FUJITSU

Data Sheet
FUJITSU Mainboard D3634-S Mini-ITX
Industrial Series

Powered by the Intel® H310 Express Chipset supporting DDR4 2666 SDRAM Memory and Intel® 8th & 9th generation Core[TM] i3 / i5 / i7 / i9 Processors.
Designed & approved for enhanced operating temperature range from 0°C to 60°C
Designed & approved for 24/7 continuous operation

Industrial Series

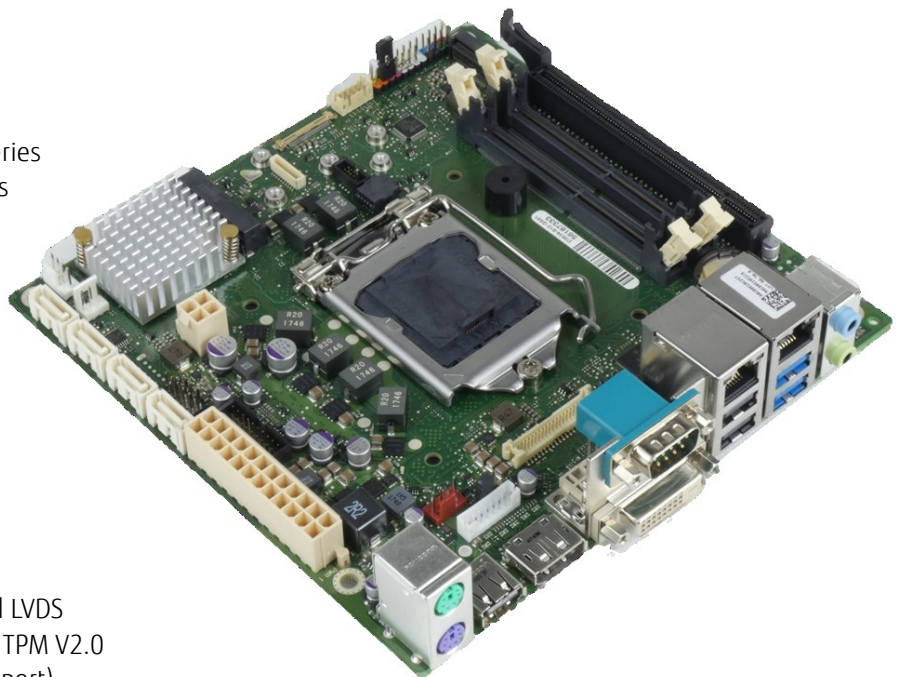**Chipset:**
Intel® H310 Express Chipset

Processors:
Intel® Core™ i7 / i5 / i3 (8th gen.) processor series
Intel® Core™ i9 / i7 / i5 / i3 (9th gen.) processor series
Intel® Pentium® / Intel® Celeron® processor series
Socket LGA1151 – up to 95W TDP

Memory:
DDR4-2666, Dual Channel
2 SO DIMM sockets, up to 32GB memory

Product Features:
cTPD – Easy & flexible reduction of CPU TDP
PCI Express x16 (Gen.3)
2x Intel® GbE LAN (incl. Teaming)
Intel® UHD Graphics (DX12)
1x DVI-D, 1x DP V1.2, eDP V1.4 and Dual Channel LVDS
Intel® High Definition 5.1 Audio; Intel integrated TPM V2.0
8 Bit GPIO; 2 x COM port (incl. RS-422/RS-485 support)
5x USB 2.0, 4x USB 3.1 Gen1
4x SATA 6G/s & M.2 (PCIe-based SSD modules 2242, 2260, or 2280)
Mini-PCIe socket (halfsize/fullsize support)
Dual Power Supply (ATX compliant or single 12V DC)
BIOS-POST/-Boot & OS – HW Watchdog onboard

Windows 10 Compatible · intel CORE i7 9th Gen · intel CORE i9 9th Gen · intel CORE i5 9th Gen · intel CORE i3 9th Gen · SERIAL ATA · PCI EXPRESS · FC · TÜV SÜD · Green IT

