

# EC510/EC511-CS

8th/9th Gen Intel® Core™  
Modular-Designed Embedded System



## KEY FEATURES



### DDR4

DDR4 SODIMM up to 64GB



### PoE

Support 4 PoE (EC51x-CS6G86E-Q)



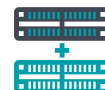
### Three Independent Displays

1 VGA + 2 HDMI/DP++ (auto detection)  
(for EC51x-CS6G86E and EC51x-CS6G86 SKU)



### Support 5G Communication

Support 5G communication



### Multiple Expansion

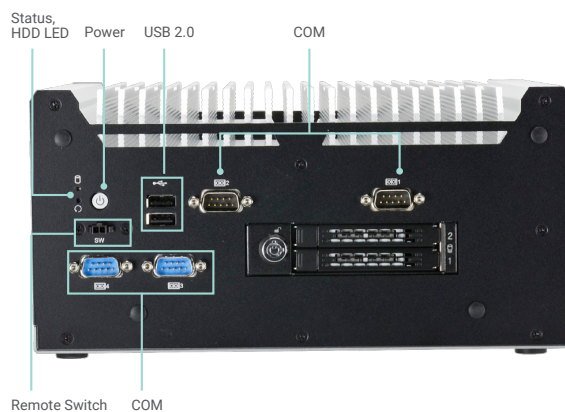
1 PCIe and 3 M.2 slots support NVMe



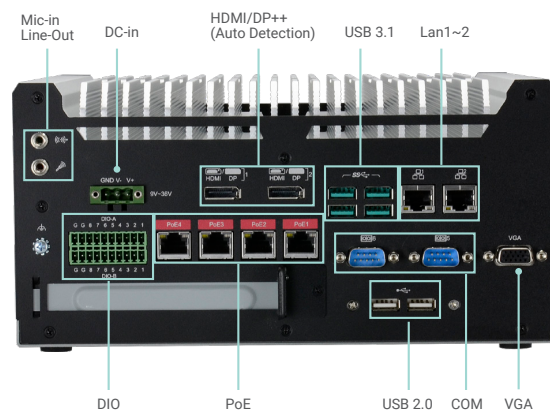
### Wide-Temperature

Operating Temperature: -20 to 70°C

## PANEL

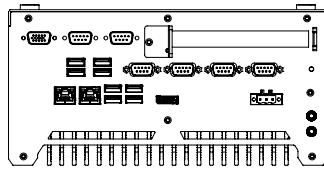


Front View

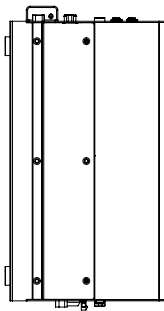


Rear View

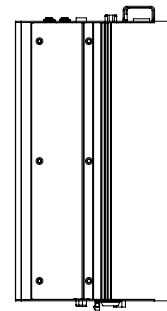
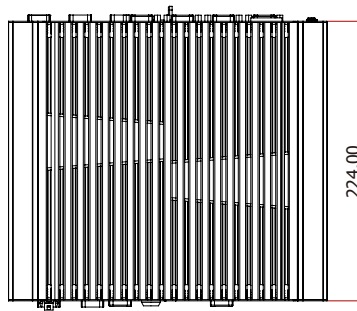
## DIMENSIONS



