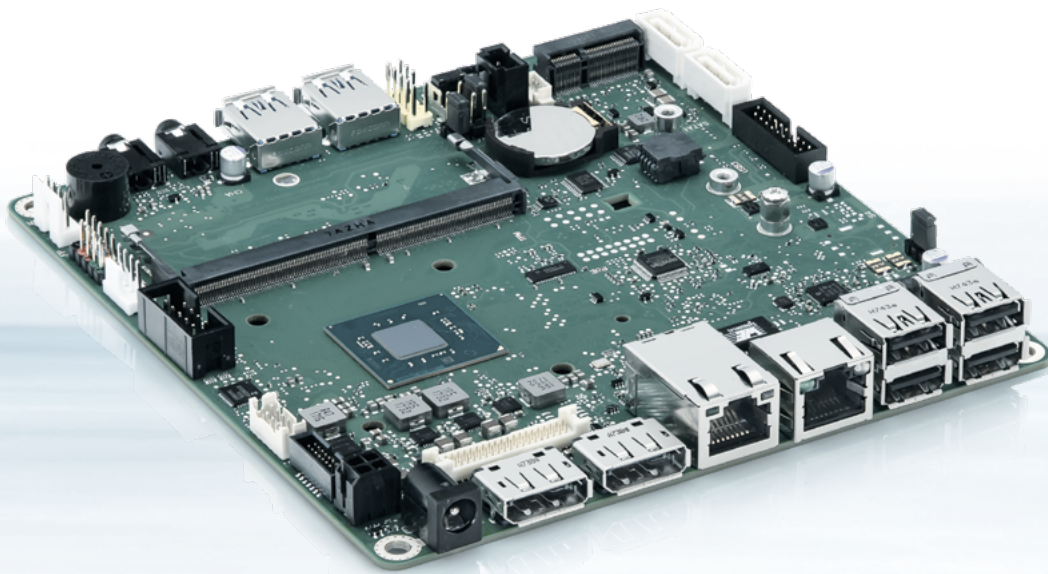


D3544-S mSTX

Industrial Series



Intel® Celeron® Processor J4005/J4105 & Intel® Pentium® Silver Processor J5005

- ▶ Dual DP V1.2a, LVDS & eDP
- ▶ M.2 SSD & M.2 WLAN Slots onboard
- ▶ HW Watchdog & GPIO
- ▶ Wide Range DC Power Supply (8 V-24 V)
- ▶ Designed for Fanless Operation

POSSIBILITIES START HERE

D3544-S mSTX

Industrial Series

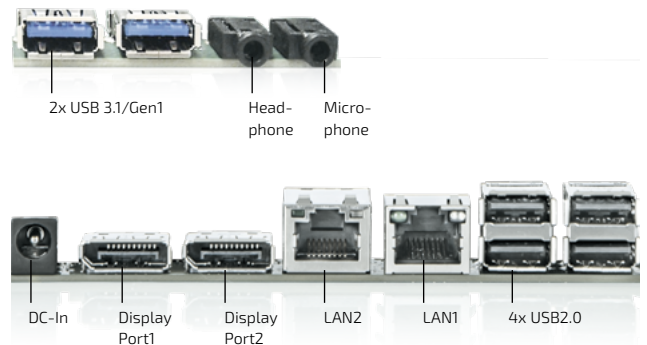
The Industrial Motherboard D3544-S mSTX supports the Intel® Celeron® Processors J4005, J4105 as well as the Intel® Pentium® Processor J5005. Despite the small form factor, the D3544-S mSTX provides best graphic performance with DP connectors for up to

4K displays. It offers highest functionality supporting 24/7 operation mode and an enhanced operating temperature range from 0 °C to 60 °C on low power consumption.

