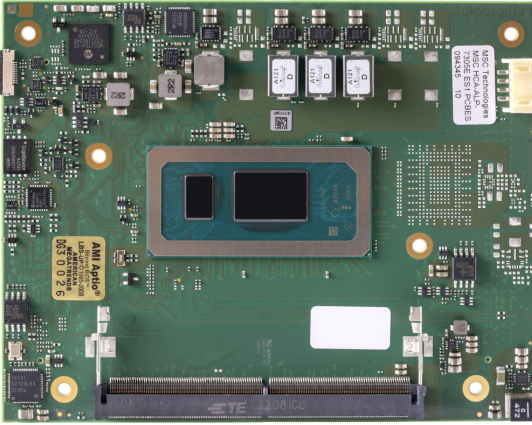


MSC HCA-RLP

Intel® Core™ 13th Generation



120 x 95



23 / 62 W



-40 +85



COM+HPC®

Description

The MSC HCA-RLP COM-HPC Client module features the 13th Gen Intel® Core™ processor, giving application designers a great variety of choices of power efficient and performant compute solutions. Offering a great scalability of performance, the module is ideal for compute intense applications in automation, instrumentation, high-end medical equipment, transportation, and video surveillance. The Intel® performance hybrid architecture combines Performance-cores and Efficient-cores with the Intel® Thread Director providing intelligent workload optimization. The architecture scales up to fourteen cores and twenty threads at 45/35W thermal design power (TDP). The board is ideal for applications requiring support for extended temperature range and 24/7 continuous operation.

For highest data throughput the module enables fast DDR5-5200 memory technology with up to sixty-four GB SO-DIMM based memory. Module I/O comprises up to eight PCIe Gen 3 lanes, up to eight PCIe Gen 4 lanes and an optional eight lane PEG port capable of PCIe Gen 4. The two Ethernet interfaces provide up to 2.5GbE bandwidth each based on the Intel i226 network controller. Further high-speed I/O can utilize USB ports featuring USB4 and USB 3.2.

System investments are well protected through long-term availability of the module, designed and manufactured by Tria Technologies. In addition, the COM-HPC standard enables performance scaling and migrating applications to future technology upgrades when they become available.

Highlights

- COM-HPC Client module, Size A
- 13th Gen Intel® Core™ processors
- Scalable CPU performance
- Up to fourteen cores, twenty threads
- Industrial grading options (Intel® TCC, TSN, IB ECC, ext. Temp., 24/7)
- Up to 64GB DDR5-5200 SDRAM, dual channel
- Intel® Iris® Xe architecture Graphics, up to 96 EUs
- Three DisplayPort/HDMI interfaces
- Embedded DisplayPort interface
- Up to four independent displays
- PCI Express® Gen 3, up to 8 lanes, PCI Express® Gen 4, up to 2x4
- PEG 1x8, PCIe Gen 4/5 (optional)
- Two USB4, two USB 3.2 Gen2, eight USB 2.0 ports
- Two UARTs
- Optional on-board NVMe SSD, up to 1TB
- Optional two SATA 6Gb/s mass storage interfaces
- Two 1 / 2.5 Gb Ethernet ports (Intel® i226)
- Trusted Platform Module TPM 2.0
- Long-term product availability

