D3598-G ATX
Extended Lifecycle Series

Intel® X299 Workstation chipset and Intel® Core™ High Performance i7/i9 X-series processors

- 2x PCIe x16
- Intel® VROC Support
- Dual LAN & Mini-PCIe Socket
- HW Watchdog
- USB 3.1 Gen2 Type C
D3598-G ATX
Extended Lifecycle Series

The Motherboard D3598-G ATX is the right choice for any demanding applications and needs. Featured by Intel® X299 Chipset, the D3598-G ATX supports the whole Intel® Core™-X-Processors Series. The perfect fit for any workstation and high performance computing will be realized with 7 PCIe connectors, Dual Intel® GbE LAN, Mini-PCle and M.2 onboard capability as well as M.2 Riser to support two or more additional M.2 in RAID mode.

### PRODUCT HIGHLIGHTS
- Intel® Core™ i7-78xxX/-98xxX Processors
- Intel® Core™ i9-79xxX/-98xxX/-99xxX/-109xxX Processors
- DDR4 2666/2933 SDRAM Memory, max. 256 GByte
- Mini-PCle socket incl. USB 2.0
- 7x PCIe generation 3 onboard
- 5.1 multichannel audio onboard
- USB 3.1 Gen2, USB 3.1 Gen1 and USB 2.0
- USB 3.1 Gen2 Type C
- Dual Intel® GbE LAN incl. Teaming support
- 8x Serial ATA III incl. RAID onboard
- Trusted Platform Modul (Infineon) V2.0 onboard
- BIOS-POST/-Boot & OS - HW Watchdog onboard
- M.2 SSD 2280 socket (PCIe, for NVMe modules)
- Intel® VROC (Virtual RAID on CPU) supported

### TECHNICAL INFORMATION

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>PROCESSOR</th>
</tr>
</thead>
</table>
| | Intel® Core™ (7-78xxX/-98xxX Processors)
| | Intel® Core™ (9-79xxX/-98xxX/-99xxX/-109xxX Processors)
| CHIPSET | Socket R4 (LGA2066), max. 165 W TDP, integrated Memory Controller (For details on supported processors please refer to Kontron FTP Server)
| MEMORY | Intel® X299 Workstation chipset
| | B DIMM Sockets DDR4, max. 256 GByte, up to 4 channels
| VIDEO | Single-/ dual- rank UDIMM
| | DDR4 2133/2400/2666/2933, 1.2 V, 288-pin, non-ECC
| AUDIO | Realtek ALC671
| AUDIO INTERFACE | 5.1 Multichannel, High Definition Audio
| NETWORK CONNECTION | Intel® i219LM / Intel® i210 Ethernet Controller 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, Teaming Support
| PERIPHERAL CONNECTION | 2x USB 2.0 (by header), 6x USB 3.1 Gen1, 4x USB 3.1 Gen1 by header, 2x USB 3.1 Gen2 (ASMedia ASM1142)
| SERIAL PORT | 1x RS232 (by header)
| STORAGE & EXPANSION | 8x SATA III 600 Interfaces (up to 6GBit/s, NCQ); AHCI; RAID 0/1/10
| PCIe/PCI SLOTS | PCIe x16: 2x 16 Lanes Gen3
| | PCIe x8: 1x 8 Lanes, Gen3; 2x 4 Lanes, Gen3; 2x 1 Lane, Gen3
| POWER | 24 Pin Power Connector + 8 Pin (12V) ATX Power Connector required
| CONNECTOR | Support for Soft-Off Power Supplies; 12V and 3.3V Supply Voltage on PCIe Slots
| INPUT VOLTAGE | 3.3V Auxiliary Supply Voltage on PCIe Slots (Wake-Up Function)
| | On board CPU high-efficiency CPU Voltage Regulator, 5 V / 2 A Auxiliary Power
| | required for USB Wake-Up from Save-to-RAM, Save-to-Disk
| FIRMWARE | BIOS
| | AMI Aptio S.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.
| | Boot support for M.2 Carrier Board D3352-A (PCIe-based SSD modules, NVME).
| | BIOS integrated HW Diagnostic Tool
| | Full supervision of BIOS POST and Boot sequence
| | Integrated Trusted Platform Module TPM V2.0 (Infineon SLB9670)
### TECHNICAL INFORMATION

#### SYSTEM CONTROL
- **FP HEADER:** 1x Header for Reset button, HDD LED & Internal Speaker
- **SECURITY:** 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, Infineon Trusted Platform Module (TPM) v2.0

