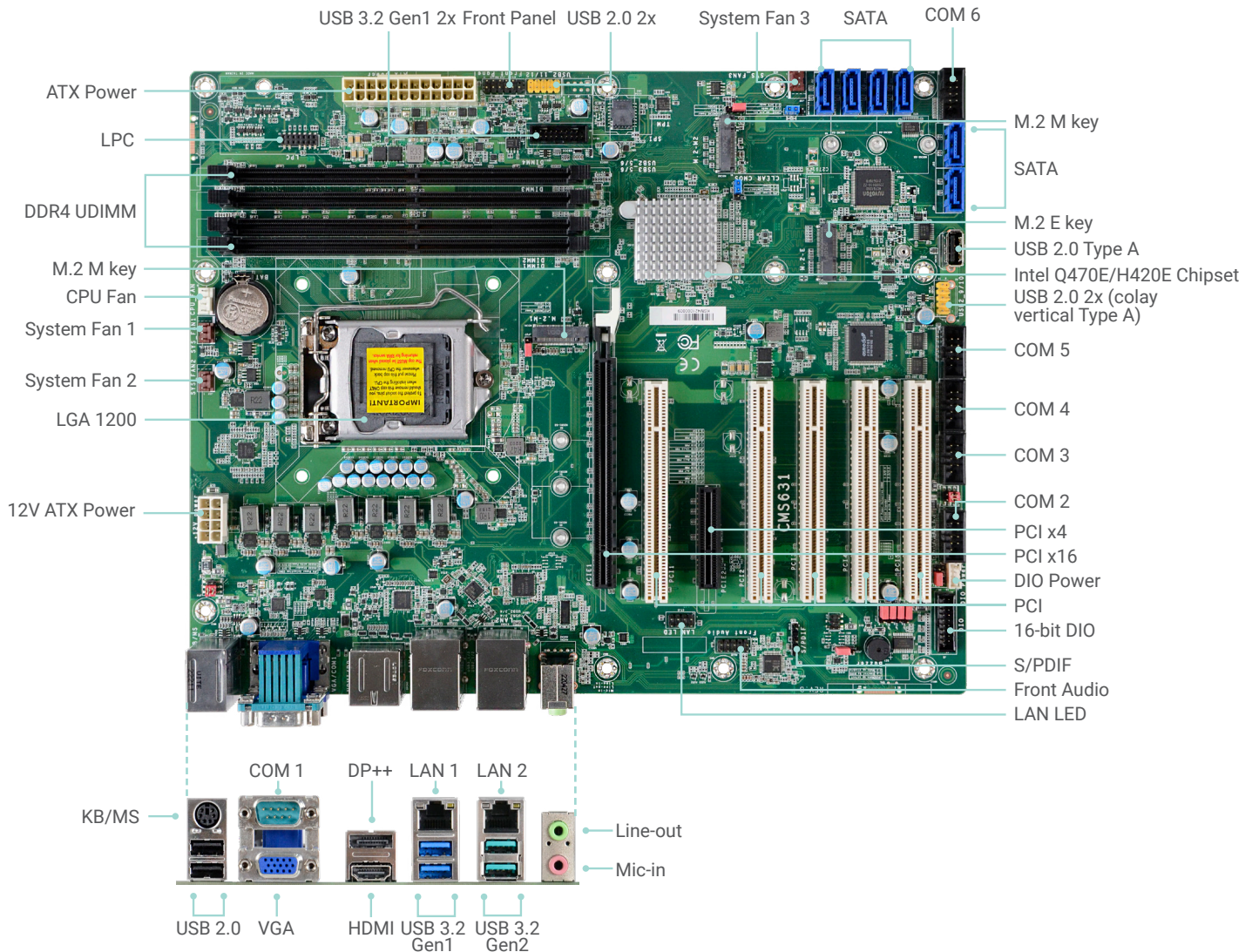


CMS631-Q470E/H420E

10th Gen Intel® Core™
Desktop
ATX



Top View

*The photo above refers to CMS631-Q470E.