24/7 OPERATION · EXTENDED TEMPERATURE · SILENT FAN · SYSTEM GUARD · MULTI BOOT · HDD PASSWORD · RECOVERY BIOS · DESK UPDATE · WATCH DOG · Erasedisk · cTDP

Features and benefits

Board Size	Mini-ITX: 6.7" x 6.7" (170 x 170 mm)
Chipset	Intel® H310 Express Chipset
Memory	2 x SO-DIMM Socket (1.2V), max. 32GB, Dual Channel, DDR4 -2666 (CL19) / -2400 (CL17) / -2133 (CL15) SDRAM, unbuffered, non-ECC Effective memory speed depends on installed processor
Processor	Intel® Core™ i7 / i5 / i3 (8th generation) processor series Intel® Core™ i9 / i7 / i5 / i3 (9th generation) processor series[1] Intel® Pentium® / Intel Celeron® processor series Socket LGA1151, max. 95W TDP (For details on supported processors please refer to OEM FTP Server)
Power Specification	ATX- 24 Pin / ATX- 20 Pin or 12V only Power Supply required; Support for Soft-Off Power Supplies; 3.3V Auxiliary Supply Voltage on PCIe Slot (Wake-Up Function)
Power Supply Requirements	for onboard components: worst case incl. processor & memory; w/o USB devices; w/o PCIe cards, w/o M.2, w/o SATA drives, w/o M.2 devices, w/o eDP or LVDS

Source [1]	Voltage	Min. PS Load	Max. Voltage Tolerance	Mainboard Capacitive Load	Max. Mainboard Current
ATX Power Supply (Multi Rail)	+ 12V	0.05A	± 5 %	1.300µF	10A/18A [2]
	- 12V	0A		--	Not used
	+ 5V	0.2A	± 5 %	900µF	4.5A
	+ 3.3V	0A	± 5 %	350µF	0.5A
	+ 5Vaux	0A	+5 % / -3%	330µF	2.5A
Single 12V DC	+12V	0A	± 5 %	1.300µF	11A/19A [3]

1) ATX PSU (multi rail) or single 12V DC Supply

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

3) Max. load for single 12V DC supply: approx. +1A compared to multi rail supply

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 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)
Security Features	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

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1 Appropriate BIOS version supporting CoffeeLake-Refresh processors required

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Special Features	cTDP	Easy & flexible reduction of CPU TDP (BIOS Setup) down to 10W TDP
	Silent Fan	Independent temperature related processor fan and system fan supervision and control
	System Guard	View and adjust Silent Fan features
	Recovery BIOS	Restores a corrupted BIOS
	Desk Update	Simple driver update with Driver & Utilities DVD
	Multi Boot	Comfortable boot from any boot device
	HDD Password	Access protection for disk drives / M.2 SSD modules
	Always On	Reliable power-on whenever voltage is connected
	Never Off	Option to prevent the system from being shut down
	CSA / UL compliance	cTÜVus acc. IEC62368-1
	FCC compliance	FCC-B verified

Operating Systems	OS	"Runnable"	"Tested/Released by Fujitsu"
	MS Windows 10 RS3/RS4/RS5	X	X
	Linux-64	X	

Important Note:

Legacy OS / MBR installation (DOS, MS Windows 7, ...) is not supported due to Intel restrictions

Designed for Industrial Applications	Longlife components	Designed for 24/7 use in industrial applications
	Revision control	Strict control and pre-announcement
	Extended lifecycle up to 6 years	Mainboard available for more five four years
	Industrial grade EMI immunity	
	Enhanced operating temperature range (0°C-60°C)[2]	

Graphics	Intel® UHD Graphics, DX12
	1 x DisplayPort V1.2 & 1 x DVI-D
	Embedded Display Port V1.4 (2 lanes supported)
	Dual-Channel 24bit LVDS

Audio	Realtek ALC671, 5.1-channel, High Definition Audio Codec

TPM	Intel integrated TPM V2.0

LAN	Intel i219LM & i210AT 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

SATA Ports	4 x Serial ATA III 600 Interface (up to 6GBit/s), NCQ, AHCI

M.2 Socket	1 x M.2 Key-M for PCIe-based SSD NVME modules; 2 x PCIe Gen2 lanes
	Mechanical support for 2280, 2260 or 2242 modules [3]

