

# Data Sheet

## FUJITSU Mainboard D3544-S Mini-STX

### Industrial Series

Intel® embedded Gemini Lake SoC (System on Chip, 10W TDP) for DDR4 2400 SDRAM Memory  
Enhanced operating temperature range from 0°C to 60°C



#### Processors (SoC):

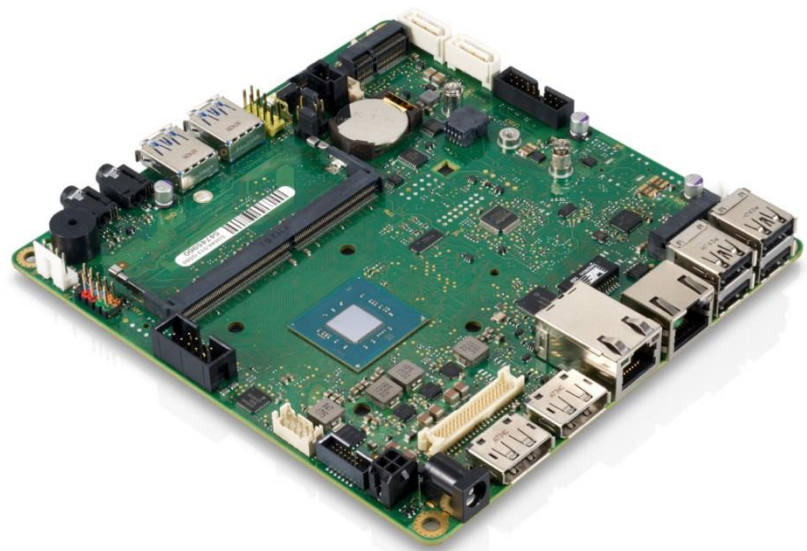
Intel® Celeron® Processor J4005 (DC @2.0GHz / 2.7GHz), integrated Intel® UHD Graphics 600 (12EUs @700MHz)  
Intel® Celeron® Processor J4105 (QC @1.5GHz / 2.5GHz), integrated Intel® UHD Graphics 600 (12EUs @750MHz)  
Intel® Pentium® Silver Processor J5005 (QC @1.5GHz / 2.8GHz), integrated Intel® UHD Graphics 605 (18EUs @800MHz)  
10W TDP

#### Memory:

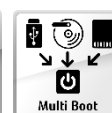
DDR4 2400 SDRAM (SO-DIMM)

#### Product Features:

Intel® UHD Graphics 600/605 (within SoC)  
2x DisplayPort V1.2a  
Dual Channel LVDS (24Bit) and eDP V1.4 onboard  
8 Bit GPIO & HD Audio onboard  
USB 2.0 and USB 3.1 (gen1) onboard  
2x SATA III  
Onboard support for M.2 SSD (SATA/PCIe)  
Onboard support for M.2 WLAN/Bluetooth module  
Dual GbE LAN onboard  
Intel® integrated TPM V2.0 onboard  
WideRange internal/external DC Input (8V - 24V)  
HW Watchdog onboard  
RS-232/485/422 support onboard



(upon request)



# Features and benefits

**Board Size** Mini-STX: 5.5" x 5.8" (140 x 148 mm)

**Mainboard Versions**

	Processor (SoC)	Graphics	Memory	Graphics
D3544-S1	Intel® Celeron® J4005 (Dual Core) 2.0GHz / 2.7GHz <sup>1)</sup>	Intel® UHD 600 12EUs; max. 8GB 250MHz / 700MHz <sup>2)</sup>	DDR4 / 2400 one socket max. 16GB	2 x DP V1.2 max. 4096 x 2160 @60Hz  1 x eDP V1.4 2 lanes max. 1920 x 1200
D3544-S2	Intel® Celeron® J4105 (Quad Core) 1.5GHz / 2.5GHz <sup>1)</sup>	Intel® UHD 600 12EUs; max. 8GB 250MHz / 750MHz <sup>2)</sup>		1 x LVDS 24Bit Dual Channel max. 1920 x 1200
D3544-S3	Intel® Pentium® Silver J5005 (Quad Core) 1.5GHz / 2.8GHz <sup>1)</sup>	Intel® UHD 605 18EUs; max. 8GB 250MHz / 800MHz <sup>2)</sup>		max. 3 x independent display

