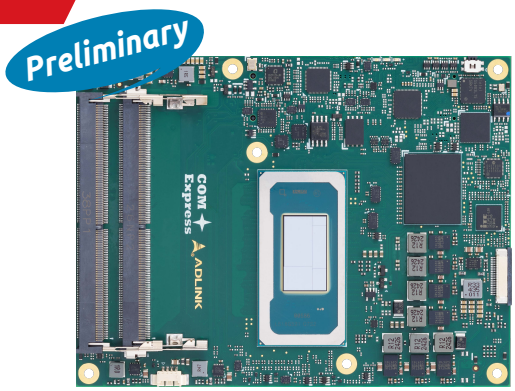
ADLINK
LEADING EDGE COMPUTING

Express-PTL

COM Express COM R3.1 Type 6 Module based on Intel® Panther Lake-H Platform



Features

- New NPU provide 50 TOPS AI performance
- Xe3 Intel GPU up to 1.5x improvement over the last generation
- Up to 128GB DDR5 SO-DIMM, IBECC
- Up to 4x SATA gen3 ports
- Built-in one MIPI-CSI connector
- Extreme rugged operating temperature (selected SKUs)

Specifications

Core System	SoC	Intel® Core™ Ultra Series 3 processors (Panther Lake-H)

Processor	Cores/Threads	Cache	TDP	Graphics
Core™ Ultra 7 368H	4P+8E+4LPE	18MB	25W(15-65W cTDP)	12 Xe3
Core™ Ultra 7 356H	4P+8E+4LPE	18MB	25W(15-65W cTDP)	4 Xe3
Core™ Ultra 5 336H	4P+4E+4LPE	18MB	25W(15-65W cTDP)	4 Xe3

1. Panther Lake supports Embedded and Industrial SKUs.
2. Some processor SKUs are supported by project basis only. Please see the user's manual for details.

Supports: Intel® VT (including VT-x, VT-d, VT-x with Extended Page Tables), Intel® HT Technology, Intel® SSE4.2, Intel® 64 Architecture, Intel® Turbo Boost Technology 3.0, Intel® AVX512-VNNI, Intel® TXT, Execute Disable Bit, Intel® Data Protection Technology with Intel® Secure Key, Intel® AES-NI
Note: Availability of features may vary between processor SKUs.

	Memory	Up to 128GB (2x 64GB) DDR5, IBECC (selected SKUs), SO-DIMM memory, max. 7200MHz 2 memory channels with 1DPC design
	Embedded BIOS	AMI UEFI with CMOS backup in 32 SPI BIOS (dual BIOS opt.)
	Cache	Ultra 7 368H/ 7 356H/ 5 336H 18MB (Other SKUs will be updated after Intel releases information.)
	Expansion Busses	PCIe x8 Gen4, lanes 16-23, available for H484 and H404 ET

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

	Expansion Busses	8 PCIe x1 Gen4: Lanes 0/1/2/3 (configurable to x1, x2, x4) and Lanes 4/5/6/7 (Configurable to x1, x2, x4. Port 7 and GbE function can be selected via BIOS settings) LPC bus (via ESPI-to-LPC bridge IC), SMBus (system), I²C (user), GP_SPI(TBC)
	SEMA Board Controller	Supports: Voltage/current monitoring, power sequence debug support, AT/ATX mode control, logistics and forensic information, general purpose I²C, UART, GPIO, watchdog timer, fan control
	Debug Headers	30-pin multipurpose flat cable connector for use with DB30-x86 debug module providing BIOS POST code LED, SEMA Board Controller access, SPI BIOS flashing,power testpoints, debug LEDs
Video	GPU Feature Support	Intel® Xe3 Graphics Core Architecture, max. 196EUs, supporting 4 concurrent display. Supports display resolutions of up to 8K60 for a single output and 6K60 for four simultaneous displays. Hardware Codecs decode VVC 8K60 8/10-bit 420 and AVC 4K60 8/10-bit 420/422 Encode AVI/VP8 8K30 10-bit 420/422/444 DirectX 12, OpenGL 4.6 Graphics Hardware Virtualization (SRIOV)
	Digital Display Interface	DDI 1/2/3 supporting DP 2.1, HDMI 2.1, DVI
	VGA	Supported by build option via DP-to-VGA IC (in place of DDI 3), max. resolution 1920x1200@60Hz
	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
	USB4	Max. 2x USB4 in place of DDI 1/2, supports DP 2.1 by DP alternative mode, Thunderbolt 4 capable (TBC) Requires BIOS code modification by project basis, re-timer with PD on carrier
Audio	Chipset	Integrated on SoC
	Codec	On the carrier Express-BASE6 R3.1 (ALC888 standard support)
Ethernet	Intel® MAC/PHY	Intel® Ethernet Connection I226 series (I226-IT supports TSN by build option)
	Interface	2.5GbE and 1000/100/10 Mbit/s Ethernet connection GbE0_SDP if TSN support enabled (TBC)
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) 4x SATA 6Gb/s (SATA 0-3) Max. two USB4 (in place of DDI 1/2) by project basis, Thunderbolt 4 capable (TBC)
	On-board Storage	NVMe SSD in place of SATA 0-3 (build option, project basis)
	Serial	2x UART ports with console redirection
	GPIO	8x GPIO (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 (SPI based)
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 (TBC)
	Power States	C1-C6, S0, S1, 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

