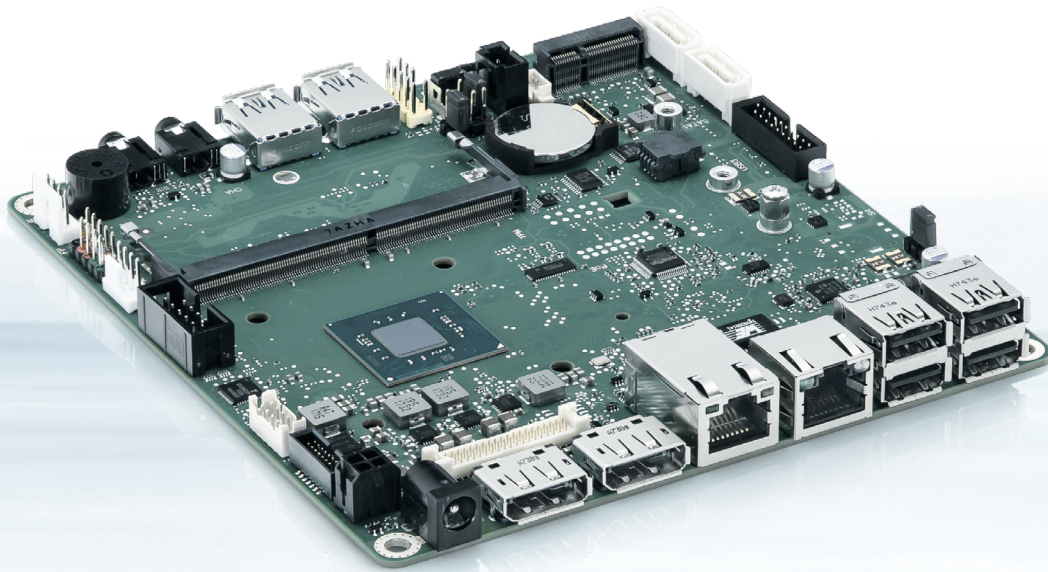


D3544-S mSTX

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

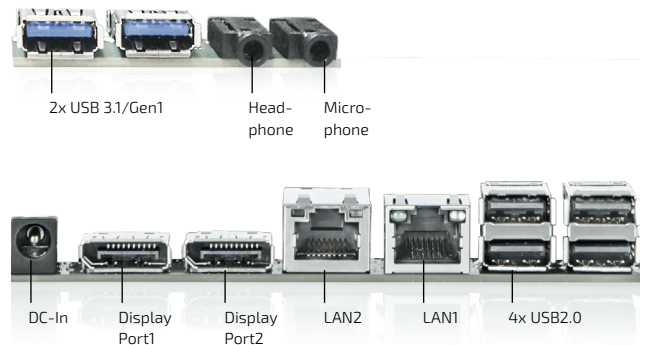
The Industrial Motherboard D3544-S mSTX supports the Intel® Celeron® Processors J4005, J4105 as well as the Intel® Pentium® Processor J5005. Despite the small form factor, the D3544-S mSTX provides best graphic performance with DP connectors for up to

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 or Tempo Semiconductor 92HD91B* 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	

*) Depends on motherboard version

**) 5.1 surround sound is possible via digital output ports like S/PDIF or DisplayPort

► 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 CE Class B, UKCA

► 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.

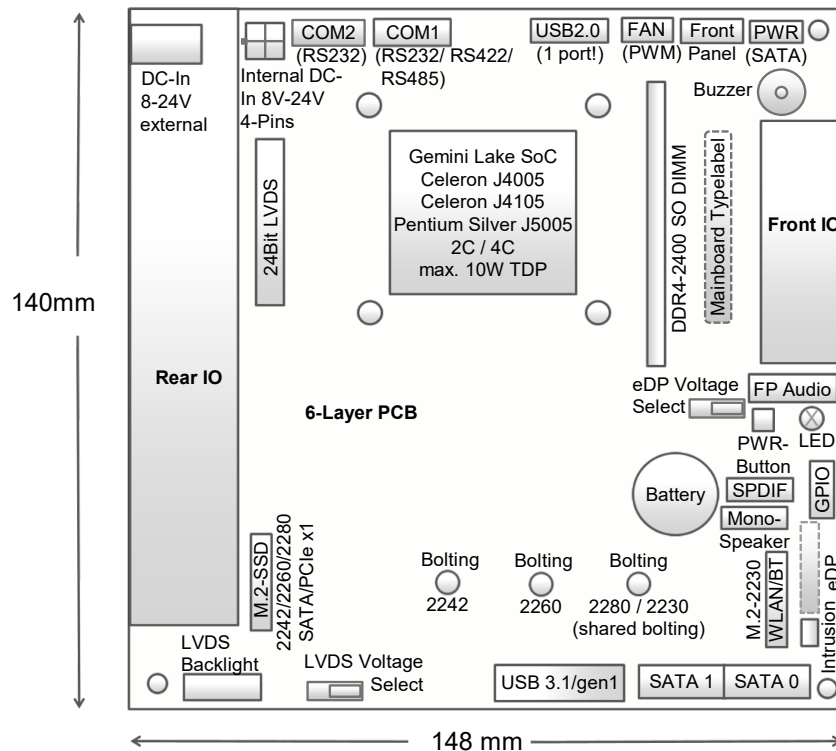
***) SATA-based M.2 SSD is shared with SATA port 1; simultaneous use of M.2 2280 module and M.2 2230 module (WLAN/Bluetooth) possible

****) 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-V207	Intel® Celeron® J4005 (DC/10 W TDP/2.7 GHz), Tempo Audio Codec
D3544-S2 mSTX	F5120-V208	Intel® Celeron® J4105 (QC/10 W TDP/2.5 GHz), Tempo Audio Codec
D3544-S3 mSTX	F5120-V209	Intel® Pentium® Silver J5005 (QC/10 W/2.8 GHz), Tempo Audio Codec
D3544-S1 mSTX	F5120-V157 (EOL)	Intel® Celeron® J4005 (DC/10 W TDP/2.7 GHz), Realtek Audio Codec
D3544-S2 mSTX	F5120-V158 (EOL)	Intel® Celeron® J4105 (QC/10 W TDP/2.5 GHz), Realtek Audio Codec
D3544-S3 mSTX	F5120-V159 (EOL)	Intel® Pentium® Silver J5005 (QC/10 W/2.8 GHz), Realtek Audio Codec
D3544-S1 mSTX (w/o LVDS Support)	F5120-V1573 (EOL)	Intel® Celeron® J4005 (DC/10W TDP/2.7 GHz), Realtek Audio Codec*
D3544-S2 mSTX (w/o LVDS Support)	F5120-V1583 (EOL)	Intel® Celeron® J4105 Processor (QC/10W TDP/2.5 GHz), Realtek Audio Codec*
D3544-S3 mSTX (w/o LVDS Support)	F5120-V1593 (EOL)	Intel® Pentium® Silver J5005 Processor (QC/10W/2.8 GHz), Realtek Audio Codec*

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

*) LVDS electronics & related connectors removed

▶ GLOBAL HEADQUARTERS

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