1) CPU Base Frequency / Burst Frequency    2) Graphics Base Frequency / max. Dynamic Frequency

**Memory** 1 x SO DIMM Socket (1.2V), max. 16GB,  
DDR4 - 2400 (CL17) / 2133 (CL15) SDRAM, unbuffered, non-ECC

**Power Specification** External DC Input 8V-24V (5A max. / 100W max.)  
Internal DC Input 8V-24V (8A max. / 100W max.)  
Onboard SoC and system voltage regulators (high efficiency)

**Power Supply Requirements**

Source	Voltage Range	Min. PSU Load	Max. Voltage Tolerance	typ. Mainboard Input Power <sup>1)</sup>	max. Mainboard Input Power <sup>2)</sup>
DC-IN (wide range)	8-24V	0A	± 5 %	5W - 15W	100W

- 1) Mainboard incl. Memory and M.2 SATA SSD (MS Windows 10 Idle Mode / Full Load)
- 2) Mainboard incl. Memory, M.2 SATA SSD, any USB Devices, any LVDS / eDP devices, any SATA devices  
See TechNotes document for detailed power requirements

**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 (AHCI / NVME)  
BIOS integrated HW Diagnostic Tool, Watchdog Support  
**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

<b>Special Features</b>	Silent Fan	Independent temperature related processor fan supervision
	System Guard	View Silent Fan features
	Silent Drives	Noise reduction for optical and hard disk drives
	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
	Always On	Reliable power-on whenever voltage is connected
	Never Off	Option to prevent the system from being shut down
	CSA / UL Compliance	Upon request: cTÜVus acc. IEC62368-1
FCC Compliance	FCC-B verified	

<b>Operating Systems</b>	OS	"Runnable"	"Tested/Released by Fujitsu"
	MS Windows 10-64 RS1 / RS2 <sup>1</sup>	X	--
	MS Windows 10-64 RS3	X	X
	MS Windows 10-64 RS4 / RS5	X	--
	Linux-64	X	basic functional test

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

<b>Designed for 24 / 7 use</b>	Longlife components for 24 / 7 use (0°C – 60°C) in industrial applications Revision control & Extended Lifecycle (min. 5 years + 1 year eXtended LifeCycle option)
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<b>Graphics</b>	Integrated <b>Intel® UHD Graphics 600/605</b> 2 x DisplayPort V1.2a / 1 x embedded DisplayPort (eDP) 1.4 / 1 x Dual-Channel 24bit LVDS Supports up to 3 x independent display Following max. display combinations are supported: 2 x DisplayPort (DP, external) + 1 x LVDS (internal) 2 x DisplayPort (DP, external) + 1 x embedded DisplayPort (eDP, internal) Note: Simultaneous use of LVDS and eDP is not supported
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<b>Audio</b>	<b>Realtek ALC671</b> 5.1-channel, High Definition Audio Codec
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<b>LAN</b>	1 x <b>Intel i210</b> with 10/100/1000MBit/s, Wake-on-LAN (WoL) by interesting Packets, Link Status Change and Magic Packet™, PXE and iSCSI supported, BIOS MAC Address Display 1 x <b>Realtek RTL8111G</b> 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
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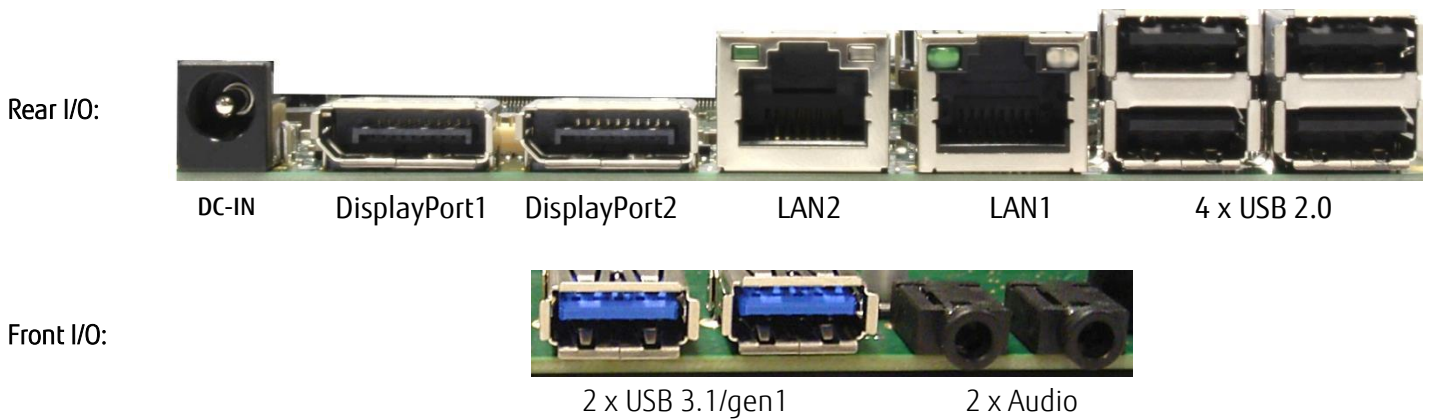
<b>Drives / Modules</b>	2 x Serial ATA (SATA) III 600 Interface (up to 6Gbit/s), NCQ, AHCI; 1 x M.2 Key B socket (2242 / 2260 / 2280) for following applications: <ul style="list-style-type: none"> <li>SATA based M.2 SSD modules (recommended for best M.2 SSD performance)</li> <li>PCIe based M.2 SSD modules (one PCI lane)</li> <li>Specific M.2 PCIe-based extension modules like LAN, SATA, COM, etc.</li> </ul> Boot support: AHCI / NVME Notes: M.2 (SATA mode only) is shared with SATA port 1 <b>Simultaneous use of M.2 2280 modules and M.2 2230 (WLAN/Bluetooth) possible!</b>
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<sup>1</sup> Long-term driver update support for RS1 (LTSB) and RS2 is not guaranteed by Intel

