

AMD Embedded R2000 Series SoC Platform for AMD FP5 SoC Processor

- AMD Radeon™ Vega Graphics (within SoC), up to 4x DisplayPort V1.4
- MS Windows 11 Support
- Dual Channel LVDS (24 Bit) and eDP V1.3 (4K) onboard
- Designed for fanless Operation
- M.2 Key-B & M.2 Key M & Mini-PCI Express® supported

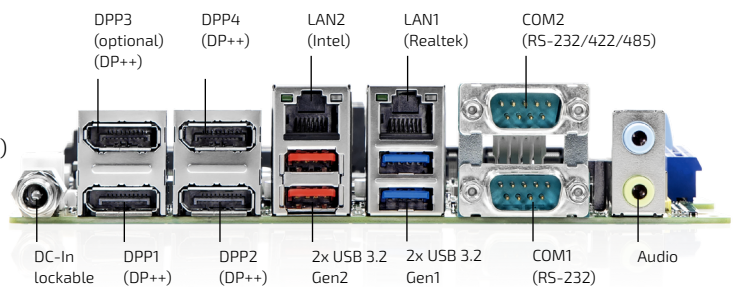
D3723-R mITX Industrial Series

The industrial motherboard D3723-R mITX supports the AMD Ryzen™ Embedded R2000 series processors with integrated AMD Radeon™ Vega Graphics and can be used in applications with high graphical requirements like casino gaming, medical displays, thin clients and industrial PCs.

It is equipped with up to four DisplayPorts, one embedded DisplayPort and one Dual-Channel LVDS (24bit) and powers up to four independent displays in 4K resolution. Depending on how much (graphical) performance is required, there are 4 motherboard versions with different AMD processors available.

- AMD Radeon™ Vega Graphics (within SoC)
- Up to 4x DisplayPort V1.4
- Dual Channel LVDS (24Bit) and eDP V1.3 (4K) onboard
- PCI Express® x4 (Gen3)
- 8 Bit GPIO & HD Audio onboard
- USB 2.0 and USB 3.2 (Gen1/Gen2) onboard
- 2x SATA III; USB Stick Socket
- Onboard support for 1x M.2 SSD (Key-M: 2230/2242/2280)
- Onboard support for 1x M.2 (Key-B: 2242/3052/2260/2280)
- Onboard support for 1x Mini-PCIe (halfsize/fullsize)
- Dual GbE LAN onboard incl. Teaming Support
- AMD integrated TPM V2.0 onboard & socket for optional TPM Module

- WideRange internal/external DC Input (8 V - 34 V)
- HW Watchdog onboard
- RS-232/485/422 support onboard



Technical Information

SYSTEM	PROCESSOR	AMD Ryzen™ Embedded R2000 Series R4: AMD Embedded R2544 R3: AMD Embedded R2514 R2: AMD Embedded R2314 R1: AMD Embedded R2312
	MEMORY	DDR4 2400/2666/3200 SDRAM, Dual Channel 2x SO DIMM sockets, up to 32 GByte memory, ECC/non-ECC
VIDEO	GRAPHICS	AMD Radeon™ Vega Graphics Up to 4x DPP V1.4 incl. DP++ support 1x embedded DP (eDP V1.3; supporting 4K resolutions) 1x Dual-Channel 24bit LVDS Following max. display combinations are supported: D3723-R2/-R3/-R4: 2x DPP + 1x LVDS + 1x eDP, 3x DPP + 1x LVDS or eDP, 4x DPP D3723-R1: 1x DPP + 1x LVDS + 1x eDP, 2x DPP + 1x LVDS or eDP, 3x DPP
AUDIO	AUDIO CODEC AUDIO INTERFACE	Realtek ALC256 High Definition Stereo Audio Codec
NETWORK CONNECTION	ETHERNET	Intel® i210 & Realtek RTL8111H 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	USB SERIAL PORT OTHER I/Os	2x USB 2.0 (by header), 2x USB 3.2 Gen1, 2x USB 3.2 Gen1 (by header), 2x USB 3.2 Gen2, 1x USB 2.0 stick socket 1x RS232/422/485; 3x RS232 (2x by header) GPIO (by header)
STORAGE & EXPANSION	SATA PCIe/PCI SLOTS	2x Serial ATA III 600 Interface (up to 6GBit/s), NCQ, AHCI, 1x M.2 PCIe x4 (Key-M: 2230/2242/2280), 1x Mini PCIe (Gen3, halfsize/fullsize) 1x PCIe x4 Gen3; 1x M.2 PCIe x2/USB 2.0/SATA (Key B: 2242/3052/2260/2280) Note (M.2 Key-M): D3723-R1: M.2 Key-M socket shared with PCIe x4 slot (M.2 or PCIe slot usable; BIOS Setup option) Supports PCIe-based NVME SSD modules Note (M.2 Key-B): D3723-R1: PCIe x1 D3723-R2/-R3/-R4: PCIe x2 SATA line shared with onboard SATA Port1 (only if a SATA-based M.2 module is installed) Supports PCIe-based NVME SSD modules, SATA-based SSD modules, and industrial multipurpose modules based on PCIe / SATA / USB

