header / DMIC header (digital microphone) Front Panel (Power Switch, Reset Switch, LEDs, Intel 10 pin header) Onboard SATA Drive Power Connector Onboard (internal) DC-In Connector 12 V (4 pin) / 19-24 V (2 pin) | 2 2 / - / 1 1 1 3 / 2 / - / - 1 / - 1 / 1 / - 0 / 1 / 1 / 0 1 / 1 / - 1 / 1 1 1 1 1 / 1 |
| EXTERNAL CONNECTORS | DVI-I / DVI-D / DisplayPort V1.2 / HDMI V1.4 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 DC-In connector (external input) 19-24V @ 10A max. | - / - / 1 / 1 - / 1 / 1 1 - / + 2 / 2 / 0 1 |

*) Planned for factory shipments from 06/2019

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

▶ CONNECTOR / SOCKET DIAGRAM



► ORDERING INFORMATION

| ARTICLE | PART NO. | DESCRIPTION |
|-----------------------------|------------|---|
| D3674-B Thin mITX | F5120-V168 | Intel® 8th/9th Gen Core™ i3/i5/i7/i9 Processors, Intel® H310 Chipset, 24/7 continuous operation @ 50 °C |
| ACCESSORIES | | |
| ACTIVE HEATSINK + BACKPLATE | F5000-C11 | 35 W TDP |
| COM1 EXTENSION CABLE | F5000-K7 | 120 mm, w/o slot bracket |
| COM1 EXTENSION CABLE | F5000-K10 | 400 mm, fullsize slot bracket |

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