Technical Data - MSC HCA-RLP

Technology	x86
Formfactor	COM-HPC Size A
CPU	<p>13th Gen Intel® Core™ processors</p> <p>H-series</p> <p>Intel® Core™ i7-13800HE 6P+8E/20T, 2.5GHz, 96 EUs, 24MB L3, 45/35W cTDP Intel® Core™ i7-13800HRE 6P+8E/20T, 2.5GHz, 96 EUs, 24MB L3, 45/35W cTDP, TCC/TSN, IBECC, ET Intel® Core™ i5-13600HE 4P+8E/16T, 2.7GHz, 80 EUs, 18MB L3, 45/35W cTDP Intel® Core™ i5-13600HRE 4P+8E/16T, 2.7GHz, 80 EUs, 18MB L3, 45/35W cTDP, TCC/TSN, IBECC, ET Intel® Core™ i3-13300HE 4P+4E/12T, 2.1GHz, 48 EUs, 12MB L3, 45/35W cTDP Intel® Core™ i3-13300HRE 4P+4E/12T, 2.1GHz, 48 EUs, 12MB L3, 45/35W cTDP, TCC/TSN, IBECC, ET</p> <p>P-series</p> <p>Intel® Core™ i7-1370PE 6P+8E/20T, 1.9GHz, 96 EUs, 24MB L3, 28/20W cTDP Intel® Core™ i7-1370PRE 6P+8E/20T, 1.9GHz, 96 EUs, 24MB L3, 28/20W cTDP, TCC/TSN, IBECC, ET Intel® Core™ i5-1350PE 4P+8E/16T, 1.8GHz, 80 EUs, 12MB L3, 28/20W cTDP Intel® Core™ i5-1350PRE 4P+8E/16T, 1.8GHz, 80 EUs, 12MB L3, 28/20W cTDP, TCC/TSN, IBECC, ET Intel® Core™ i5-1340PE 4P+8E/16T, 1.8GHz, 80 EUs, 12MB L3, 28/20W cTDP Intel® Core™ i3-1320PE 4P+4E/12T, 1.7GHz, 48 EUs, 12MB L3, 28/20W cTDP Intel® Core™ i3-1320PRE 4P+4E/12T, 1.7GHz, 48 EUs, 12MB L3, 28/20W cTDP, TCC/TSN, IBECC, ET</p> <p>U-series</p> <p>Intel® Core™ i7-1365UE 2P+8E/12T, 1.7GHz, 96 EUs, 12MB L3, 15/12W cTDP Intel® Core™ i7-1365URE 2P+8E/12T, 1.7GHz, 96 EUs, 12MB L3, 15/12W cTDP, TCC/TSN, IBECC, ET Intel® Core™ i5-1345UE 2P+8E/12T, 1.4GHz, 80 EUs, 12MB L3, 15/12W cTDP Intel® Core™ i5-1345URE 2P+8E/12T, 1.4GHz, 80 EUs, 12MB L3, 15/12W cTDP, TCC/TSN, IBECC, ET Intel® Core™ i5-1335UE 2P+8E/12T, 1.3GHz, 80 EUs, 12MB L3, 15/12W cTDP Intel® Core™ i3-1315UE 2P+4E/8T, 1.2GHz, 64 EUs, 10MB L3, 15/12W cTDP Intel® Core™ i3-1315URE 2P+4E/8T, 1.2GHz, 64 EUs, 10MB L3, 15/12W cTDP, TCC/TSN, IBECC, ET Intel® Processor U300E 1P+4E/6T, 1.1GHz, 48 EUs, 8MB L3, 15/12W cTDP</p> <p>Note: P core base frequency at nominal TDP shown, other clock frequencies supported</p>
Chipset	Integrated into SoC
RAM	2x 262-pin SO-DIMM socket for up to 2x 32GB DDR5 SDRAM (DDR5-5200); dual channel operation; minimum capacity 1x 8GB single channel operation
Storage Interfaces	2x SATA channels (up to 6Gb/s), optional optional on-board NVMe, 64GB to 1TB
USB	2x USB4 on COM-HPC USB[0:1]_SSTX/RX 2x USB 3.2 (Gen 1 & 2) on COM-HPC USB[2:3]_SSTX/RX 8x USB 2.0 on COM-HPC USB[0:7]

Serial Interfaces	2x high-speed serial ports
Bus Interfaces	PCI Express® Graphics (PEG) 1x8, PCIe Gen 4/5 on COM-HPC PCIe[16:23] ¹ PCI Express® Gen 4, up to 2x4 on COM-HPC PCIe[8:15] PCI Express® Gen 3, up to 8 lanes, flexible bifurcation options on COM-HPC PCIe[0:7] ¹ Available on H-series processors
Display Controller	Intel® Iris® Xe architecture Graphics, up to 96 execution units (EU) H.264/AVC, H.265/HEVC, AV1, MJPEG encode/decode/transcode
Display Interfaces	Four independent display streams 3x Digital Display Interface (DP 1.4a, HDMI 2.0b) 1x Embedded DisplayPort 1.4b
Network Interface	Two 10/100/1000Base-TX, 2.5G ² based on Intel i226, TSN support ² Available bandwidths depending on carrier design I-Temp variants: Intel® i226-IT C-Temp variants: Intel® i226-LM
Audio Interface	High Definition Audio
Security Device	TPM 2.0
Miscellaneous	Watchdog Timer: Initiates system reset, programmable Fan Supply: 4-pin header for CPU fan, PWM speed controlled and PWM speed control for system fan supported RTC battery: external System Monitoring: voltage, temperature, CPU fan, system fan
Feature Highlights	COM-HPC Client, Size A