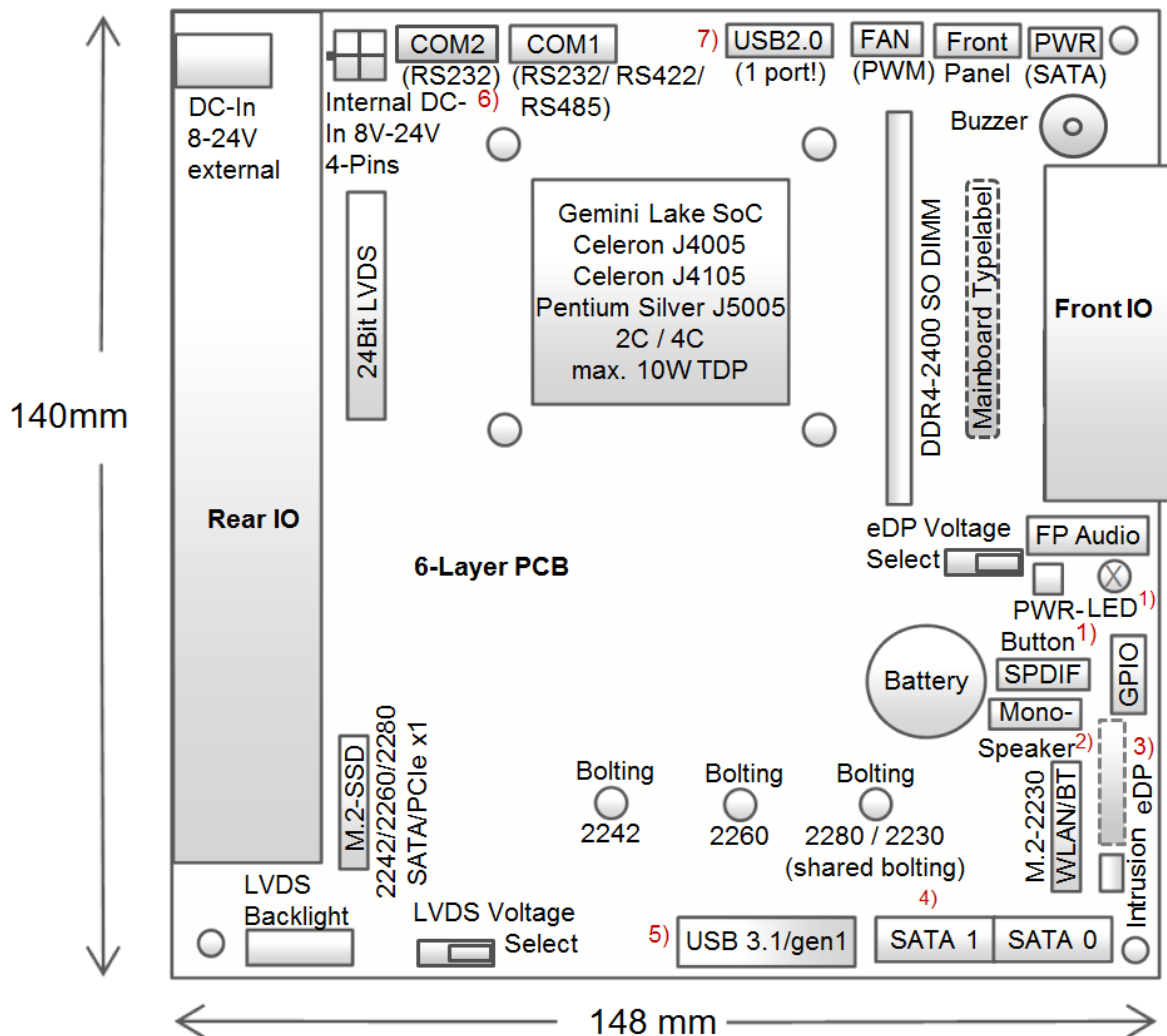
<b>WLAN / Bluetooth</b>	1 x M.2 Key E socket (WLAN / Bluetooth), mechanical support for 2230 Supports M.2 modules with PCIe x1 (Gen2) and / or USB 2.0 interface <u>Note: Simultaneous use of M.2 2280 modules and M.2 2230 (WLAN/Bluetooth) possible!</u>	
<b>LVDS</b>	LVDS Controller <b>Realtek RTD2136R</b> (DisplayPort to LVDS converter)	
<b>Features</b> <b>D3544-S (Mini-STX)</b>	Chipset	Intel Gemini Lake SoC
	DP V1.2a / 2 <sup>nd</sup> DP V1.2a / LVDS / eDP V1.4 / HDMI / DVI / VGA	✓ / ✓ / ✓ / ✓ / ✓ / - / - / - / -
	Buzzer / int. Speaker Support (mono) <sup>2</sup> / 5.1 Multichannel Audio	✓ / ✓ / ✓ / ✓
	LAN Gbit / 100 Mbit / 10 Mbit / WoL / PXE / M.2 2230 WLAN-BT	✓ / ✓ / ✓ / ✓ / ✓ / ✓ / ✓ / ✓
	iAMT-vPro / Intel Standard Manageability / DASH V1.1	- / - / -
	SATA / M.2 (SATA) / M.2 PCIe (1 lane) / eSATA-Support / RAID / mSATA	✓ / ✓ / ✓ / ✓ / ✓ / ✓ / - / -
	USB 2.0 / USB 3.1 (gen1) / FireWire™	✓ / ✓ / ✓ / -
	FAN monitored & controlled PSU / CPU / AUX1 / AUX2	- / ✓ / - / -
	TEMP monitored CPU / onboard sensors / external sensor	✓ / ✓ / ✓ / -
<b>Special Features</b> <b>D3544-S</b>	COM interface support for RS-232 / RS-485 / RS-422	✓
	Silent Fan / System Guard / Silent Drives	✓ / ✓ / ✓ / ✓
	Recovery BIOS / Desk Update / Multi Boot	✓ / ✓ / ✓ / ✓
	HDD Password / EraseDisk <sup>3</sup> / TPM V1.2 / TPM V2.0	✓ / ✓ / ✓ / - / ✓ / ✓
