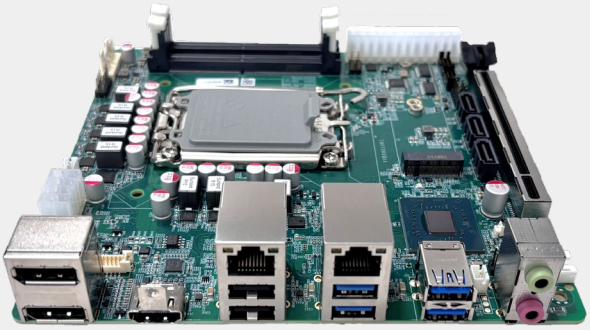
VT-MITX-RPL Single Board Computer



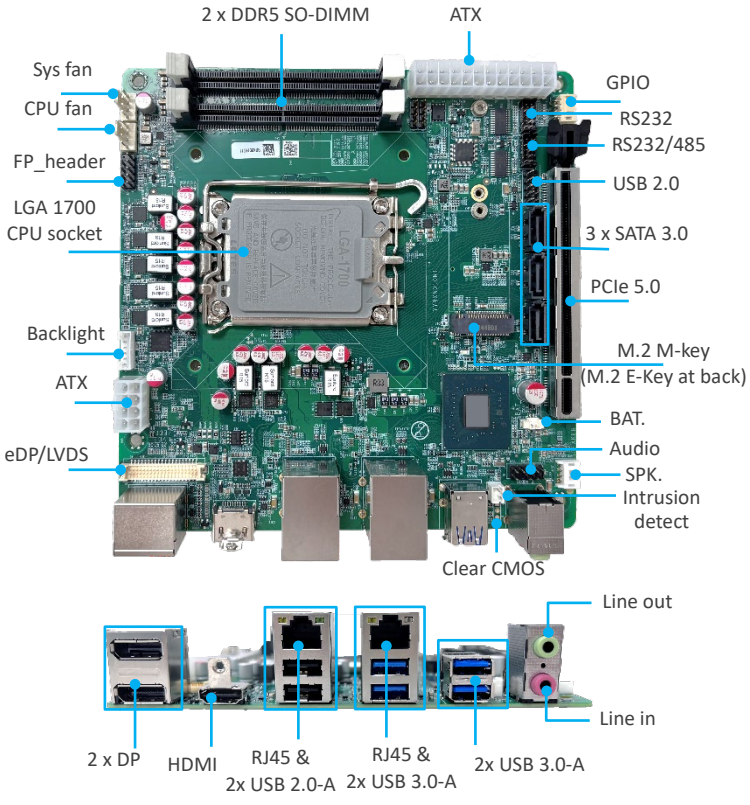
Product Brief

VT-MITX-RPL single board computer comes in the MITX form factor with a compact 170mm x 170mm footprint. It supports Intel's 12th (Alder Lake), 13th (Raptor Lake), and 14th (Raptor Lake Refresh) Generation Core™ processors, delivering cutting-edge performance that caters to the exacting demands of gamers, content creators, and professionals alike. Built on the LGA1700 socket, it seamlessly supports Intel's hybrid architecture, combining Performance and Efficient cores to optimize both single-threaded tasks and multi-threaded workloads. With support for PCIe 5.0, USB 3.0, high-speed DDR5 memory sockets, SATA 3.0, M.2 slots, along with additional header for front-panel expansion, the board is designed to break the barriers of speed and efficiency but also to guarantee long-term reliability.

For connectivity, the board offers 2.5G Ethernet, optional Wi-Fi and Bluetooth for lag-free networking. Supporting up to four independent displays via HDMI 2.0b, DisplayPort 1.4a, and optional LVDS/eDP interfaces, the board leverages Intel's UHD Graphics (up to 770) and Deep Learning Boost technology to deliver up to 4K video output.

VT-MITX-RPL delivers unmatched performance, expandability, and security for applications such as high-performance gaming, low-latency HMI, edge AI processing, and industrial automation.

