



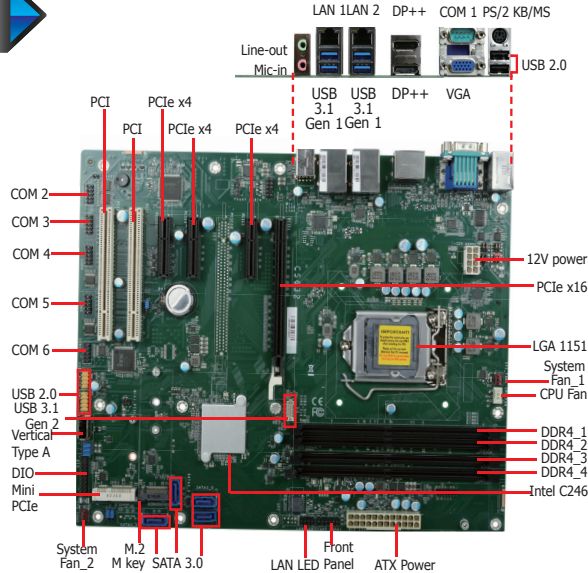
**9th/8th Gen Intel® Core™ Processor
ATX**



CS632-C246

Workstation

C246

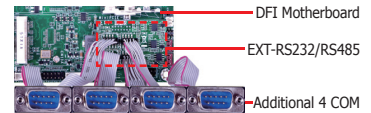


Features

- **4 DDR4 DIMM up to 128GB (ECC/non ECC)**
- **3 independent displays:
VGA + DP++ + DP++**
- **DP++ resolution up to 4096x2160 @ 60Hz**
- **Multiple expansion:
1 PCIe x16 (x8/x8 signals as opt.), 3 PCIe x4, 2 PCI, 1 Mini PCIe, 1 M.2 M key, 1 SMBus, 1 LPC**
- **Rich I/O: 2 Intel GbE, 6 COM, 2 USB 3.1 Gen 2, 4 USB 3.1 Gen 1, 7 USB 2.0**



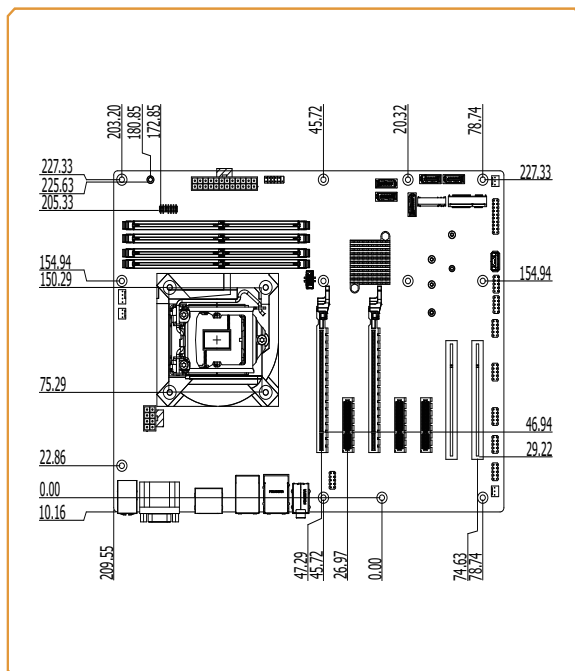
2 Extension Modules for Additional 4 COM Ports (via the LPC connector)



