ADLINK
LEADING EDGE COMPUTING

cExpress-R8

COM Express Compact Size Type 6 Module based on AMD Ryzen 8000 Platform

Preliminary

Features

- COM Express® R3.1 Compact Module Type 6 Pinout
- Integrated AMD Radeon™ RDNA™ 3 Graphics
- AMD XDNA™ NPU up to 16 TOPs
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- All PCIe Lanes up to PCIe GEN4 Spec
- Support DDR5 5600 MHz up to 96 GB and ECC option

Specifications

Core System	SoC	AMD Ryzen 8000 series at 45W/28W For more detailed information, please refer to the CPU SKUs section.
	Memory	Dual-channel DDR5 non-ECC/ECC at max. 5600 MHz Up to 96GB memory capacity
	Embedded BIOS	AMI UEFI with CMOS backup in 32MB SPI BIOS
	Cache	Refer to the CPU SKUs section
	Expansion Busses	PCIe x8 Gen4, lanes 16-23, support 1x8 or 2 x4 4 PCIe x1 Gen4: Lanes 0/1/2/3 (configurable to x1, x2, x4); 2 PCIe x2 Gen4, Lanes 4/5/6/7 (configurable to 2 x2/1x2, 2 x1); Lanes 6/7 muxed with SATA 1/0 LPC bus (via ESPI-to-LPC bridge IC), SMBus (system), I^2C (user), Note: A maximum of 7 PCIe devices are supported, including the onboard LAN controller (TBC).
	SEMA Board Controller	Supports: Voltage/current monitoring, power sequence debug support, AT/ATX mode control, logistics and forensic information, flat panel control, general purpose I^2C, watchdog timer, fan control, and failsafe BIOS (dual BIOS by a build option)
	Debug Headers	30-pin multipurpose flat cable connector for use with DB30-x86 debug module providing BIOS POST code LED, EC access, SPI BIOS flashing, power testpoints, debug LEDs

Note: "Build option" indicates an alternative BOM configuration to support additional or alternative functions that are not available on the standard product. Be aware that these "build option" part numbers will need to be newly created and this will result in production lead times.

Specifications

Video	GPU Feature Support	AMD Radeon™ RDNA™ 3 Graphics Core Architecture, up to 6 Workgroups, supporting 4 concurrent display combinations of DisplayPort/HDMI/LVDS/eDP/VGA
	Digital Display Interface	DDI 1/2/3 supporting DP, HDMI, DVI
	LVDS	Single/dual channel 18/24-bit LVDS from eDP-to-LVDS IC, max. resolution 1920x1200@60Hz in dual mode
	eDP	Build option in place of LVDS, 4 lanes, eDP 1.4b
Audio	Chipset	AMD HD Audio integrated in SoC
	Codec	On carrier Express-BASE6 R3.1 (ALC888 standard support)
Ethernet	Intel® MAC/PHY	Intel® Ethernet Connection I226 series (I226-IT supports TSN in Linux OS by build option)
	Interface	2.5GbE and 1000/100/10 Mbit/s Ethernet connection
Multi I/O and Storage	USB	4x USB 3.2/2.0/1.1 (USB 0-3), 4x USB 2.0/1.1 (USB 4-7) USB 3.2 depends on the carrier design
	SATA	4x SATA 6Gb/s (SATA 0,1,2,3) SAT 0/1 muxed with PCIe lane 7/6. SATA function as default
	On-board Storage	PCIe Gen4 NVMe SSD in place of SATA port (build option, 256GB+ capacity)
	Serial	2x UART ports with console redirection
	GPIO	4x GPIO and 4x GPI from EC (GPI with interrupt)
Super I/O	Supported on carrier if needed (standard support W83627DHG-P, other Super I/O supported by project basis)	
TPM	Chipset	Infineon
	Type	TPM 2.0
Power	Standard Input	ATX: 12V±5% / 5Vsb ±5%; or AT: 12V±5%
	Wide Input	ATX: 8.5-20V / 5Vsb ±5%; or AT: 8.5-20V
	Management	ACPI 5.0 compliant, Smart Battery support
	Power States	C1-C6, S0, S3, S4, S5, S5 ECO mode (Wake on USB S3/S4, WOL S3/S4/S5) (TBC)
	ECO Mode	Supports deep S5 mode for power saving

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Specifications

Mechanical and Environmental	Form Factor	PICMG COM.0: Rev 3.1 Type 6
	Dimension	Basic size: 95 mm x 95 mm
	Operating Temperature	Standard: 0°C to 60°C (storage: -20°C to 80°C)
	Humidity	5-90% RH operating, non-condensing 5-95% RH storage (and operating with conformal coating)
	Shock and Vibration	IEC 60068-2-64 and IEC-60068-2-27 MIL-STD-202F, Method 213B, Table 213-I, Condition A and Method 214A, Table 214-I, Condition D
	HALT	Thermal Stress, Vibration Stress, Thermal Shock, and Combined Test
Operating Systems	Standard Support	Windows 11 22H2 GAC, Ubuntu 64-bit, Yocto project-based Linux 64-bit, and VxWorks (by project basis)