▶ PRODUCT HIGHLIGHTS

- ▶ Intel® Celeron® Processor J4005/J4105 & Intel® Pentium® Silver Processor J5005
- ▶ DDR4 2400 SDRAM, max. 16 GByte
- ▶ 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 (8 V-24 V)

- ▶ HW Watchdog onboard
- ▶ RS-232/485/422 support onboard



▶ TECHNICAL INFORMATION

| | | |
|--------------------------------|-------------------------------------|---|
| SYSTEM | PROCESSOR | Intel® Celeron® Processor J4005 (DC @2.0 GHz/2.7 GHz) Intel® Celeron® Processor J4105 (QC @1.5 GHz/2.5 GHz) Intel® Pentium® Silver Processor J5005 (QC @1.5 GHz/2.8 GHz) SoC (System on Chip) |
| | CHIPSET MEMORY | 1x 50 DIMM Socket (1.2 V), max. 16 GByte, DDR4 2400 SDRAM |
| VIDEO | GRAPHICS | Integrated Intel® UHD Graphics 600/605 |
| AUDIO | AUDIO CODEC AUDIO INTERFACE | Realtek ALC671 5.1-channel, High Definition Audio Codec |
| NETWORK CONNECTION | ETHERNET | 1x Intel® i210 with 10/100/1000MBit/s, 1x Realtek RTL8111G with 10/100/1000 MBit/s |
| PERIPHERAL CONNECTION | USB | 4x USB 2.0, 1x USB 2.0 (by header) |
| | SERIAL PORT | 2x USB 3.1 Gen1, 2x USB 3.1 Gen1 (by header) |
| | OTHER I/Os | 1x RS232/RS422/RS485 (by header) 1x RS232, limited feature set (by header) 1x GPIO (by header) |
| STORAGE & EXPANSION | SATA | 2x Serial ATA (SATA) III 600 Interface (up to 6GBit/s), NCQ, AHCI; 1x M.2 Key B socket (2242/2260/2280), 1x M.2 Key-E (2230) |
| POWER | CONNECTOR INPUT VOLTAGE | External/Internal DC-in, 8 V-24 V, 100 W max. Onboard SoC and system voltage regulators (high efficiency) |
| 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 5.3/5.4, 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) 2-Level WD (BIOS Boot WD / OS WD) Integrated Intel® integrated, TPM V2.0 |
| | WATCHDOG REAL TIME CLOCK TPM | |

TECHNICAL INFORMATION

| | | |
|-----------------------|---------------------------|--|
| SYSTEM CONTROL | FP HEADER SECURITY | 1x Header for Reset button, HDD LED, Power button, Power LED Recovery BIOS, System and BIOS Password, Boot Sequence Control, Serial- / USB- Port Access Protection, Write Protection for Flash BIOS, EraseDisk (BIOS Feature), Intel integrated TPM V2.0 |
| COOLING | FAN | 1x PWM-Fan |
| SOFTWARE | OS SUPPORT | MS Windows 10 Linux-64 |
| MECHANICAL | DIMENSIONS (L x W) | Mini-STX: 5.5" x 5.8" (140 x 148 mm) |
| CERTIFICATION | EMC & SAFETY | FCC-B verified cTUVus acc. IEC62368-1 (upon request), CE Class B, UKCA |

*) Long-term driver update support for RS1 (LTSB) and RS2 is not guaranteed by Intel®

MOTHERBOARD VERSIONS

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

*) CPU Base Frequency / Burst Frequency

**) Graphics Base Frequency / max. Dynamic Frequency

***) Following max. display combinations are supported:

2x DisplayPort (DP, external) + 1x LVDS (internal)

2x DisplayPort (DP, external) + 1x embedded DisplayPort (eDP, internal)

Note: Simultaneous use of LVDS and eDP is not supported

POWER SUPPLY REQUIREMENTS

| SOURCE | VOLTAGE RANGE | MIN. PS LOAD | MAX. VOLTAGE TOLERANCE | TYP. MOTHERBOARD INPUT POWER* | MAX. MOTHERBOARD INPUT POWER** |
|--------------------|---------------|--------------|------------------------|-------------------------------|--------------------------------|
| DC-IN (wide range) | 8-24 V | 0 A | ± 5 % | 5 W - 15 W | 100 W |