Mini-PCIe Socket	1 x Mini-PCIe supporting PCIe Gen2 & USB2.0
	Mechanical support for halfsize or fullsize modules [2]

GPIO Port	8 Bit GPIO (Input/Output); WLAN LED support, WLAN enable/disable support
	3.3V / 5V / 12V supply voltage output; SMBus controller PCA9554A

Legacy Ports	1 x external COM port (RS-232)
	1 x internal COM port (RS-232/RS-422/RS-485, pin header, 2mm pitch)
	1 x PS/2 (mouse), 1 x PS/2 (keyboard)

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2 Forced cooling required, see technical documentation for detailed requirements

3 M.2 / Mini-PCIe stuffing options: M.2-2280 only or M.2-2260/2242 + halfsize Mini-PCIe or M.2-2242 + fullsize Mini-PCIe
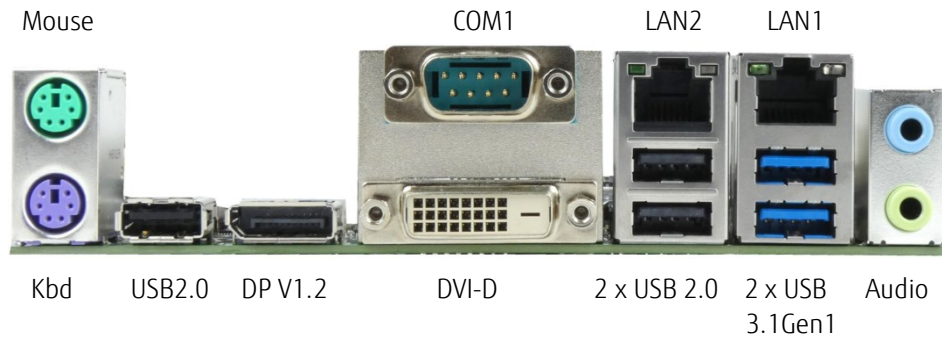
Features D3634-S	Chipset	iH310
	Board Size	Mini-ITX
	VGA / DVI-I / DVI-D / DP V1.2 / 2nd DP V1.2 / LVDS / eDP	- / - / ✔ / ✔ / - / ✔ / ✔
	Buzzer / int. Speaker Support / 5.1 Multichannel Audio	✔ / ✔ / ✔
	Dual LAN Gbit / 100 Mbit / 10 Mbit / WoL / LAN Boot / Teaming	✔ / ✔ / ✔ / ✔ / ✔ / ✔
	iAMT 12.0 vPro / 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 monitored & controlled PSU / CPU / AUX1 / AUX2	- / ✔ / ✔ / -
	TEMP monitored CPU / onboard sensors / external sensor	✔ / ✔ / -
Special Features D3634-S	Silent Fan / System Guard / cTDP	✔ / ✔ / ✔
	Recovery BIOS / Desk Update / Multi Boot	✔ / ✔ / ✔
	HDD Password / EraseDisk / TPM V2.0	✔ / ✔ / ✔
	BIOS POST- / BIOS Boot- / OS HW Watchdog	✔ / ✔ / ✔
	Logo Boot Option / Intel On Screen Branding	✔ / ✔
	High Efficiency Core Voltage Regulator Design	✔
	Operating Mode 24-7 / 8-5 (hrs per day - days per week)	✔ / -
	Mainboard operating temperature range (chassis inside)[4]	0℃ – 60℃
Internal Connectors D3634-S	SO DIMM Sockets (DDR4 2666)	2
	PCI Express x16 (Gen2) / Support for lane split (8+8 or 8+4+4)	1 / -
	mSATA / Mini PCI Express Slot (halfsize / fullsize, incl.USB 2.0)	- / 1
	SATA-600 / M.2 SSD 2280 (supports 2280/2260/2242, Key-M, PCIe/NVME)	4 / 1
	S/PDIF (digital Audio) OUT / IN	1 / 0
	Frontpanel Audio (9-Pin, HD Audio)	1
	USB 2.0 / USB 3.1 (Gen1) / USB 3.1 (Gen2) / USB Stick Socket[5]	1 / 1 / - / -
	Serial (COM2, RS-232 / RS-422 / RS-485) / Parallel Port Connector	1 / -
	LVDS / LVDS Backlight (PWM controlled) / Embedded DisplayPort	1 / 1 / 1
	FAN PSU / CPU / AUX1 / AUX2	0 / 1 / 1 / 0
	Intrusion (Case Open) / GPIO (8Bit) / SMBus (Case Temp.)	1 / 1 / -
	Front Panel (Power Switch, Reset Switch, LEDs, Intel 10 pin compatible)	1
	ATX Power Supply (24 pin + 4 pin) / single 12V PSU[6]	1 / 1
External Connectors D3634-S	VGA Sub D / DVI-I / DVI-D / DisplayPort V1.2	- / - / 1 / 1
	Audio Mic. In / Line in / Line out (or driver configuration)	- / 1 / 1
	LAN (RJ-45)	2
	PS/2 Mouse / Keyboard	1 / 1
	USB 2.0 / USB 3.1 Gen1 / USB 3.1 Gen2	3 / 2 / -
	Serial (COM1, RS232)	1