Firmware	<p>UEFI Firmware: AMI Aptio® V</p> <p>Security: TPM 2.0 support, TCG compliant</p> <p>Power Management: ACPI Active fan control</p> <p>USB: USB legacy support (keyboard, mouse, storage)</p> <p>Monitoring: System Monitoring Health Monitoring</p> <p>MSC Adv. Boot Device Selection: Boot device priority setting based on physical interfaces</p>
OS Support	<p>Windows 10 IoT Enterprise 2021 LTSC BSP for Linux (Yocto)</p>
Power Requirement	<p>Voltage: +8V to +20V, +5V Stby optional, +3V RTC voltage</p> <p>Power Consumption: 23 W to 62 W (typ., variant dependent)</p>
Environment	<p>Ambient Temperature: 0° ... 60°C (operating) -25° ... 85°C (storage) Extended temp. variants: -40 ... +85°C (operating)</p> <p>Humidity: 5 ... 95% (operating, non-condensing), 5 ... 95% (storage, non-condensing)</p>
Dimensions	<p>120 x 95</p>

Order Reference - MSC HCA-RLP

Order Number	Description	Reference	Cat*
113950	COM-HPC Client Size A module (120mm x 95mm); CPU: Intel i7-13800HE 14C/20T, vPro, 2.1GHz, 45/35W cTDP; Graphics: Intel® Iris® Xe 96 EUs; 3x DP/HDMI; 1x eDP; HD Audio; Ethernet: 2x Intel i226-LM Gbit, TSN; TPM 2.0; 2x USB4, 2x USB3, 8x USB2, PEG x8 Gen 4, PCIe Gen 4 2x4, PCIe Gen 3 8x; 2x socket for DDR5; 0...+60°C.	MSC HCA-RLP-13800HE-NN0131C PCBFTX	OR
113946	COM-HPC Client Size A module (120mm x 95mm); CPU: Intel i5-13600HE 12C/16T, vPro, 2.1GHz, 45/35W cTDP; Graphics: Intel® Iris® Xe 80 EUs; 3x DP/HDMI; 1x eDP; HD Audio; Ethernet: 2x Intel i226-LM Gbit, TSN; TPM 2.0; 2x USB4, 2x USB3, 8x USB2, 2x SATA, PEG x8 Gen 4, PCIe Gen 4 2x4, PCIe Gen 3 6x; 2x socket for DDR5; 0...+60°C.	MSC HCA-RLP-13600HE-NN0121C PCBFTX	PV
113942	COM-HPC Client Size A module (120mm x 95mm); CPU: Intel i3-13300HE 8C/12T, 2.1GHz, 45/35W cTDP; Graphics: Intel® UHD Graphics 48 EUs; 3x DP/HDMI; 1x eDP; HD Audio; Ethernet: 2x Intel i226-LM Gbit, TSN; TPM 2.0; 2x USB4, 2x USB3, 8x USB2, 2x SATA, PEG x8 Gen 4, PCIe Gen 4 2x4, PCIe Gen 3 6x; 2x socket for DDR5; 0...+60°C.	MSC HCA-RLP-13300HE-NN0121C PCBFTX	PV
113938	COM-HPC Client Size A module (120mm x 95mm); CPU: Intel i5-1350PE 12C/16T, vPro, 1.8GHz, 28/20W cTDP; Graphics: Intel® Iris® Xe 80 EUs; 3x DP/HDMI; 1x eDP; HD Audio; Ethernet: 2x Intel i226-LM Gbit, TSN; TPM 2.0; 2x USB4, 2x USB3, 8x USB2, PCIe Gen 4 2x4, PCIe Gen 3 8x; 2x socket for DDR5; 0...+60°C.	MSC HCA-RLP-1350PE-NN0131C PCBFTX	OR
113932	COM-HPC Client Size A module (120mm x 95mm); CPU: Intel i3-1320PE 8C/12T, 1.7GHz, 28/20W cTDP; Graphics: Intel® UHD Graphics 48 EUs; 3x DP/HDMI; 1x eDP; HD Audio; Ethernet: 2x Intel i226-LM Gbit, TSN; TPM 2.0; 2x USB4, 2x USB3, 8x USB2, PCIe Gen 4 2x4, PCIe Gen 3 8x; 2x socket for DDR5; 0...+60°C.	MSC HCA-RLP-1320PE-NN0131C PCBFTX	OR
113952	COM-HPC Client Size A module (120mm x 95mm); CPU: Intel i7-13800HRE 14C/20T, vPro, 1.8GHz, 45/35W cTDP; Graphics: Intel® Iris® Xe 96 EUs; 3x DP/HDMI; 1x eDP; HD Audio; Ethernet: 2x Intel i226-IT Gbit, TSN; TPM 2.0; 1TB NVMe; 2x USB4, 2x USB3, 8x USB2, PEG x8 Gen 4, PCIe Gen 4 1x4, PCIe Gen 3 8x; 2x socket for DDR5, in-band ECC; -40...+85°C, recommended for 24/7 operation.	MSC HCA-RLP-13800HRE-NA0131I PCBFTX	OR