KEY FEATURES



DDR4

Q470E: 2 DDR4 UDIMM
up to 128GB
H420E: 2 DDR4 UDIMM
up to 64GB



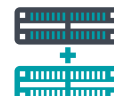
4K High Resolution

Supports 4K/ 2K resolution



Multiple Displays

Q470E: VGA + DP++ + HDMI
H420E: VGA + DP++, VGA +
HDMI, DP++ + HDM



Multiple Expansion

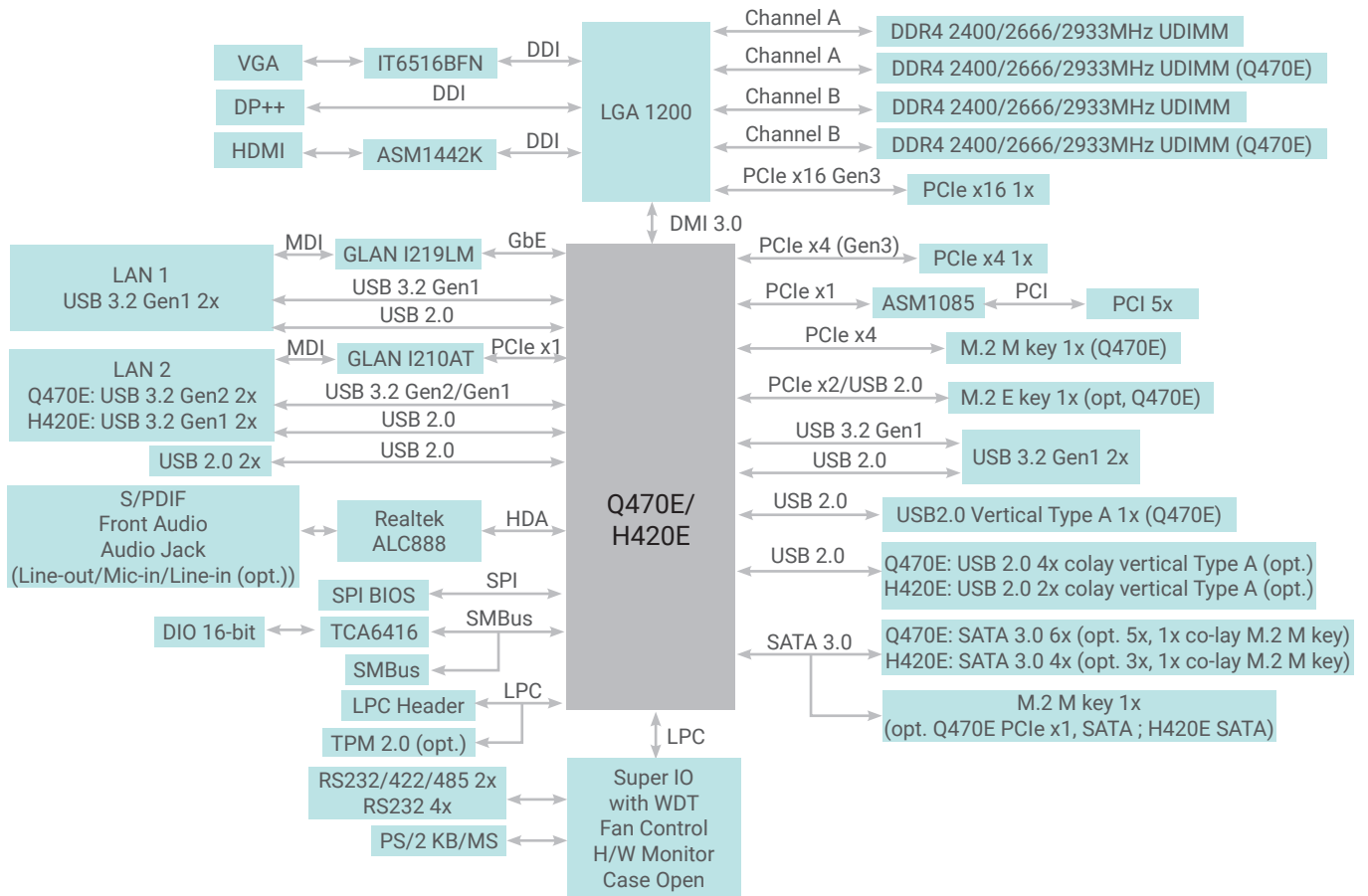
1 PCIe x16, 1 PCIe x4,
5 PCI, 1 M.2 M key,
1 M.2 E key



