cExpress-MTL

COM Express COM.0 R3.1 Type 6
Compact size Module based on
Intel® Core™ Ultra Processors



Features

- Intel Core Ultra processor, Intel XᵉLPG GFX integration and up to 8 Xᵉ-Cores
- New integrated NPU for dedicated AI acceleration
- All PCIe signals upgraded to Gen4
- 2.5GbE Ethernet, with optional TSN
- Up to 96GB DDR5 at 5600MT/s, in-band ECC/non-ECC
- SoC power reduction
- 2x USB4 support (BOM option)

Specifications

Core System	SoC	Intel® Core™ Ultra 7/5 at 28W/15W. For more detailed information, please refer to the SKU section. 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 96GB DDR5, in-band ECC/non-ECC in two SO-DIMM, max. 5600MT/s
	Embedded BIOS	AMI UEFI with CMOS backup in 32 or 16MB (TBC) SPI BIOS with Intel® AMT 12.x support
	Cache	Ultra 7 155H 24MB Ultra 5 135H/125H 18MB Ultra 5 135U/125U 12MB
	Expansion Buses	PCIe x8 Gen4, lanes 16-23, available for 28W SKUs PCIe x4 Gen4, lanes 24-27 PCIe x4 Gen4, lanes 28-31 Up to 8 PCIe x1 Gen4 lanes (AB): Lanes 0/1/2/3 and Lanes 4/5/6/7 (configurable to 4 x1, 2 x2, 1 x4, 2 x1 + 1 x2, 1 x2 + 2 x1, lanes 6/7 by option)
	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
	Management Bus	I2C, SMBus

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.

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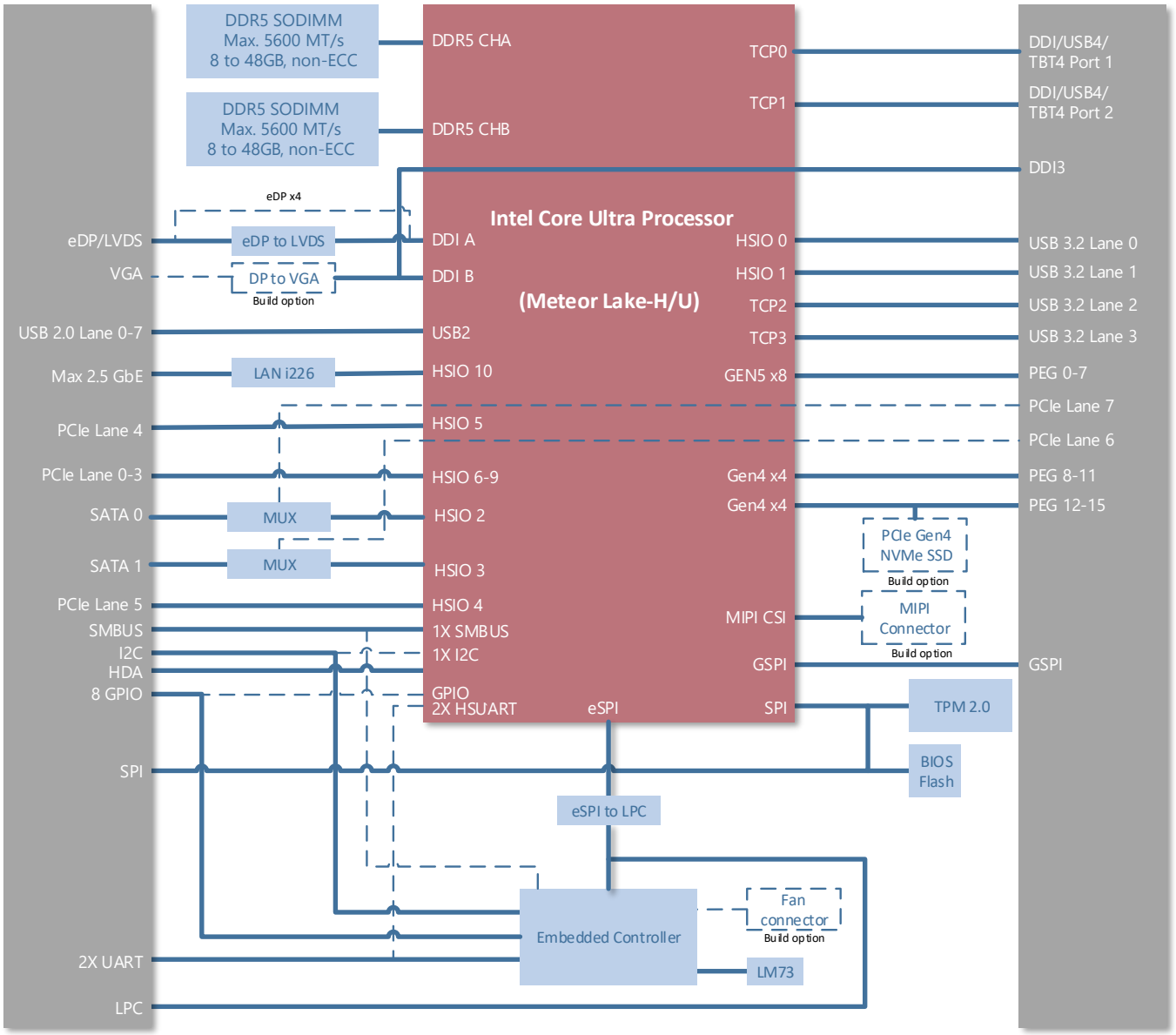
Specifications