Order Reference - MSC HCA-RLP

Order Number	Description	Reference	Cat*
113948	COM-HPC Client Size A module (120mm x 95mm); CPU: Intel i5-13600HRE 12C/16T, vPro, 1.9GHz, 45/35W cTDP; Graphics: Intel® Iris® Xe 80 EUs; 3x DP/HDMI; 1x eDP; HD Audio; Ethernet: 2x Intel i226-IT Gbit, TSN; TPM 2.0; 2x USB4, 2x USB3, 8x USB2, PEG x8 Gen 4, PCIe Gen 4 2x4, PCIe Gen 3 8x; 2x socket for DDR5, in-band ECC; -40...+85°C, recommended for 24/7 operation.	MSC HCA-RLP-13600HRE-NN0131I PCBFTX	PV
113944	COM-HPC Client Size A module (120mm x 95mm); CPU: Intel i3-13300HRE 8C/12T, 2.1GHz, 45/35W cTDP; Graphics: Intel® UHD Graphics 48 EUs; 3x DP/HDMI; 1x eDP; HD Audio; Ethernet: 2x Intel i226-IT Gbit, TSN; TPM 2.0; 2x USB4, 2x USB3, 8x USB2, PEG x8 Gen 4, PCIe Gen 4 2x4, PCIe Gen 3 8x; 2x socket for DDR5, in-band ECC; -40...+85°C, recommended for 24/7 operation.	MSC HCA-RLP-13300HRE-NN0131I PCBFTX	PV
113940	COM-HPC Client Size A module (120mm x 95mm); CPU: Intel i5-1350PRE 12C/16T, vPro, 1.8GHz, 28/20W cTDP; Graphics: Intel® Iris® Xe 80 EUs; 3x DP/HDMI; 1x eDP; HD Audio; Ethernet: 2x Intel i226-IT Gbit, TSN; TPM 2.0; 2x USB4, 2x USB3, 8x USB2, PCIe Gen 4 2x4, PCIe Gen 3 8x; 2x socket for DDR5, in-band ECC; -40...+85°C, recommended for 24/7 operation.	MSC HCA-RLP-1350PRE-NN0131I PCBFTX	OR
113934	COM-HPC Client Size A module (120mm x 95mm); CPU: Intel i3-1320PRE 8C/12T, 1.7GHz, 28/20W cTDP; Graphics: Intel® UHD Graphics 48 EUs; 3x DP/HDMI; 1x eDP; HD Audio; Ethernet: 2x Intel i226-IT Gbit, TSN; TPM 2.0; 2x USB4, 2x USB3, 8x USB2, PCIe Gen 4 2x4, PCIe Gen 3 8x; 2x socket for DDR5, in-band ECC; -40...+85°C, recommended for 24/7 operation.	MSC HCA-RLP-1320PRE-NN0131I PCBFTX	PV
113936	COM-HPC Client Size A module (120mm x 95mm); CPU: Intel i5-1345URE 10C/12T, vPro, 1.4GHz, 15/12W cTDP; Graphics: Intel® Iris® Xe 80 EUs; 3x DP/HDMI; 1x eDP; HD Audio; Ethernet: 2x Intel i226-IT Gbit, TSN; TPM 2.0; 2x USB4, 2x USB3, 8x USB2, PCIe Gen 4 2x4, PCIe Gen 3 8x; 2x socket for DDR5, in-band ECC; -40...+85°C, recommended for 24/7 operation.	MSC HCA-RLP-1345URE-NN0131I PCBFTX	OR
113930	COM-HPC Client Size A module (120mm x 95mm); CPU: Intel i3-1315URE 6C/8T, 2.5GHz, 15/12W cTDP; Graphics: Intel® UHD Graphics 64 EUs; 3x DP/HDMI; 1x eDP; HD Audio; Ethernet: 2x Intel i226-IT Gbit, TSN; TPM 2.0; 2x USB4, 2x USB3, 8x USB2, PCIe Gen 4 2x4, PCIe Gen 3 8x; 2x socket for DDR5, in-band ECC; -40...+85°C, recommended for 24/7 operation.	MSC HCA-RLP-1315URE-NN0131I PCBFTX	PV