POWER	CONNECTOR INPUT VOLTAGE	External/Internal DC-In (DC Jack/4-Pin Mini-Fit) DC Input 8 V - 34 V (max. 10 A /max. 130 W)
FIRMWARE	BIOS	AMI Aptio 5.x (UEFI) BIOS modified and adapted by Kontron; Recovery BIOS, SM-BIOS (DMI), BIOS 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), Watchdog Support No legacy OS support, no MBR installation (UEFI only) 3 level HW Watchdog (BIOS POST/BIOS Boot/OS) Integrated AMD integrated TPM V2.0
SYSTEM CONTROL	WATCHDOG REAL TIME CLOCK TPM	
COOLING	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), AMD integrated TPM V2.0, socket for optional TPM upgrade module
SOFTWARE	FAN	2x PWM fan (CPU/System)
MECHANICAL	OS SUPPORT	MS Windows 10/MS Windows 11 Linux-64 No legacy OS support, no MBR installation (UEFI only)
CERTIFICATION	DIMENSIONS (L x W)	Mini-ITX: 6.7" x 6.7" (170 x 170 mm)
	EMC & SAFETY	CE Class-B, UKCA cTÜVus acc. IEC62368-1

Motherboard Versions

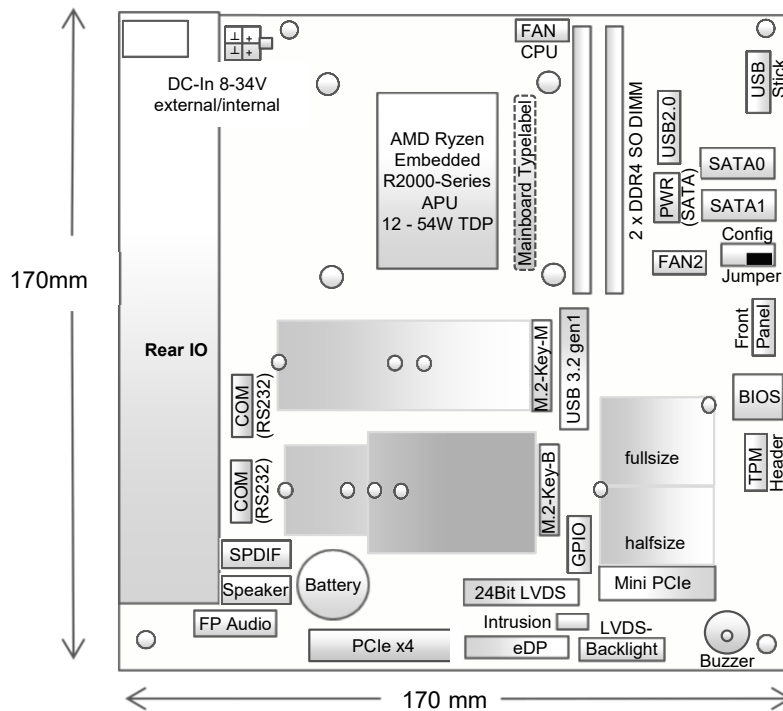
	PROCESSOR (APU) *)	GRAPHICS RADEON™ VEGA	MAX. MEMORY SPEED
-R4	R2544 Quad-Core 3.35/3.7 GHz **) Supported TDP Limits: 54 W ***)/45 W/35 W	GPU @ 1.3 GHz 8x CU ****) up to 4 displays (eDP, LVDS, DPP1, DPP2, DPP3, DPP4)	DDR4-3200 Two sockets (ECC supported)
-R3	R2514 Quad-Core 2.1/3.7 GHz **) Supported TDP Limits: 35 W ***)/25 W/15 W/12 W	GPU @ 1.2 GHz 8x CU ****) up to 4 displays (eDP, LVDS, DPP1, DPP2, DPP3, DPP4)	DDR4-2666 Two sockets (ECC supported)
-R2	R2314 Quad-Core 2.1/3.5 GHz **) Supported TDP Limits: 35 W ***)/25 W/15 W/12 W	GPU @ 1.2 GHz 6x CU ****) up to 4 displays (eDP, LVDS, DPP1, DPP2, DPP3, DPP4)	DDR4-2666 Two sockets (ECC supported)
-R1	R2312 Dual-Core 2.7/3.5 GHz **) Supported TDP Limits: 25 W ***)/15 W/12 W	GPU @ 1.2 GHz 3x CU ****) up to 3 displays (eDP, LVDS, DPP1, DPP2, DPP4)	DDR4-2400 Two sockets (ECC supported)

*) APU = Accelerated Processing Unit
**) CPU Base Frequency / Boost Frequency
***) Default TDP
****) CU = Compute Units

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 V - 34 V (recommended nominal range) 7.6 V - 36 V (absolute maximum ratings)	0 A	± 5 %	<10 W/40 W	130 W

*) Motherboard incl. Memory and M.2 NVME SSD (approximations for MS Windows 10 Idle Mode / Full Processor Load @ 25 W TDP)
**) Motherboard incl. Memory, M.2, PCIe/Mini-PCIe devices, USB Devices, LVDS / eDP devices, SATA devices
See TechNotes document for detailed power requirements