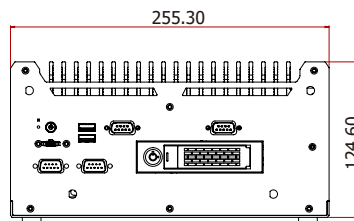
Front View



Left View

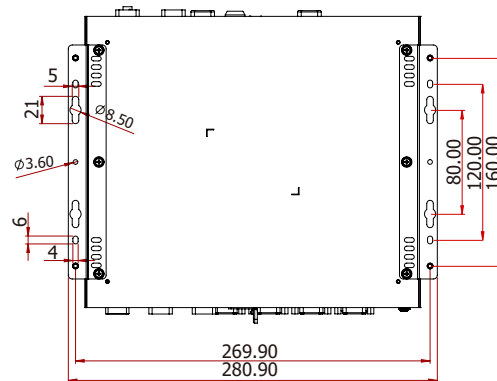
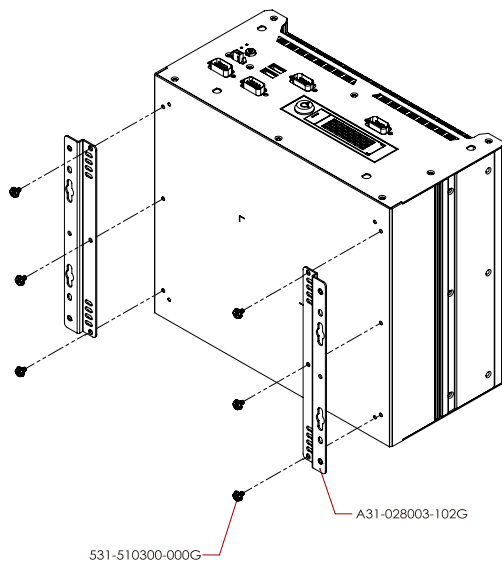


Right View



Rear View

## WALL MOUNTING



## SPECIFICATION

|           |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                              |
|-----------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| SYSTEM    | Processor              | 8th/9th Generation Intel® Core™ Processors, LGA 1151<br>Intel® Core™ i7-9700TE , Octa Cores, 12M Cache, up to 3.8 GHz, 35W<br>Intel® Core™ i5-9500TE , Hexa Cores, 9M Cache, up to 3.6 GHz, 35W<br>Intel® Core™ i3-9100TE, Quad Cores, 6M Cache, up to 3.2 GHz, 35W<br>Intel® Core™ i7-8700T Processor, Hexa Core, 12M Cache, 2.4GHz (4GHz), 35W<br>Intel® Core™ i5-8500T Processor, Hexa Core, 9M Cache, 2.1GHz (3.5GHz), 35W<br>Intel® Core™ i3-8100T Processor, Quad Core, 6M Cache, 3.1GHz, 35W<br>Intel® Pentium® Processor G5400T, Dual Core, 4M Cache, 3.1GHz, 35W<br>Intel® Celeron® Processor G4900T, Dual Core, 2M Cache, 3.1GHz, 35W |                                                                                                                              |
|           | Chipset                | Intel® Q370/H310 Chipset                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                              |
|           | Memory                 | Two 260-pin DDR4 2400/2666MHz SODIMM up to 64GB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                              |
|           | BIOS                   | AMI SPI 128Mbit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                              |
|           | Controller             | Intel® HD Graphics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                              |
| GRAPHICS  | Feature                | OpenGL up to 5.0, DirectX 11, OpenCL 2.1<br>HW Decode: HEVC/H.265, H.264, M/JPEG, MPEG2, VC1/WMV9, VP8 (8-bit), VP9 (10-bit)<br>HW Encode: HEVC/H.265, M/JPEG, MPEG2, VP8                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                              |
|           | Display                | -EC51x-CS6G86E-Q/EC51x-CS6G86-Q<br>1 x VGA<br>2 x HDMI/DP++ (auto detection)<br>-EC51x-CS98A1-H<br>1 x VGA<br>1 x HDMI/DP++ (auto detection)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | VGA: resolution up to 1920x1200 @ 60Hz<br>HDMI: resolution up to 4096x2160 @ 30Hz<br>DP++: resolution up to 4096x2304 @ 60Hz |
|           | Double/Triple Displays | -EC51x-CS6G86E-Q/EC51x-CS6G86-Q<br>VGA + 2 x HDMI/DP++ (auto detection)<br>-EC51x-CS98A1-H<br>VGA + 1 x HDMI/DP++ (auto detection)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                              |
|           | Interface              | 2 x 2.5" SATA 3.0 drive bay<br>support RAID 0/1 (EC51x-CS6G86E-Q/EC51x-CS6G86-Q)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                              |
| STORAGE   | Interface              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                              |
| EXPANSION | Interface              | -EC510-CS6G86E-Q/EC510-CS6G86-Q<br>1 x M.2 2230 E key (PCIe/USB 2.0)<br>1 x M.2 2280 M key (PCIe x4 NVMe/SATA)<br>1 x M.2 3042/3052 B key (PCIe/USB 3.0)<br>1 x PCI slot<br>-EC510-CS98A1-H<br>1 x M.2 2230 E key (PCIe/USB 2.0)<br>1 x M.2 2280 M key (SATA)<br>1 x M.2 3042/3052 B key (PCIe)<br>1 x PCI slot<br>-EC511-CS6G86E-Q/EC511-CS6G86-Q<br>1 x M.2 2230 E key (PCIe/USB 2.0)<br>1 x M.2 2280 M key (PCIe x4 NVMe/SATA)<br>1 x M.2 3042/3052 B key (PCIe/USB 3.0)<br>1 x PCIe x16 slot<br>-EC511-CS98A1-H<br>1 x M.2 2230 E key (PCIe/USB 2.0)<br>1 x M.2 2280 M key (SATA)<br>1 x M.2 3042/3052 B key (PCIe)<br>1 x PCIe x16 slot    |                                                                                                                              |
|           |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                              |
|           |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                              |
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|           |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                              |
| AUDIO     | Audio Codec            | ALC888                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                              |
| ETHERNET  | Controller             | -EC51x-CS6G86E-Q/EC51x-CS6G86-Q<br>1 x Intel® I210AT PCIe (10/100/1000Mbps)<br>1 x Intel® I219LM with iAMT11.0 PCIe (10/100/1000Mbps) (only Core i7/i5 supports iAMT)<br>-EC51x-CS98A1-H<br>1 x Intel® I210AT PCIe (10/100/1000Mbps)<br>1 x Intel® I219V with iAMT11.0 PCIe (10/100/1000Mbps) (only Core i7/i5 supports iAMT)                                                                                                                                                                                                                                                                                                                   |                                                                                                                              |
|           |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                              |
| LED       | Indicators             | 1 x Status LED<br>1 x HDD LED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                              |
| FRONT I/O | Serial                 | 4 x RS-232/422/485 (DB-9)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                              |
|           | USB                    | 2 x USB 2.0 (type A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                              |
|           | Buttons                | 1 x Power button<br>1 x Reset button                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                              |
|           | Antenna                | 4 x Antenna hole (WiFi)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                              |