Accessories

Order Number	Description	Reference
Carrier Options		
114609	COM-HPC Client Carrier Board with 1x PEG x16, 1x PCIe x16, 3x PCIe x4 slots; 2x USB 4 Gen 2x2, 2x USB 3.2 Gen 2x1, 2x 1G/2.5G/10GBASE-T, 2x SATA; 3x DisplayPort, 1x eDP; audio module socket; 1x M.2 socket; 24pin ATX and ATX12V power connectors; Dimensions: 305mm x 244mm (ATX form factor);	MSC HC-MB-EV BRDFTX
Cooling Options		
79809	Fan kit for Heatsink MSC HCA-ALP/RLP-0x HSI-xxx, MSC C6B-ALP/RLP-0x HSI-xxx, MSC C6B-TLH-0x HSI-xxx, MSC C6C-ALP/RLP-0x HSI-xxx, MSC C6C-TLU-0x HSI-xxx, MSC C6C-WLU-0x HSI-xxx, MSC C6C-ALN/ASL-0x HSI-xxx, MSC C6C-EL-0x HSI-xxx, MSC C6C-RYZx-0x HSI-xxx, PWM fan 80x80x15mm.	MSC C6C-FANKIT-01-HSF-001
94875	Passive heatsink for HCA-ALP/RLP consisting of a single-piece aluminum profile with fins, standoffs without thread (2.7mm inner diameter), screws and thermopads for the thermal contact to CPU, chipset, NVMe.	MSC HCA-ALP-01 HSI-001
94876	Passive heatsink / heat pipe for HCA-ALP/RLP consisting of a single-piece aluminum profile with fins and embedded heatpipe, standoffs without thread (2.7mm inner diameter), screws and thermopads for the thermal contact to CPU, chipset, NVMe.	MSC HCA-ALP-01 HSI-HP-001
94877	Heatspreader for HCA-ALP/RLP. Single-piece aluminum profile, standoffs without thread (2.7mm inner diameter), screws and thermopads for the thermal contact to CPU, chipset, NVMe.	MSC HCA-ALP-01 HSP-001
94878	Heatspreader / heat pipe for HCA-ALP/RLP. Single-piece aluminum profile with embedded heat pipe, standoffs without thread (2.7mm inner diameter), screws and thermopad for the thermal contact to CPU, chipset, NVMe.	MSC HCA-ALP-01 HSP-HP-001
112247	Passive heatsink / heat pipe for HCA-ALP/RLP consisting of a single-piece aluminum profile with fins (rotated orientation) and embedded heatpipe, standoffs without thread (2.7mm inner diameter), screws and thermopads for the thermal contact to CPU, chipset, NVMe.	MSC HCA-ALP-02 HSI-HP-001
94879	Heatspreader for HCA-ALP/RLP. Single-piece aluminum profile, standoffs with M2.5 thread, screws and thermopads for the thermal contact to CPU, chipset, NVMe.	MSC HCA-ALP-02 HSP-001
Memory Options		
97208	16GB DDR5-4800 SO-DIMM	MOD SODIMM DDR5 16GB PC5-38400 CL22 1B

Accessories

Order Number	Description	Reference
114625	16GB DDR5-5600 SO-DIMM, sorting wide temperature	MOD SODIMM DDR5 16GB PC5-44800 CL22 1B
97209	32GB DDR5-4800 SO-DIMM	MOD SODIMM DDR5 32GB PC5-38400 CL22 2B
114626	32GB DDR5-5600 SO-DIMM, sorting wide temperature	MOD SODIMM DDR5 32GB PC5-44800 CL22 2B
97207	8GB DDR5-4800 SO-DIMM	MOD SODIMM DDR5 8GB PC5-38400 CL22 1B
114624	8GB DDR5-5600 SO-DIMM, sorting wide temperature	MOD SODIMM DDR5 8GB PC5-44800 CL22 1B

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