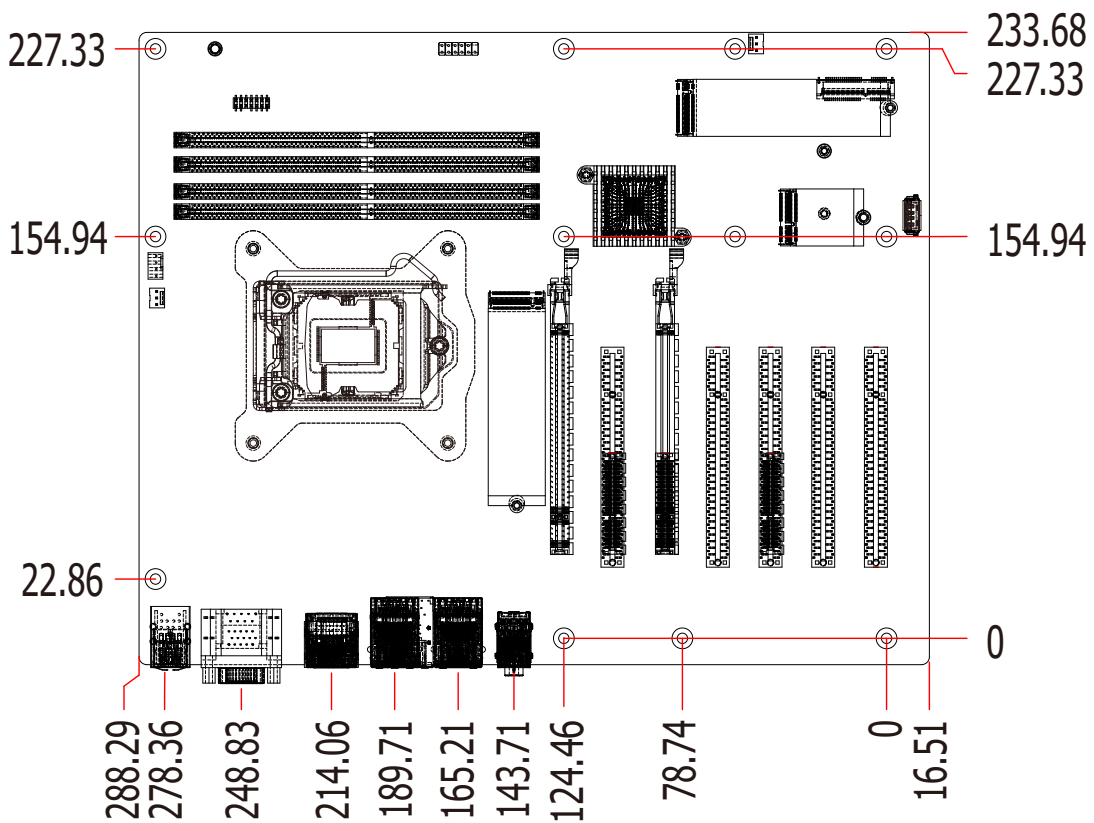
Rich I/O

2 Intel GbE, 6 COM
Q470E: 13 USB
H420E: 10 USB

BLOCK DIAGRAM



MECHANICAL DRAWING



SPECIFICATION

System	Processor	10th Generation Intel® LGA 1200 Socket Processors, TDP support up to 125W Intel® Core™ i9-10900E (10 Cores, 20M Cache, up to 4.7 GHz); 65W Intel® Core™ i9-10900TE (10 Cores, 20M Cache, up to 4.5 GHz); 35W Intel® Core™ i7-10700E (8 Cores, 16M Cache, up to 4.5 GHz); 65W Intel® Core™ i7-10700TE (8 Cores, 16M Cache, up to 4.4 GHz); 35W Intel® Core™ i5-10500E (6 Cores, 12M Cache, up to 4.2 GHz); 65W Intel® Core™ i5-10500TE (6 Cores, 12M Cache, up to 3.7 GHz); 35W Intel® Core™ i3-10100E (4 Cores, 8M Cache, up to 3.8 GHz); 65W Intel® Core™ i3-10100TE (4 Cores, 8M Cache, up to 3.6 GHz); 35W Intel® Pentium® G6400E (2 Cores, 4M Cache, 3.8 GHz); 58W Intel® Celeron® G5900E (2 Cores, 2M Cache, 3.2 GHz); 58W Intel® Celeron® G5900TE (2 Cores, 2M Cache, 3.0 GHz); 35W		
	Chipset	Intel® Q470E/H420E Chipset		
	Memory	Q470E: Four 288-pin Non-ECC UDIMM up to 128GB H420E: Two 288-pin Non-ECC UDIMM up to 64GB Dual Channel DDR4 2400/2666/2933MHz		
	BIOS	AMI		
	Graphics	Controller	Intel® HD Gen 9 Graphics	
Feature		OpenGL 4.5, DirectX 12, OpenCL 2.1 HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 HW Encode: MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9		
Display		1 x VGA	VGA: resolution up to 1920x1200 @ 60Hz	
		1 x DP++	DP++: resolution up to 4096x2160 @ 60Hz	
		1 x HDMI 1.4b	HDMI: resolution up to 4096x2160 @ 24Hz	
Multiple Displays	Q470E: VGA + DP++ + HDMI (Triple Display) H420E: VGA + DP++ / VGA + HDMI / DP++ + HDMI (Dual Display)			