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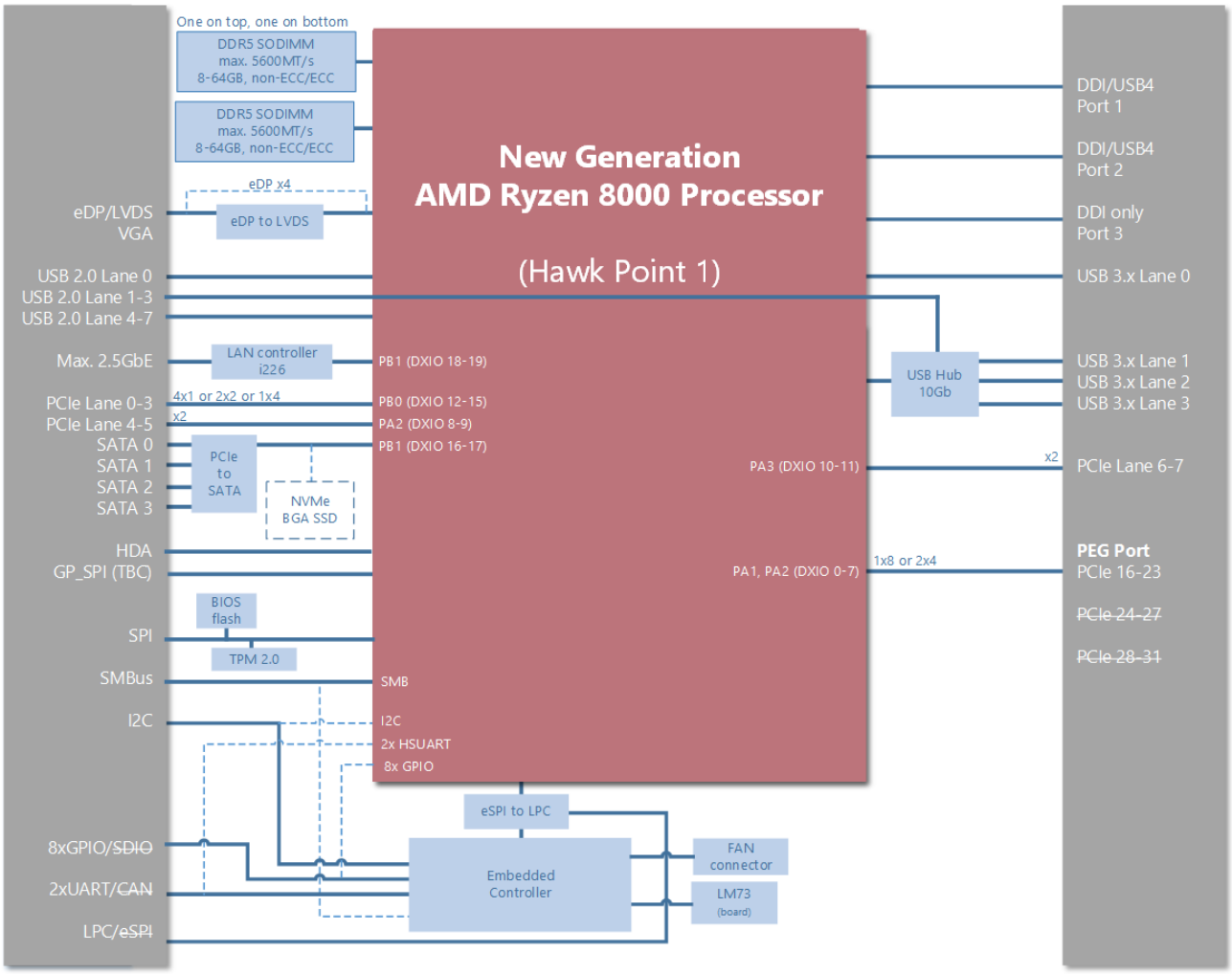
Block diagram



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CPU SKUs

Processor	Cores	Frequency(P-core)	Cache	TDP	GPU Cores
8845HS	8	3.8 (5.1) GHz	24MB	45W (35-54W)	6
8840U	8	3.3 (5.1) GHz	24MB	28W (15-30W)	6
8645HS	6	4.3 (5.0) GHz	22MB	45W (35-54W)	4
8640U	6	3.5 (4.9) GHz	22MB	28W (15-30W)	4

Note:

1. Raptor Lake-P supports Embedded and Industrial SKUs.
2. Some processor SKUs are supported by project basis only. Please consult our ADLINK representative.

Ordering Information

Module Number	Description/Configuration
To be announced (TBA)	

Note:

1. For processor SKUs that are not listed, please contact our ADLINK representative.

Accessories

Heat Spreaders	
HTS-cR8-B	Heatspreader for cExpress-R8 with threaded standoffs for bottom mounting
HTS-cR8-BT	Heatspreader for cExpress-R8 with through-hole standoffs for top mounting
Passive Heatsinks	
THS-cR8-BL	Low-profile Heatsink for cExpress-R8 with threaded standoffs for bottom mounting
THS-cR8-BT	Low-profile Heatsink for cExpress-R8 with through-hole standoffs for top mounting
THSH-cR8-B	High-profile Heatsink for cExpress-R8 with threaded standoffs for bottom mounting
Active Heatsinks	
THSF-cR8-B	High-profile Heatsink with Fan for cExpress-R8 with threaded standoffs for bottom mounting

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