Exterior and Features



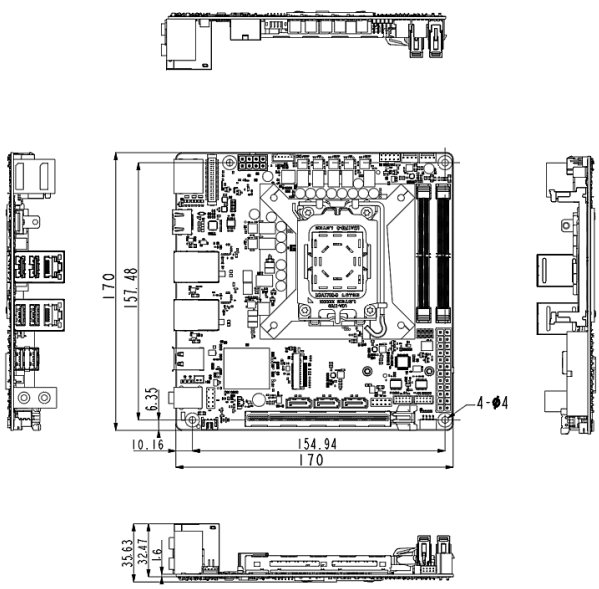
VT-MITX-RPL	
	12th/13th/14th Gen Intel® Core™ processor, LGA1700
	2 x DDR5 SO-DIMM socket, up to 96GB
	High-speed I/O: PCIe 5.0, USB 3.0, SATA 3.0, M.2
	Up to 4 displays delivering up to 4K video output
	2.5G Ethernet, optional Wi-Fi & Bluetooth
	Windows 10/11 IoT, Linux (Support upon request)
	Intel® Deep Learning Boost + GNA 3.0 AI acceleration
	MITX form factor

