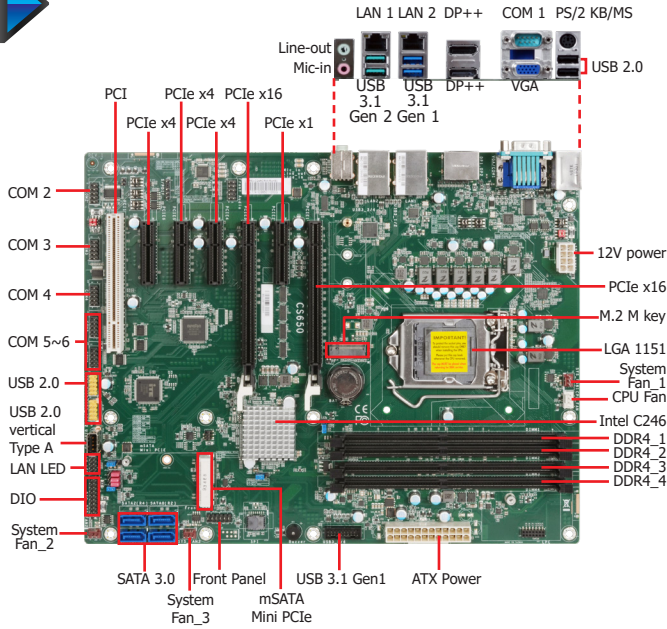




CS650-C246

Workstation

C246

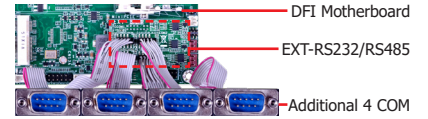
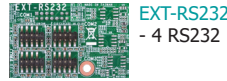


Features

- 4 DDR4 ECC/Non-ECC DIMM up to 128GB
- 3 independent displays: VGA + DP++ + DP++
- DP++ resolution up to 4096x2160 @ 60Hz
- Multiple expansion: 2 PCIe x16 (1 x16 signal or 2 x8 signals), 3 PCIe x4, 1 PCIe x1, 1 Full-sized Mini PCIe, 1 M.2 M key
- Rich I/O: 2 Intel GbE, 6 COM, 2 USB 3.1 Gen 2, 4 USB 3.1 Gen 1, 6 USB 2.0



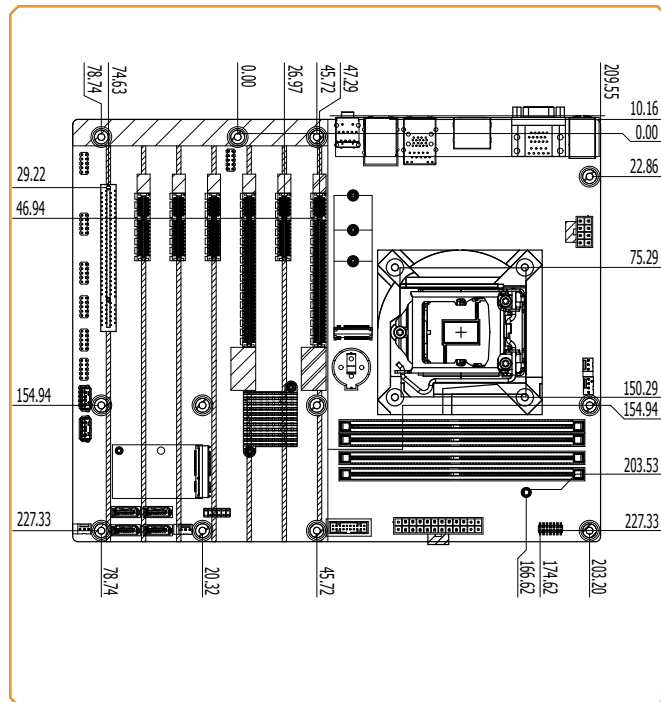
2 Extension Modules for Additional 4 COM Ports (via the LPC connector)