	Logo Boot Option / Intel On Screen Branding	✓ / ✓
	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) <sup>4</sup>	0°C – 60°C
<b>Internal Connectors</b> <b>D3544-S</b>	SO DIMM Sockets (DDR4 2400)	1
	SATA-600 / M.2 SSD <sup>5</sup> / M.2 WLAN-BT / mSATA	2 / 1 / 1 / -
	Front Panel Audio (9-Pin, HD Audio) / SP-DIF Out (Digital Audio)	1 / 1
	USB 2.0 pin header (provides 1 USB channel) / USB Stick socket	1 / -
	USB 3.1/gen1 pin header (provides 2 USB channels) <sup>6</sup>	1
	Serial COM1 (RS-232 / -422 / -485; pin header 2mm pitch) <sup>7</sup>	1
	Serial COM2 (RS-232; specific connector) <sup>8</sup> / Parallel Port header	1 / -
	LVDS / LVDS Backlight / Embedded DisplayPort	1 / 1 / 1
	FAN PSU / CPU (PWM) / AUX1 (PWM)	- / 1 / -
	Intrusion (Case Open) / GPIO (8Bit) / SMBus (Case Temp.)	1 / 1 / -
	Mono Speaker header / Stereo Speaker header / Digital MIC header	1 / - / -
	Front Panel (Power Switch, Reset Switch, LEDs, Intel 10 pin header)	1
	SATA Drive Power Connector (5V/12V) / DC-In Connector 8-324 (4 pin)	1 / 1
<b>External Connectors</b> <b>D3544-S</b>	DisplayPort V1.2a / HDMI / DVI / VGA	2 / - / - / -
	Audio Mic. In / Line in / Line out (or driver configuration)	1 / - / 1
	LAN (RJ-45) / PS-2 Keyboard / PS-2 Mouse	2 / - / -
	USB 2.0 / USB 3.1 gen1	4 / 2
	DC-In connector (external input) 8-24V @ 5A max.	1