Technical Details

FEATURES	Chipset / SoC (APU) DPP / HDMI / LVDS / eDP Buzzer / int. Speaker Support (stereo)* / 5.1 Multichannel Audio GbE LAN / Dual GbE LAN / 2.5GbE LAN / M.2 2230 WLAN-BT** WoL / PXE / LAN Teaming / TSN SATA / SATA RAID / M.2 (SATA) / M.2 (PCIe/NVME) Mini-PCIe / USB 2.0 / USB 3.2 (Gen1) / USB 3.2 (Gen2) FAN monitored & controlled CPU / AUX1 / AUX2 TEMP monitored CPU / onboard sensors / external sensor	AMD Ryzen™ Embedded + / - / + / + + / + / - + / + / - / - + / + / + / - + / - / + / + + / + / + / + + / + / - + / + / -
SPECIAL FEATURES	COM interface support for RS-232 / RS-485 / RS-422 Silent Fan / System Guard Recovery BIOS / Multi Boot HDD Password / EraseDisk / TPM V2.0 onboard / optional TPM module 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 ... +60 °C
INTERNAL CONNECTORS	SO DIMM Sockets (DDR4 3200/2666/2400) SATA-III / M.2 Key-M SSD / M.2 Key-B / M.2 2230 WLAN-BT / Mini-PCIe Front Panel Audio (9-Pin, HD Audio) / SP-DIF Out (Digital Audio) USB 2.0 pin header (provides 2 USB channel) / USB Stick socket**** USB 3.2 Gen1 pin header (provides 2 USB channels)***** Serial COM3 header***** / Serial COM4 header***** / Parallel Port header LVDS / LVDS Backlight / Embedded DisplayPort @ 4 lanes FAN PSU / CPU (PWM) / AUX1 (PWM) Intrusion (Case Open) / GPIO (8 Bit) / SMBus (Case Temp.) Stereo Speaker header / Digital Mic header Front Panel (Power Switch, Reset Switch, LEDs, Intel 10 pin header) SATA Drive Power Connector (5 V/12 V) / DC-In Connector 8 - 34 V (4 pin)	2 2 / 1 / 1 / - / 1 1 / 1 1 / 1 1 1 / 1 / - 1 / 1 / 1 - / 1 / 1 1 / 1 / - 1 / - 1 1 / 1
EXTERNAL CONNECTORS	DisplayPort V1.4 / HDMI / DVI / VGA Audio Mic. In / Line in / Line out (or driver configuration) LAN (RJ-45) / PS/2 Keyboard / Mouse USB 2.0 / USB 3.1 Gen1 / USB 3.1 Gen2 DC-In connector (external input) 8 - 34 V @ 10 A max.; lockable Serial COM interface*****	up to 4 / - / - / - / - - / 1 / 1 2 / - / - 0 / 2 / 2 1 2

*) Stereo speaker support: 2 W @4Ω
 **) M.2 WLAN possible via Mini-PCIe to M.2 converter module D3436-5
 ***) Forced cooling required for high operating temperature range. See TechNotes document for details
 ****) USB 2.0
 *****) USB3 connector includes separate USB2.0 signal pins (2 channels)
 *****) COM3 / COM4; RS-232 @ reduced feature set / pin count; see TechNotes document for details
 *****) RS-232; Thereof one port (COM2) supporting RS-232/RS-422/RS-485

ARTICLE	PART NO.	DESCRIPTION
D3723-R4	F5120-V202	AMD Embedded R2544 SoC
D3723-R3	F5120-V201	AMD Embedded R2514 SoC
D3723-R2	F5120-V200	AMD Embedded R2314 SoC
D3723-R1	F5120-V199	AMD Embedded R2312 SoC

Accessories

SLIM ACTIVE HEATSINK + BACKPLATE	S26361-F5000-C021	max. 35 W TDP
ACTIVE HEATSINK + BACKPLATE	S26361-F5000-C020	max. 54 W TDP
FANLESS HEATSINK + BACKPLATE	S26361-F5000-C019	max. 15 W TDP
RISERCARD	S26361-F5000-R006	1x PCIe X4
SERIAL PORT CABLE	S26361-F5000-K010	400 mm, fullsize slot bracket
MINI PCIE TO M.2 ADAPTER	S26361-F5000-M003	Adapter for Mini PCIe to M.2 Wi-Fi modules
AC-ADAPTER 19V/65W	S26361-F5000-P006	For applications up to 35 W TDP (SoC)
AC-ADAPTER 20V/120W	S26361-F5000-P007	lockable connector
INTERNAL PSU KIT	S26361-F5000-P004	12 V/65 W, designed for SMARTCASE™ chassis
DRIVE POWER CABLE	S26361-F5000-K001	400 mm, power connector for 1x SATA and 1x slimline DVD
TPM MODULE	S26361-F5000-R012	Infineon SLB9670, TPM V2.0 (TCG compliant)
SMARTCASE S711	S26361-F5000-J008	Chassis kit solution for D3713 & D3723

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