*) Motherboard incl. Memory and M.2 SATA SSD (MS Windows 10 Idle Mode / Full Load)

**) Motherboard incl. Memory, M.2 SATA SSD, any USB Devices, any LVDS / eDP devices, any SATA devices

TECHNICAL INFORMATION

| FEATURES | Chipset DP V1.2a / 2nd DP V1.2a / LVDS / eDP V1.4 / HDMI / DVI / VGA Buzzer / int. Speaker Support (mono)* / 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 | Intel Gemini Lake SoC + / + / + / + / - / - / - + / + / + + / + / + / + / + / + - / - / - + / + / + / + / - / - + / + / - - / + / - / - + / + / - |
|---------------------|---|---|
| SPECIAL FEATURES | COM interface support for RS-232 / RS-485 / RS-422 Silent Fan / System Guard Recovery BIOS / Desk Update / Multi Boot HDD Password / EraseDisk / TPM V1.2 / TPM V2.0 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)** | + + / + + / + / + + / + / - / + + + / + / + + / - 0 °C – 60 °C |
| INTERNAL CONNECTORS | 50 DIMM Sockets (DDR4 2400) SATA-600 / M.2 SSD*** / M.2 WLAN-BT / mSATA Front Panel Audio (9-Pin, HD Audio) / SP-DIF Out (Digital Audio) USB 2.0 pin header (provides 1 USB channel) / USB Stick socket USB 3.1/gen1 pin header (provides 2 USB channels)**** Serial COM1 (RS-232 / -422 / -485; pin header 2mm pitch)***** Serial COM2 (RS-232; specific connector)***** / Parallel Port header LVDS / LVDS Backlight / Embedded DisplayPort FAN PSU / CPU (PWM) / AUX1 (PWM) Intrusion (Case Open) / GPIO (8Bit) / SMBus (Case Temp.) Mono Speaker header / Stereo Speaker header / Digital MIC header Front Panel (Power Switch, Reset Switch, LEDs, Intel 10 pin header) SATA Drive Power Connector (5V/12V) / DC-In Connector 8-24 V (4 pin) | 1 2 / 1 / 1 / - 1 / 1 1 / - 1 1 1 / - 1 / 1 / 1 - / 1 / - 1 / 1 / - 1 / - / - 1 1 / 1 |
| EXTERNAL CONNECTORS | DisplayPort V1.2a / HDMI / DVI / VGA Audio Mic. In / Line in / Line out (or driver configuration) LAN (RJ-45) / PS-2 Keyboard / PS-2 Mouse USB 2.0 / USB 3.1 gen1 DC-In connector (external input) 8-24 V @ 5 A max. | 2 / - / - / - 1 / - / 1 2 / - / - 4 / 2 1 |

