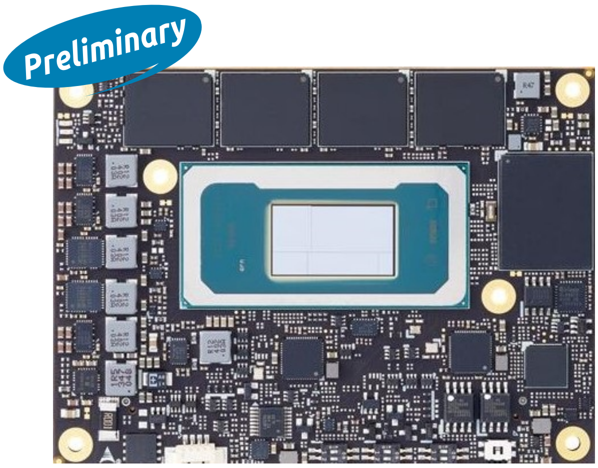
COM-HPC-mPTL

COM-HPC Mini Module Based on Intel® Panther Lake Platform


Preliminary

Features

- Smallest COM-HPC form factor (Size: 95mm x 70mm)
- Intel® Core™ Ultra processors, up to 16 cores
- Integrated NPU up to 50 TOPS
- Intel® Arc™ graphics up to 12 Xe cores
- Up to 64GB LPDDR5X
- High-speed I/O w/ PCIe Gen5 & USB4 (Optional)
- Onboard NVMe SSD support (Optional)
- Extreme rugged operating temperature (selected SKUs, TBC)

Specifications

Core System	SoC	Intel® Core™ Ultra Series 3				
		Processor	Cores	TDP	Graphics	PEG (8-15)
		Ultra X7 358H	16 (4P+8E+4LPE)	25W	12Xe	-
		Ultra 7 356H	16 (4P+8E+4LPE)	25W	4Xe	Supported
		Ultra 5 325	8 (4P+0E+4LPE)	25W	4Xe	-
		Note: Target SKUs will be supported by project basis.				
	NPU	Integrated, up to 50 TOPS				
	Memory (soldered Down)	Up to 64GB (4x 16GB) LPDDR5x at max. 8533MT/s				
	Embedded BIOS	AMI UEFI with CMOS backup in 32MB SPI BIOS (Dual BIOS, TBC)				

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

Core System	Expansion Busses	Up to 16 PCIe lanes • 8 PCIe Gen5 lanes (8-15): x8, x4 configurations • 4 PCIe Gen4 lanes (0-3): x4, x2, x1 configurations • 2 PCIe Gen4 lanes (4-5): x2, x1 configurations • 2 PCIe Gen5 lanes (6-7): x2 (lane 6-7), x1(only lane 6) configurations Note: Lanes 4-7 can be combined as PCIe Gen5 x4. (available w/o onboard NVMe SSD function). • SMBus (system), 2x I2C (user), 1x GP_SPI, 1x Boot_SPI and eSPI
	SEMA Board Controller	Manageability • Voltage/current monitoring • Power-sequence debug support • Logistics & forensic information (event/history) • General-purpose interfaces: I²C, UART, GPIO • Watchdog timer and fan control
	Debug Headers	40-pin FFC/FPC connector, compatible with the DB40-HPC debug module (For BIOS POST code LEDs, EC access, SPI BIOS flashing, power test points, and debug LEDs)
Video	GPU Feature	Support up to 4 independent displays: DP / HDMI / eDP + USB4 (DP Alt Mode) • Intel® Xe + Intel® Arc™ iGPU, up to 12 Xe cores • Max output: 4× 4K@60Hz (TBD) • Hardware video encode/decode • Standards: DirectX® 12, OpenGL® 4.6, Vulkan® 1.2, Intel® VPL, HDCP 2.3 • Graphics hardware virtualization: SR-IOV
	Digital Display Interface	2 DDI ports (DDI 0/1), support DP1.4a / HDMI2.1 (Default DDI0)
	USB4	3x USB4 ports, support DP alt mode (Default USB4 0/1; USB4_1 optional USB3_2 or USB3_3) Note: Custom BIOS and re-timer/PD required (by project support)
	eDP	eDP 1.4b
Audio	Chipset	Integrated on SoC
	Interface	HDA
	Audio Codec	On COM-HPC mini Base Carrier (Realtek solution on carrier)
Camera	MIPI-CSI	2x MIPI-CSI on-board FFC connector (Optional, TBC)
NBASE-T Ethernet	Intel® MAC/PHY	2x Intel® i226 controllers (I226 supports TSN by build option)
	Speed	2.5Gbps/1000M/100M/10M Ethernet connection