Expansion	Interface	1 x PCIe x16 (Gen 3)		
		1 x PCIe x4 (Gen 3)		
		5 x PCI		
		Q470E: 1 x M.2 2242/2260/2280 M key (PCIe Gen3 x4 NVMe/SATA/Intel® Optane Memory support) 1 x M.2 2242/2260/2280 M key (PCIe Gen3 x1/SATA as option, MOQ required) 1 x M.2 2230 E key (PCIe Gen3 x2/USB 2.0 as option, MOQ required) H420E: 1 x M.2 2242/2260/2280 M key (SATA as option, MOQ required)		
Audio	Audio Codec	Realtek ALC888		
Ethernet	Controller	1 x Intel® I210AT PCIe (10/100/1000Mbps)		
		1 x Intel® I219LM/I219V with iAMT12.0 (10/100/1000Mbps) (only Q470E Core i9/ i7/i5 supports iAMT)		
Rear I/O	Ethernet	2 x GbE (RJ-45)		
	Serial	1 x RS-232/422/485 (RS-232 w/ power) (DB-9)		
	USB	Q470E: 2 x USB 3.2 Gen2 2 x USB 3.2 Gen1 2 x USB 2.0	H420E: 4 x USB 3.2 Gen1 2 x USB 2.0	
		Display	1 x VGA 1 x DP++ 1 x HDMI	
	Audio	1 x Line-out 1 x Mic-in	1 x Line-in (opt., MOQ required)	
Internal I/O	Serial	1 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch)		
		4 x RS-232 (2.54mm pitch)		
	USB	Q470E: 2 x USB 3.2 Gen 1 4 x USB 2.0 (2.54mm pitch, colay vertical Type A, opt.: MOQ required) 1 x USB 2.0 vertical Type A H420E: 2 x USB 3.2 Gen 1 2 x USB 2.0 (2.54mm pitch, colay vertical Type A, opt.: MOQ required)		
		Audio	1 x Front Audio Header 1 x S/PDIF	
	SATA	Q470E: 6 x SATA 3.0 (up to 6Gb/s) one SATA port share with M.2 M-key	RAID 0/1/5/10	
		H420E: 4 x SATA 3.0 (up to 6Gb/s) one SATA port share with M.2 M-key		
	PS/2	1 x PS/2 (mini-DIN-6)		
	LPC	1 x LPC	Supports LPC EXT-RS232/RS485 module	
	DIO	1 x 16-bit DIO		
	SMBus	1 x SMBus		
Watchdog Timer	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds		
Security	TPM	Infineon TPM2.0 (opt., MOQ required)		