VT-MITX-RPL Single Board Computer Datasheet

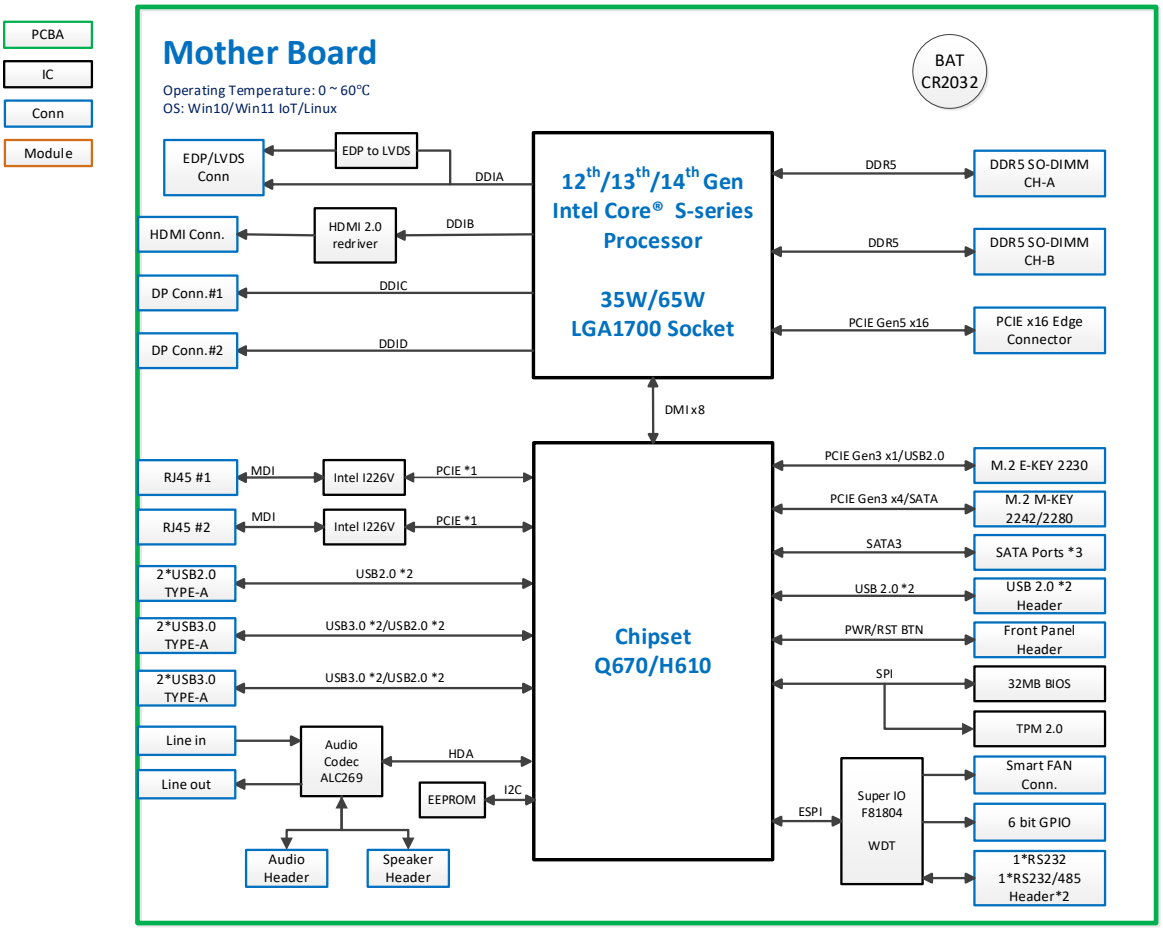
VT-MITX-RPL													
System	CPU		**Intel® Desktop 12th/13th/14th Generation Core™ processor, LGA1700 socket**										
	14th Gen processor support	CPU	i9-14900	i9-14900T	i7-14700	i7-14700T	i5-14500	i5-14500T	i5-14400	i5-14400T	i3-14100	i3-14100T	
		Core #	24	24	20	20	14	14	10	10	8	8	
		Base freq. (GHz)	2.0/1.5	1.1/0.8	2.1/1.5	1.3/0.9	2.6/1.9	1.7/1.2	2.5/1.8	1.5/1.1	3.5	2.7	
		Turbo freq. (GHz)	5.8/4.3	5.5/4.0	5.4/4.2	5.2/3.7	5.0/3.7	4.8/3.4	4.7/3.5	4.5/3.2	4.7	4.4	
		Smart cache	36MB	36MB	33MB	33MB	24MB	24MB	20MB	20MB	12MB	12MB	
		TDP	65W	35W	65W	35W	65W	35W	65W	35W	65W	35W	
	13th Gen processor support	CPU	i9-13900/ i9-13900E	i9-13900TE	i7-13700/ i7-13700E	i7-13700TE	i5-13500/ i5-13500E	i5-13500TE	i5-13400/ i5-13400E	i3-13100/ i3-13100E	i3-13500TE		
		Core #	24	24	16	16	14	14	10	4	4		
		Base freq. (GHz)	1.8/2.0	1	1.9/2.1	0.8	2.4/2.6	1.3	2.4/2.5	3.3/3.4	2.4		
		Turbo freq. (GHz)	5.2/5.6	5	5.1/5.2	4.8	4.6/4.8	4.5	4.6	4.4/4.5	4.1		
		Smart cache	36	36	30	30	24	24	20	12	12		
		TDP	65W	35W	65W	35W	65W	35W	65W	60W	35W		
	12th Gen processor support	CPU	i9-12900/ i9-12900E	i9-12900TE	i7-12700/ i7-12700E	i7-12700TE	i5-12500E/ i5-12500/ i5-12400	i5-12500TE	i3-12100/ i3-12100E	i3-12100TE	G7400E	G7400TE	G6900E	G6900TE
		Core #	16	16	12	12	6	6	4	4	2	2	2	2
		Base freq. (GHz)	2.3/2.4	1.1	2.1	1.4	2.9/3.0/ 2.5	1.9	3.2	2.1	3.6	3	3	2.4
		Turbo freq. (GHz)	5	4.8	4.8	4.7	4.5/4.6/ 4.4	4.3	4.2/4.3	4	N/A	N/A	N/A	N/A
		Smart cache	30	30	25	25	18	18	12	12	6	6	4	4
		TDP	65W	35W	65W	35W	65W	35W	60W	35W	46W	35W	46W	35W
	Chipset		Q670/H610											
	GPU		Up to Intel® UHD Graphics 770, support OpenGL, OpenCL, Vulkan, DirectX											
	AI acceleration		Intel® Deep Learning Boost & Intel® Gaussian & Neural Accelerator 3.0 (GNA 3.0)											
	Memory		2 x DDR5 SO-DIMM socket, 5600MHz (CPU dependent), up to 96GB											
	Storage		3 x SATA 3.0, up to 600MB/s							SSD expansion via M.2 M-Key supported				
Communication	Ethernet		2 x RJ45, 2500Mbps (Intel® I226-V controller)											
	Wi-Fi & Bluetooth		Optional (Expansion via M.2 E-Key)											