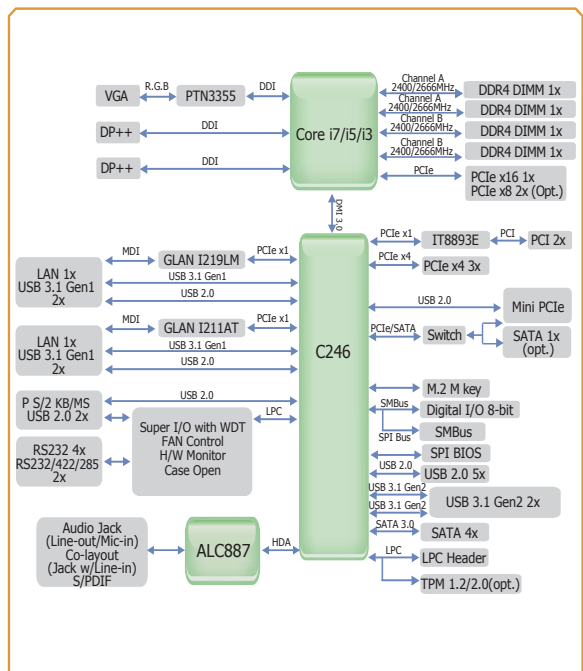
Ordering Information

Model Name	P/N	Memory	GbE	RS-232/422/485	RS-232	USB3.1 Gen 2	USB3.1 Gen 1	USB 2.0	Power	Thermal	Temp.
CS632-C246CRM	770-CS6321-000G	4 DIMM	2	2	4	2	4	7	24-pin ATX	Active	0 to 60°C

Mechanical Drawing



Block Diagram





Specifications

SYSTEM	Processor	8th Generation Intel® Core™ /Pentium®/Celeron® LGA 1151 Socket Processors: Intel® Xeon® E-2176G (6 Cores, 12M Cache, up to 4.7 GHz); 80W Intel® Xeon® E-2124G (4 Cores, 8M Cache, up to 4.5 GHz); 71W Intel® Core™ i7-8700K (6 Cores, 12M Cache, up to 4.7 GHz); 95W Intel® Core™ i7-8700 (6 Cores, 12M Cache, up to 4.6 GHz); 65W Intel® Core™ i7-8700T (6 Cores, 12M Cache, up to 4.0 GHz); 35W Intel® Core™ i5-8500 (6 Cores, 9M Cache, up to 4.1 GHz); 65W Intel® Core™ i5-8500T (6 Cores, 9M Cache, up to 3.5 GHz); 35W Intel® Core™ i3-8100 (4 Cores, 6M Cache, 3.6 GHz); 65W Intel® Core™ i3-8100T (4 Cores, 6M Cache, 3.1 GHz); 35W Intel® Pentium® G5400 (2 Cores, 4M Cache, 3.7 GHz); 58W Intel® Pentium® G5400T (2 Cores, 4M Cache, 3.1 GHz); 35W Intel® Celeron® G4900 (2 Cores, 2M Cache, 3.1 GHz); 54W Intel® Celeron® G4900T (2 Cores, 2M Cache, 2.9 GHz); 35W		9th Generation Intel® Core™ LGA 1151 Socket Processors: Intel® Xeon® E-2278GEL (8 Cores, 16M Cache, up to 3.9 GHz); 35W Intel® Xeon® E-2226GE (6 Cores, 12M Cache, up to 4.6 GHz); 80W Intel® Core™ i7-9700TE (8 Cores, 12M Cache, up to 3.8 GHz); 35W Intel® Core™ i5-9500E (6 Cores, 9M Cache, up to 4.2 GHz); 65W Intel® Core™ i5-9500TE (6 Cores, 9M Cache, up to 3.6 GHz); 35W Intel® Core™ i3-9100E (4 Cores, 6M Cache, 3.7 GHz); 65W Intel® Core™ i3-9100TE (4 Cores, 6M Cache, 3.2 GHz); 35W
	Chipset	Intel® C246 Chipset		
	Memory	Four 288-pin ECC DIMM up to 128GB (Core™ i5/i7 only support non-ECC)	Dual Channel DDR4 2400/2666MHz	
	BIOS	SPI 128Mbit		
GRAPHICS	Controller	Intel® HD Gen 9 Graphics		
	Feature	OpenGL 5.0, 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 2 x DP++	VGA: resolution up to 1920x1200 @ 60Hz DP++: resolution up to 4096x2160 @ 60Hz	
	Triple Displays	VGA + DP++ + DP++		
EXPANSION	Interface	1 x PCIe x16 (Gen 3) (x8/x8 signals as opt., MOQ required) 3 x PCIe x4 (Gen 3) 2 x PCI 1 x Mini PCIe (PCIe/mSATA, share w/SATA conn. as opt./USB2.0) 1 x M.2 2242/2280 M key (PCIe x4 NVMe, Intel Optane Memory Support)		
AUDIO	Audio Codec	Realtek ALC887 (ALC888 as opt.)		