Video	GPU Feature Support	Intel® Xe LPG, HW AV1 encode/decode, DX12.1, OpenGL4.6, H.265 (HEVC) 8- bit codec, OneAPI
	Digital Display Interface	3x DDI (DP 1.4/HDMI 2.0b, VGA build option)
	LVDS	1x LVDS (or eDP1.4b)
	USB	2x USB4 in place of DDI 1/2, supports DP 2.1 by DP alternative mode, Thunderbolt 4 capable (requires BIOS code mod., by project basis)
Camera	MIPI CSI	4 lanes and support MIPI CSI2.0 DPHY at 2.5Gbps
Audio	Chipset	Integrated on SoC
	Codec	On carrier Express-BASE6 (ALC886 standard support)
Ethernet	Intel® MAC/PHY	Intel® Ethernet Connection I226 series (I226-IT/V 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	2x USB 3.2/2.0/1.1, 2x USB 3.2 (BOM option), 6x USB 2.0/1.1
	SATA	2x SATA 6Gb/s (SATA 0-1)
	Serial	2x UART with console redirection
	GPIO	GPIO: 8 xGPIO from EC (GPI with interrupt)
	On-board Storage	NVMe SSD in place of PEG lanes 12-16 (build option, project basis)
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%
	Management	ACPI 5.0 compliant, Smart Battery support
	Power States	C1-C6, S0, S1, S3, S4, S5 , S5 ECO mode (Wake on USB S3/S4, WOL S3/S4/S5)
	ECO Mode	Supports deep S5 mode for power saving
Mechanical and Environmental	Form Factor	PICMG COM.0: Rev 3.1 Type 6
	Dimension	Compact size: 95 mm x 95 mm
	Operating Temperature	Standard: 0°C to 60°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 10 Enterprise LTSC 2021, Yocto Linux 64-bit, VxWorks 64-bit (TBC), Ubuntu 24.04

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Block diagram



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CPU SKUs

Processor	Frequency	Cache	TDP	CPU/GPU Cores
Ultra 7 155H	1.4(4.8)GHz	24MB	28W	14C/8Xᵉ
Ultra 5 135H	1.7(4.6)GHz	18MB	28W	12C/8Xᵉ
Ultra 5 125H	1.2(4.9)GHz	18MB	28W	12C/7Xᵉ
Ultra 5 135U	1.6(4.4)GHz	12MB	15W	10C/4Xᵉ
Ultra 5 125U	1.3(4.3)GHz	12MB	15W	10C/4Xᵉ

Ordering Information

Module	
cExpress-MTL-155H	Compact COM Express Type 6 module with Meteor Lake Ultra 7 155H 14 core, Intel 8 core Xᵉ LPG graphics
cExpress-MTL-135H	Compact COM Express Type 6 module with Meteor Lake Ultra 5 135H 12 core, Intel 8 core Xᵉ LPG graphics
cExpress-MTL-125U	Compact COM Express Type 6 module with Meteor Lake Ultra 5 125U 12 core, Intel 4 core Xᵉ LPG graphics

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

Accessories

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

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