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Specifications

Multi I/O and Storage	USB	Up to 4x USB 3.2 Gen2x1 10Gbps (Default port 0,1) 4x USB 2.0 (Port 4, 5, 6, 7)
	Serial	2x UART ports with console redirection (Default from EC; SoC by project basis)
	GPIO	12x GPIO (GPI with interrupt, TBC) (Default from EC; SoC by project basis)
	On-board Storage	Onboard NVMe SSD (Optional; co-lay with PCIe lane 4 & 5 w/ PCIex2 Gen5) Note: x2/x4 lanes support is on a project basis.
TPM	Chipset	Infineon
	Type	TPM 2.0 (SPI based)
Power	Standard Input	AT mode 12V±5%; Vin 8-20V (Single power rail)
	Wide Input	AT: 8.5-20V
	Power States	C0-C6, S0, S3, S5; ECO mode (Wake-on-USB S3/S4, WoL S3/S4/S5; TBC)
Mechanical and Environmental	Form Factor	PICMG COM-HPC: Rev 1.3 mini Type
	Dimension	95mm x 70 mm
	Operating Temperature	Standard: 0°C to 60°C (Storage: -20°C to 80°C) Industrial: -40°C to 85°C (Storage: -40°C to 85°C, selected SKUs, TBC)
	Humidity	Operating: 5-90% RH, non-condensing Storage: 5-95% RH, non-condensing
	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
Operating Systems	Standard Support	Windows 11 IoT Enterprise LTSC Ubuntu 24.04 LTS VxWorks (by project)

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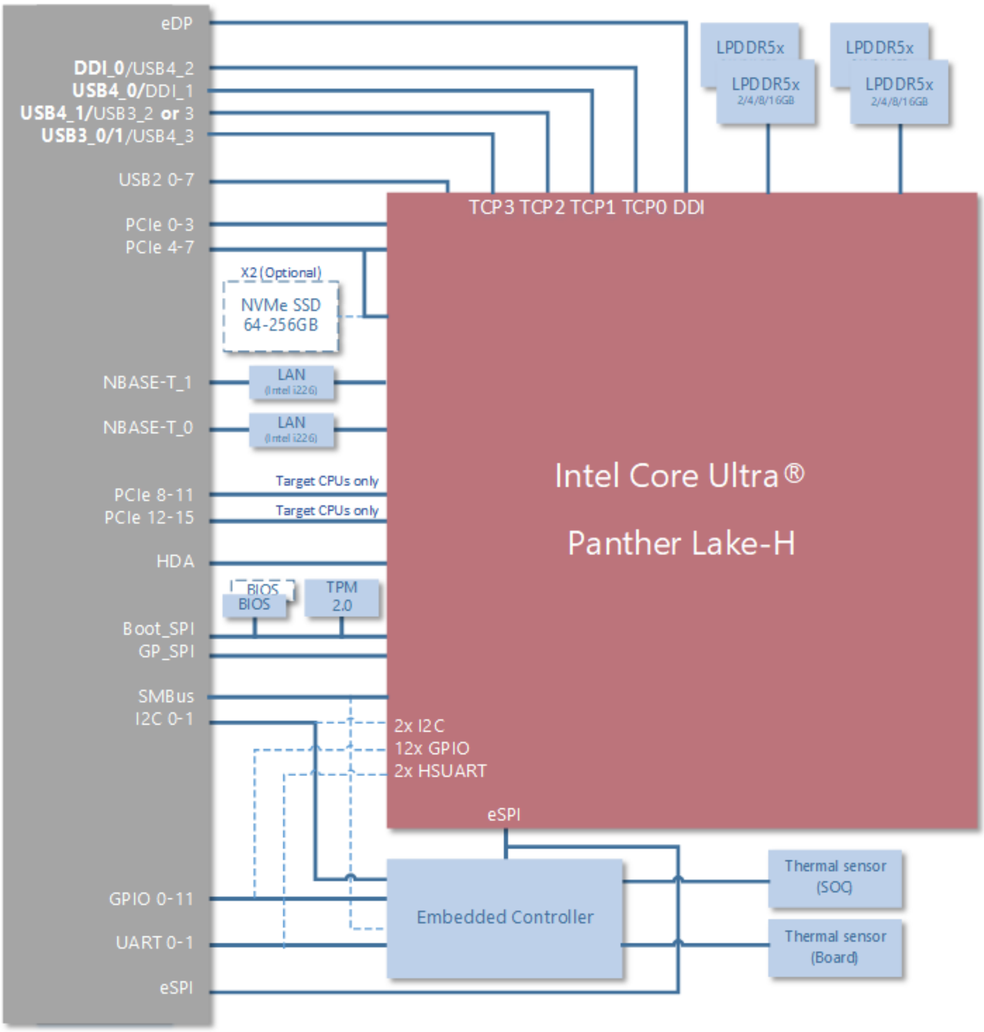
Block diagram



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Ordering Information

Module	
TBC	
COM-HPC-mPTL-358H-32G	COM-HPC mini module with Intel Panther Lake Core Ultra X7 358H, 32GB LPDDR5 memory
COM-HPC-mPTL-325-16G	COM-HPC mini module with Intel Panther Lake Core Ultra 5 325, 16GB LPDDR5 memory

Note: For certain processor or memory capacity SKUs not listed, please contact our ADLINK representative.

Accessories

Heat Spreaders	
HTS-mPTL-B	Heatspreader for COM-HPC-mPTL with threaded standoffs for bottom mounting
Active Heatsinks	
THSF-mPTL-B	High-profile Heatsink with Fan for COM-HPC-mPTL with threaded standoffs for bottom mounting

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