ETHERNET	Controller	1 x Intel® I211AT PCIe (10/100/1000Mbps) 1 x Intel® I219LM PCIe with iAMT12.0 (10/100/1000Mbps) (only Xeon/Core i7/i5 supports iAMT)		
REAR I/O	Ethernet	2 x GbE (RJ-45)		
	USB	4 x USB 3.1 Gen1	2 x USB 2.0	
	Serial	1 x RS-232/422/485 (RS-232 w/ power) (DB-9)		
	PS/2	1 x PS/2 (mini-DIN-6)		
	Display	1 x VGA	2 x DP++	
	Audio	1 x Line-out, 1 x Mic-in, 1 x Line-in (opt., MOQ required)		
INTERNAL I/O	Serial	5 x RS-232 (2.54mm pitch)		
	USB	2 x USB 3.1 Gen 2 (2.00mm pitch) 5 x USB 2.0 (2.54mm pitch) (4 x Pin Header, 1 x USB 2.0 vertical Type A)		
	Audio	1 x S/PDIF, 1 Front Audio Header		
	SATA	4 x SATA 3.0	RAID 0/1/5/10	
	DIO	1 x 8-bit DIO		
	LPC	1 x LPC (supports LPC EXT-RS232/RS485 module)		
	SMBus	1 x SMBus		
WATCHDOG TIMER	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds		
SECURITY	TPM	Infineon TPM1.2/2.0 (opt., MOQ required)		
POWER	Type	ATX		
	Connector	8-pin ATX 12V power	24-pin ATX power	
	Consumption	TBD		
	RTC Battery	CR2032 Coin Cell		
OS SUPPORT		Windows 10 IoT Enterprise 64-bit	Linux	
ENVIRONMENT	Temperature	Operating: 0 to 60°C Storage: -30 to 60°C with RTC Battery; -40 to 85°C without RTC Battery		
	Humidity	Operating: 5 to 90% RH	Storage: 5 to 90% RH	
	MTBF	582,202 hrs @ 25°C; 332,716 hrs @ 45°C; 207,812 hrs @ 60°C Calculation model: Telcordia Issue 4 Environment: GB, GC – Ground Benign, Controlled		
MECHANICAL	Dimensions	ATX Form Factor	305mm (12") x 244mm (9.6")	
CERTIFICATIONS	Height	PCB: TBD	Top Side: TBD Bottom Side: TBD	
		RoHS		

Packing List

• 1 CS632-C246 motherboard	
• 1 Serial ATA data cable (Length: 500mm)	332-553001-005G
• 1 I/O shield	A49-CS6310-000G
• 1 M.2 2242/half mini PCIe standoff	A33-725019-090G
• 1 M.2 screw	A32-112016-041G
• 1 mini PCIe screw	A32-112016-041G

Optional Items

• USB 2.0 port cable (Length: 350mm)	A81-001066-016G
• USB 3.1 Gen2 port cable (Length: TBD)	A81-001075-017G
• COM port cable (Length: 400mm, 2 x COM ports)	A81-015026-023G
• Serial ATA data cable (Length: 500mm, W/LOCK)	332-553001-005G
• Thermal solution (For 35W, Height: 37.3mm)	A71-101107-000G
• Thermal solution (For 65W, Height: 72.8mm)	552-200049-000G
• Thermal solution (For 95W, Height: 69.3mm)	761-103001-000G
• LPC EXT-RS232 module (4 x RS232 ports)	770-EXTRS1-000G
• LPC EXT-RS485 module (4 x RS485 ports)	770-EXTRS1-100G
• DP to HDMI dongle	612-D2H13M-000G

Assured Systems

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