#### SOFTWARE
- **OS SUPPORT:** MS Windows 10-64, Linux-64

#### MECHANICAL
- **DIMENSIONS (L x W):** ATX: 12” x 9.6” (305 x 244 mm)

#### ENVIRONMENTAL
- **OPERATION TEMPERATURE:** 10 °C - 50 °C
- **EMC & SAFETY**

### 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>1.000 µF</td>
<td>~45 A; **; ***</td>
</tr>
<tr>
<td></td>
<td>CPU (Rail#2)</td>
<td>± 5%</td>
<td></td>
<td>1.000 µF</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>CPU (Rail#3)</td>
<td>± 5%</td>
<td></td>
<td>1.000 µF</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>- 12 V</td>
<td>0 A</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>+ 5 V</td>
<td>0.05 A</td>
<td>± 5%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>+ 3.3 V</td>
<td>0.05 A</td>
<td>± 5%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Aux</strong></td>
<td></td>
<td>0 A</td>
<td>± 5% / - 3%</td>
<td>2.200 µF</td>
<td>~2 A***</td>
</tr>
<tr>
<td><strong>Main Power Supply</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</table>

*) Combined load for all 12 V Rails.
**Thereof processor peak current up to 32 A (<250 ms)
*** Depends on system configuration (Main focus: 12 V /3.3 V PCIe Slots; 5 V: Memory /USB)

### CONNECTOR / SOCKET DIAGRAM

- **FAN2**
- **PSU Control**
- **Frontpanel**
- **SATA**
- **USB**
- **PCIe**
- **ATX Connector**

- **Processor**
- **Intel Core™ X-series**
- **Socket R4**
- **LGA 2066**

- **Buzzer**
- **Battery**
- **Mini PCIe**
- **1x Header for Reset button, HDD LED & Internal 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, Infineon Trusted Platform Module (TPM) v2.0**
- **MS Windows 10-64, Linux-64**
- **ATX: 12” x 9.6” (305 x 244 mm)**
- **10 °C - 50 °C**
- **ctÜVus possible upon request, CE Class B, FCC-B verified**

* Reduced # of supported lanes for i7-77xx processors only
** 8 lanes supported by latest i9-109xx processors only
**TECHNICAL INFORMATION**

**FEATURES**

- Board Size / Chipset: ATX / Intel® X299
- Audio: Stereo Audio / 5.1 Multichannel Audio
- Motherboard: Intel® Core™ i9-79xxX/-98xxX/-99xxX/-109xxX Processors, Intel® X299 chipset
- USB: USB 2.0 / USB 3.1 Gen1 / USB 3.1 Gen2 / USB 3.1 Gen2 Type C
- SATA: SATA RAID / eSATA Support / M.2 (PCIe x4) / NVME RAID (VROC)
- RAID: Support for additional M.2 SSD modules (via M.2 carrier board D3352)****

**SPECIAL FEATURES**

- Silent Fan / System Guard
- Recovery BIOS / Desk Update / Multi Boot
- HDD Password / USB Security***/EraseDisk
- Logo Boot Option
- BIOS POST- / BIOS Boot- / OS - HW Watchdog
- 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 (UDIMM DDR4 2666/2933MHz): 8
- PCI Express® x16: 16lanes-gen3****
- SATA (600) / SATA (300) / M.2 SSD: 8 / 0 / 1
- USB 2.0 channels / USB 3.1 Gen1 channels / USB 3.1 Gen2 channels / socket for USB 2.0 stick / USB 2.0 via Mini-PCIe socket: 2 / 0 / 1 / 1
- Serial (FIFO, 16550 compatible) / SMBus Access****: 1 / 1
- FAN PSU* / CPU / AUX1 / AUX2 / AUX3: 1 / 1 / 1 / 1 / 1
- Intrusion (Case Open): 1
- Intel® VROC license dongle connector: 1
- Parallel (EPP/ECP) Pin Connector: 1
- Power 24 Pin (BTX) / 8 Pin (additional 12 V Supply): 1 / 1

**EXTERNAL CONNECTORS**

- Graphics: Audio Mic. In / Line in / Line out: 1 / 1 / 1
- LAN (RJ-45) / PS/2 Mouse / PS/2 Keyboard: 2 / 1 / 1
- FireWire™ / Serial (RS232) / Parallel (EPP/ECP): 1 / 1 / 1
- USB 2.0 / USB 3.1 Gen1 / USB 3.1 Gen2 Type A / USB 3.1 Gen2 Type C: 6 / 1 / 1

**ORDERING INFORMATION**

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</table>

**ACCESSORIES**

- ADAPTER BOARD PCIe TO M.2: F5000-M3
- SERIAL PORT CABLE: F5000-K005
- M.2 CARRIER BOARD: F5000-M2
- M.2 CARRIER BOARD: F5000-M1

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