<sup>2</sup> Mono speaker support; max. 2.2W @4Ω / 1.3W @8Ω<sup>3</sup> BIOS feature; License included<sup>4</sup> Forced cooling required for high operating temperature range. See TechNotes document for details<sup>5</sup> SATA-based M.2 SSD is shared with SATA port 1; simultaneous use of M.2 2280 module and M.2 2230 module (WLAN/Bluetooth) possible<sup>6</sup> USB3 connector includes separate USB2.0 signal pins (2 channels)<sup>7</sup> RS-232 / RS-422 / RS-485; pin header 2mm pitch. See TechNotes document for details<sup>8</sup> RS-232; reduced feature set; specific device driver supported from BIOS R1.6.0; specific connector cable (incl. RS-232 line driver) required. See TechNotes document for details

## External Connectors





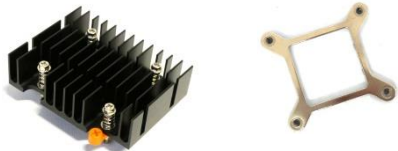





## Connector / Socket Diagram



- 1) Onboard power button (push button) and power LED are designed for usage in Fujitsu STX chassis kit
- 2) Optional speaker kit available upon request for Fujitsu STX chassis kit
- 3) eDP (embedded DisplayPort) connector located at bottom side
- 4) SATA Port1 shared with SATA-based M.2 SSD
- 5) Optional USB Type-C extension cable (USB 3.1/gen1) planned for Fujitsu STX chassis kit
- 6) Optional COM 1 cable for Fujitsu STX chassis kit available  
COM2 port: Reduced feature set; specific device driver supported from BIOS Rev. 1.6.0.  
Requires specific cable with integrated line driver
- 7) Supports one USB2.0 channel only (→Bottom pin header row = 4 pins + key useable)

**Accessories**

	<b>(Ordercode)</b>	
Mini-STX Chassis Kit for D3544-S	F5000-J4	
AC Adapter 19V / 40W	F5000-P5 (E622)	
AC Adapter 19V / 65W	F5000-P3 (E623)	
Active Heatsink + Backplate	F5000-C9	
Fanless Heatsink + Backplate	F5000-C10	
USB-C Rear Extension Cable (USB 3.1/gen1)	F5000-K8	
COM1 extension cable	F5000-K7	
COM2 extension cable (active version)	F5000-K11	
WLAN Module Intel 9260 (M.2 2230)	F5000-W3	
WLAN Module Intel 9260 (M.2 2230) incl. Dual WLAN Antenna for SMARTCASE S500	F5000-W2	
Mono Speaker Kit for SMARTCASE S500	F5000-K9	

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Multi-Input Touch Panels

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