Specifications

Mechanical and Environmental	Form Factor	PICMG COM Rev 3.1 Type 6
	Dimension	Basic size: 125 mm x 95 mm
	Operating Temperature	Standard: 0°C to 60°C (storage: -20°C to 80°C) Extreme Rugged: -40°C to 85°C (storage: -40°C to 85°C) (Build option, selected SKUs, TBC)
	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 (TBC)
	HALT	Thermal Stress, Vibration Stress, Thermal Shock and Combined Test
Operating Systems	Standard Support	Windows 11 IoT Enterprise LTSC 2024, Ubuntu 2024 64-bit, Yocto project-based Linux 64-bit (TBC)

Ordering Information

Starter Kit	
COM Express Type 6 Starter Kit Plus	Starter kit for COM Express Type 6
Module	
Express-PTL-368H	Basic COM Express Type 6 module with Panther Lake Ultra 7 368H 16 core, Intel 12 core Xe graphics
Express-PTL-358H	Basic COM Express Type 6 module with Panther Lake Ultra 7 358H 16 core, Intel 4 core Xe graphics
Express-PTL-336H	Basic COM Express Type 6 module with Panther Lake Ultra 5 336H 12 core, Intel 4 core Xe graphics

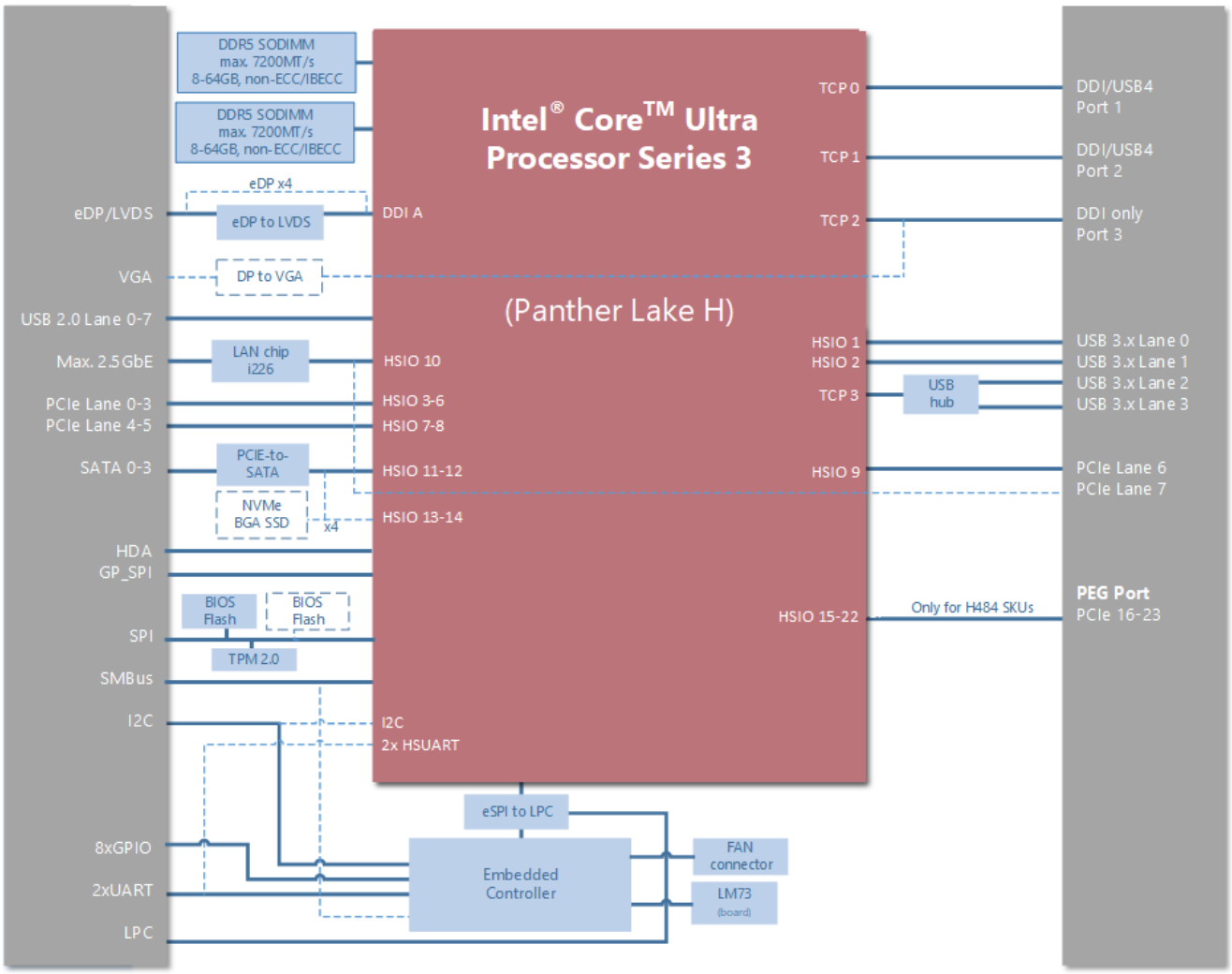
Note:
1. Special SKUs support Embedded and Industrial SKUs.
2. Some processor SKUs are supported by project basis only. Please see the user's manual for details or consult an ADLINK representative.

Accessories

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

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.

Block diagram



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