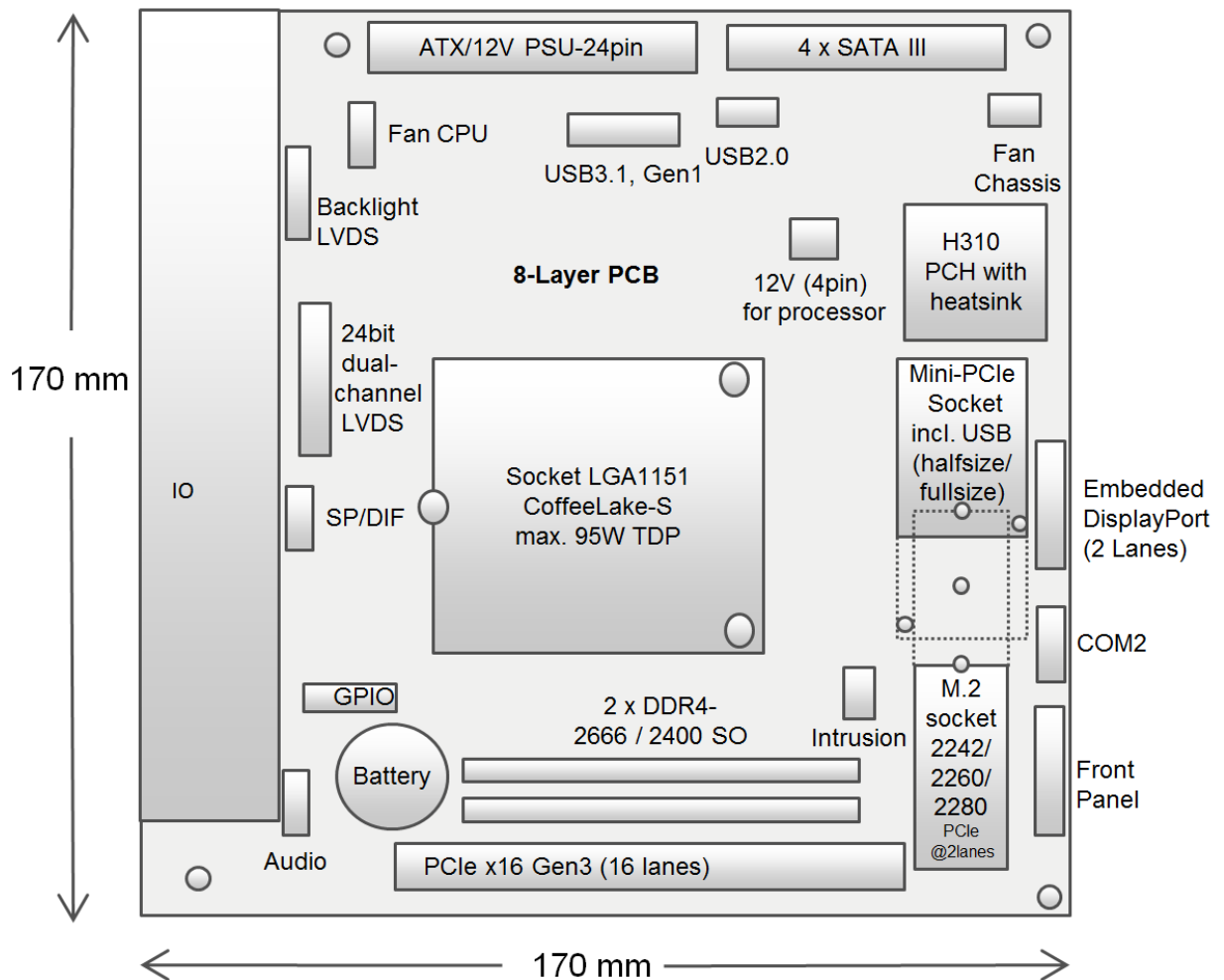4 Forced cooling required, see technical documentation for detailed requirements