VT-MITX-RPL			
Media	Video processing	Intel® UHD Graphics 770: 8K@60Hz HEVC (H.265) / 4K@60Hz AVC (H.264) decoder, 8K@30Hz/ 4K @120Hz HEVC (H.265) / 4K@60Hz AVC (H.264) encoder	
	Multi-display support	Up to 4 independent displays (Chipset dependent)	
	Display interface	1 x HDMI 2.0b, up to 3840 x 2160 @ 60Hz 2 x DP 1.4a, up to 4096 x 2304 @ 60Hz	
		1 x eDP/LVDS (Combo), up to 4096 x 2304 @60Hz	1 x Backlight connector
	Audio interface	1 x 3.5mm Line in jack; 1 x 3.5mm Line out jack	1 x Audio header; 1 x Speaker header
I/O	Serial port	1 x RS232 header	1 x RS232/RS485 header
	USB	4 x USB 3.0 Type-A; 2 x USB 2.0 Type-A	2 x Internal USB 2.0
	GPIO	1 x 6-bit GPIO	
	Front panel	1 x Front panel header (Power, reset, LED)	
Expansion	M.2	1 x M.2 M-Key (2242/2280, PCIe 3.0 x4 / SATA for SSD expansion) 1 x M.2 E-Key (2230, PCIe 3.0 x1 /USB 2.0 for Wi-Fi & BT expansion)	
	PCIe	1 x PCIe 5.0 x16 (32GT/s)	
Miscellaneous	Security	TPM 2.0	
	RTC	Supported	
	Watchdog timer	Supported	
Software	BIOS	Insyde UEFI BIOS	
	Operating system	Windows 10/11 IoT, Linux (Support upon request)	
Mechanical	Dimensions	170mm x 170mm x 35.63mm	
	Heat dissipation	Active cooling, 2 x 12V Fan header	
Power	Input	1 x 24-pin ATX header; 1 x 8-pin ATX header	
	Consumption	Typical 70W, Max. Turbo ~240W (CPU dependent)	
Environmental Condition	Temperature	Operating: 0℃~+60℃ (Optional: -40℃~75℃)	Storage: -40℃~+85℃
	Humidity	10%-85% RH (Non-condensing)	
	Certification	CE	

Product Outlines



Block Diagram



Ordering Information

Ordering No.	CPU	Memory	Ethernet	Expansion
VT-MITX-RPL	LGA1700 socket	2 x DDR5 SO-DIMM socket	2 x 2.5GbE	USB 3.0, COM, M.2, PCIe, SATA 3.0

Sample Kit	CPU	Memory	Storage	Wi-Fi & BT	Cooling	PSU	Display
VT-MITX-RPL-H610	Core™ i5-14500	2 x 8GB DDR5 SO-DIMM	256GB M.2 SATA SSD	Intel AX210 (2 x Antenna)	CPU Cooler	1 x 750W ATX PSU	4: HDMI, 2 x DP, LVDS/eDP
VT-MITX-RPL-Q670							3: HDMI, 2 x DP, LVDS/eDP

Packing List	
VT-MITX-RPL single board computer/sample kit	1