*) Mono speaker support; max. 2.2 W @4Ω / 1.3 W @8Ω

***) Forced cooling required for high operating temperature range.

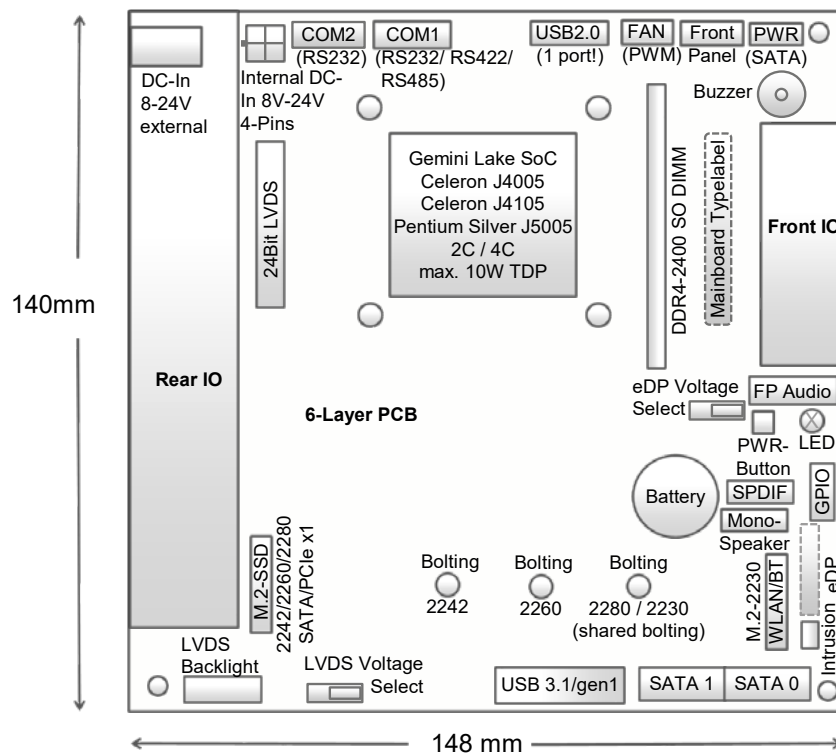
****) SATA-based M.2 SSD is shared with SATA port 1; simultaneous use of M.2 2280 module and M.2 2230 module (WLAN/Bluetooth) possible

*****) USB 3 connector includes separate USB 2.0 signal pins (2 channels)

*****) RS-232 / RS-422 / RS-485; pin header 2mm pitch. See TechNotes document for details

*****) RS-232; reduced feature set (supported signals = Rx/D / Tx/D / RTS / CTS only); specific device driver supported from BIOS R1.6.0; specific connector cable (incl. RS-232 line driver) required.

CONNECTOR / SOCKET DIAGRAM



▶ ORDERING INFORMATION

| ARTICLE | PART NO. | DESCRIPTION |
|-------------------------------------|-------------|--|
| D3544-S1 mSTX | F5120-V157 | Intel® Celeron® J4005 Processor (DC/10 W TDP/2.7 GHz) |
| D3544-S2 mSTX | F5120-V158 | Intel® Celeron® J4105 Processor (QC/10 W TDP/2.5 GHz) |
| D3544-S3 mSTX | F5120-V159 | Intel® Pentium® Silver J5005 Processor (QC/10 W/2.8 GHz) |
| D3544-S1 mSTX (w/o LVDS Support) | F5120-V1573 | Intel® Celeron® J4005 Processor (DC/10W TDP/2.7 GHz)* |
| D3544-S2 mSTX (w/o LVDS Support) | F5120-V1583 | Intel® Celeron® J4105 Processor (QC/10W TDP/2.5 GHz)* |
| D3544-S3 mSTX (w/o LVDS Support) | F5120-V1593 | Intel® Pentium® Silver J5005 Processor (QC/10W/2.8 GHz)* |
| ACCESSORIES | | |
| CHASSIS KIT | F5000-J004 | SMARTCASE™ S500 |
| AC ADAPTER | F5000-P006 | 19 V/65 W |
| HEATSINK + BACKPLATE | F5000-C009 | Active |
| HEATSINK + BACKPLATE | F5000-C010 | Fanless |
| USB-C REAR EXTENSION CABLE | F5000-K008 | USB 3.1/gen1 |
| SERIAL PORT CABLE | F5000-K007 | COM1 |
| SERIAL PORT CABLE | F5000-K011 | COM2 active version |
| WLAN MODULE | F5000-W003 | Intel® 9260 (M.2 2230) |
| WLAN MODULE KIT | F5000-W002 | Intel® 9260 (M.2 2230) incl. Dual WLAN Antenna for SMARTCASE™ S500/S520 |

*) LVDS electronics & related connectors removed

▶ GLOBAL HEADQUARTERS

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