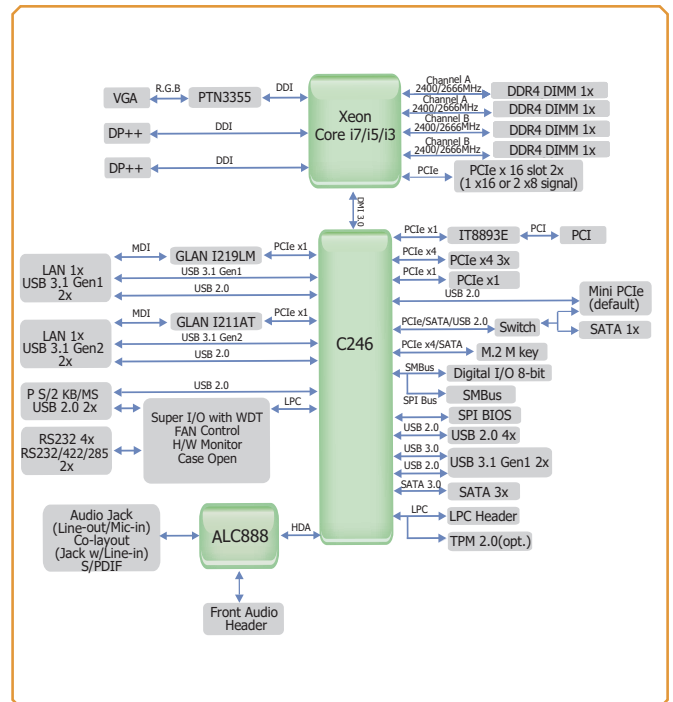
Ordering Information

| 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. |
|---------------|-----------------|--------|-----|----------------|--------|--------------|--------------|---------|------------|-------------------|
| CS650-C246CRM | 770-CS6501-000G | 4 DIMM | 2 | 2 | 4 | 2 | 4 | 6 | 24-pin ATX | Active -5 to 65°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 (Non-LTS) 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, to 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™/Xeon® LGA 1151 Socket Processors: Intel® Xeon® E-2278GE (8 Cores, 16M Cache, up to 4.7 GHz); 80W 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™ i9-9900K (8 Cores, 16M Cache, up to 5.0 GHz); 95W (Non-LTS) Intel® Core™ i7-9700K (8 Cores, 12M Cache, up to 4.9 GHz); 95W (Non-LTS) Intel® Core™ i7-9700E (8 Cores, 12M Cache, up to 4.4 GHz); 65W 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, to 3.2 GHz); 35W |
| | Chipset | Intel® C246 Chipset | |
| | Memory | Four 288-pin Non-ECC DIMM up to 128GB Core™ i5/i7 only support non-ECC | Dual Channel DDR4 2400/2666MHz |
| | BIOS | AMI 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 Full-sized Mini PCIe (PCIe/SATA/USB2.0), share with SATA 3(R5) 1 x M.2 2242/2260/2280 M key (PCIe Gen3 x4 NVMe/SATA) 2 x PCIe x16 (Gen 3) (1 x16 signal or 2 x8 signals) 3 x PCIe x4 (Gen 3) 1 x PCIe x1 (Gen 3) 1 x PCI | |
| AUDIO | Audio Codec | Realtek ALC888 | |
| 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 | 2 x USB 3.1 Gen2 2 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 | 1 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch) 4 x RS-232 (2.54mm pitch) | |
| | USB | 2 x USB 3.1 Gen 1 (2.00mm pitch) 4 x USB 2.0 (2.54mm pitch) (1 x USB 2.0 colay vertical Type A) (opt., MOQ required) | |
| | Audio | 1 x Front Audio Header | 1 x S/PDIF |
| | SATA | 4 x SATA 3.0 (up to 6Gb/s, SATA 3(R5) shared with mini PCIe (SATA), default at mini PCIe) 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 TPM2.0 (opt., MOQ required) | |
| POWER | Type | ATX | |
| | Connector | 8-pin ATX 12V power | 24-pin ATX power |
| | Consumption | Typical: i7-8700K: 3.3V @ 0.34A (1.122Watt); 5V @ 0.58A (2.9Watt); 12V @ 0.65A (7.8Watt) Max.: i7-8700K: 3.3V @ 0.52A (1.716Watt); 5V @ 1.27A (6.35Watt); 12V @ 13.01A (156.12Watt) | |
| | RTC Battery | CR2032 Coin Cell | |
| OS SUPPORT | | Windows 10 IoT Enterprise 64-bit | Linux |
| ENVIRONMENT | Temperature | Operating: -5 to 65°C Storage: -30 to 60°C with RTC Battery; -40 to 85°C without RTC Battery | |
| | Humidity | Operating: 5 to 95% RH Storage: 5 to 95% RH | |
| | MTBF | 534,017 hrs @ 25°C; 298,488 hrs @ 45°C ; 184,547 hrs @ 60°C ; 133,068 hrs @ 70°C Calculation Model: Telcordia Issue 4 Environment: GB, GC - Ground Benign, Controlled | |
| MECHANICAL | Dimensions | ATX Form Factor | 305mm (12") x 244mm (9.6") |
| | Height | PCB: 1.6mm | Top Side: 32mm Bottom Side: 4.4mm |
| CERTIFICATIONS | | CE, FCC Class B, RoHS, KCC | |

Packing List

| | |
|--|-----------------|
| • 1 CS650-C246 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-CS6310-000G |
| • 1 mini PCIe screw | A32-112016-041G |

Optional Items

| | |
|---|-----------------|
| • USB 2.0 port cable (Length: 350mm) | A81-001066-016G |
| • USB 3.1 Gen1 port cable (Length: 320mm) | A81-001052-023G |
| • COM port cable (Length: 300mm, 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 |