SPECIFICATION

Power	Type	ATX
	Connector	8-pin ATX 12V power 24-pin ATX power
	Consumption	Typical: i9-10900K: 3.3V @ 0.13A (0.429W); 5V @ 0.7A (3.5W); 12V @ 0.44A (5.28W) Max.: i9-10900K: 3.3V @ 0.18A (0.594W); 5V @ 1.59A (7.95W); 12V @ 14.22A (170.64W)
	RTC Battery	CR2032 Coin Cell
OS Support	Microsoft	Windows 10 IoT Enterprise 64-bit
	Linux	Linux Ubuntu 20.04
Environment	Temperature	Operating: -5 to 65°C
		Storage: -40 to 85°C
	Humidity	Operating: 5 to 90% RH
		Storage: 5 to 90% RH
MTBF	Q470E: 504,168 hrs @ 25°C ; 278,849 hrs @ 45°C ; 172,277 hrs @ 60°C ; 146,454 hrs @ 65°C Calculation Model: Telcordia Issue 4 Environment: GB, GC - Ground Benign, Controlled H420E: 521,024 hrs @ 25°C ; 292,119 hrs @ 45°C ; 181,960 hrs @ 60°C ; 155,038 hrs @ 65°C Calculation Model: Telcordia Issue 4 Environment: GB, GC - Ground Benign, Controlled	
Mechanism	Dimensions	ATX Form Factor
		305mm (12") x 244mm (9.6")
	Height	PCB: 1.6mm Top Side: 37.7mm Bottom Side: 3mm
Certifications	Certifications	CE, FCC Class B, RoHS, UKCA

ORDERING INFORMATION

Model Name	P/N	Memory	GbE	M.2	RS-232 /422/485	USB 3.2 Gen2	USB 3.2 Gen1	USB 2.0	SATA	TPM 2.0	Power	Thermal	Temp.
CMS631-H420EC	770-CMS6313-000G	2 DDR4 UDIMM	2	0	1	0	6	10	4	0	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
CMS631-Q470ECRM	770-CMS6313-100G	4 DDR4 UDIMM	2	1	1	2	6	13	6	0	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
CMS631-H420EC	770-CMS6313-200G	2 DDR4 UDIMM	2	0	1	0	6	10	4	1	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
CMS631-Q470ECRM	770-CMS6313-300G	4 DDR4 UDIMM	2	1	1	2	6	13	6	1	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
CMS631-H420EC	770-CMS6313-400G	2 DDR4 UDIMM	2	1	1	0	6	10	3	0	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C

PACKING LIST

1 CMS631 motherboard	
1 COM port cables (Length: 300mm, 2 x COM ports)	A81-015026-023G
1 Serial ATA data cable (Length: 500mm)	332-553001-005G
1 I/O shield	A49-CMS631-000G

OPTIONAL ITEMS

USB 2.0 port cable (Length: 350/398mm)	A81-001066-016G
USB 3.1 Gen1 port cable (Length: 320mm)	A81-001052-023G
USB 3.2 Gen2 port cable (Length: 300mm)	A81-001075-017G
COM port cable (Length: 300mm, 2 x COM ports)	A81-015026-023G
Serial ATA data cable (Length: 500mm, W/LOCK)	332-553001-005G
Serial ATA data cable (Length: 500mm, W/LOCK, 90D)	A81-002128-017G
Thermal solution (For 35W, Height: 37.3mm)	A71-101107-000G
Thermal solution (For 65W, Height: 74.47mm)	A71-101158-000G
Thermal solution (For 95W, Height: 77.2mm)	761-103001-000G
DP to HDMI Dongle	612-D2H13M-000G
EXT-RS232 (4 ports RS-232 LPC module)	770-EXTRS1-000G
EXT-RS485 (4 ports RS-485 LPC module)	770-EXTRS1-100G
M.2-COM4 (M.2 serial port module)	770-M2COM1-000G
M.2-2LAN (M.2 LAN port module)	770-M22LN2-000G
M.2-2PSE (M.2 PSE module)	770-M22PS2-000G