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

6 Alternatives: Powered by ATX (multi rail) PSU or single 12V DC. See TechNotes document for further details
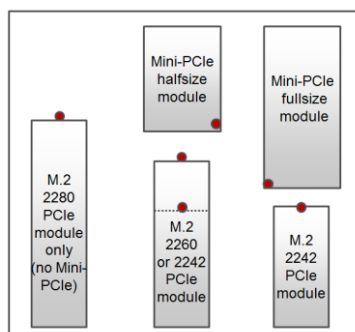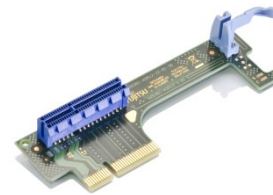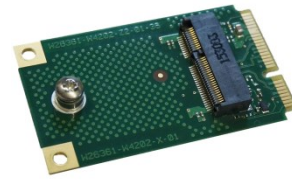
External Connectors

Mouse			COM1		LAN2	LAN1	

Kbd   USB2.0   DP V1.2   DVI-D   2 x USB 2.0   2 x USB 3.1Gen1   Audio

Connector / Socket Diagram

- ATX/12V PSU-24pin
- 4 x SATA III
- Fan CPU
- USB3.1, Gen1
- USB2.0
- Fan Chassis
- Backlight LVDS
- 8-Layer PCB
- 12V (4pin) for processor
- H310 PCH with heatsink
- 24bit dual-channel LVDS
- Socket LGA1151 CoffeeLake-S max. 95W TDP
- Mini-PCIe Socket incl. USB (halfsize/fullsize)
- Embedded DisplayPort (2 Lanes)
- 170 mm
- IO
- SP/DIF
- COM2
- GPIO
- 2 x DDR4-2666 / 2400 SO
- Intrusion
- M.2 socket 2242/ 2260/ 2280 PCIe @2lanes
- Front Panel
- Battery
- Audio
- PCIe x16 Gen3 (16 lanes)
- 170 mm

M.2 / Mini-PCIe stuffing options:
- M.2-2280 only or
- M.2-2260/2242 + halfsize Mini-PCIe or
- M.2-2242 + fullsize Mini-PCIe

Mini-PCIe halfsize module

Mini-PCIe fullsize module

M.2 2280 PCIe module only (no Mini-PCIe)

M.2 2260 or 2242 PCIe module

M.2 2242 PCIe module

Accessories

	OEM Order Code
Mini PCIe to M.2 Adapter (D3436-S)	S26361-F5000-M3
Serial Port Cable (fullsize slot bracket)	S26361-F5000-K10
Risercard 1x PCIe x4 (D3318-A)	S26361-F5000-R6
SMARTCASE S720 Chassis Kit	S26361-F5000-J3

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Contact:

Fujitsu Components Europe, B.V.
Tel.:   +31 (0)23 556 0910
Fax: +31 (0)23 556 0950
Website: emea.fujitsu.com/components
Address: Diamantlaan 25
           2132 WV Hoofddorp
           Netherlands

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Fujitsu Technology Solutions GmbH
OEM Mainboard Sales
Email: oem-sales@ts.fujitsu.com

Website: http://ts.fujitsu.com
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