## SPECIFICATION

|                              |                        |                                                                                                                                                    |
|------------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| REAR I/O                     | Ethernet/PoE           | -EC51x-CS6G86E-Q<br>2 x GbE (RJ-45)<br>4 x PoE (RJ-45)<br>-EC51x-CS6G86-Q<br>6 x GbE (RJ-45)<br>-EC51x-CS98A1-H<br>2 x GbE (RJ-45)                 |
|                              | COM                    | -EC51x-CS6G86E-Q/EC51x-CS6G86-Q<br>2 x RS232<br>-EC51x-CS98A1-H<br>3 x RS232/422/485<br>2 x RS232                                                  |
|                              | USB                    | -EC51x-CS6G86E-Q/EC51x-CS6G86-Q<br>4 x USB 3.1 (Gen.2)<br>2 x USB2.0<br>-EC51x-CS98A1-H<br>4 x USB 3.1 (Gen.2)<br>4 x USB 3.1 (Gen.1)              |
|                              | DIO                    | -EC51x-CS6G86E-Q/EC51x-CS6G86-Q<br>16 bits DIO<br>-EC51x-CS98A1-H<br>8 bits DIO                                                                    |
|                              | Display                | -EC51x-CS6G86E-Q/EC51x-CS6G86-Q<br>VGA + 2 x HDMI/DP++ (auto detection)<br>-EC51x-CS6G86E-Q/EC51x-CS6G86-Q<br>VGA + 1 x HDMI/DP++ (auto detection) |
|                              | Audio                  | 1 x Line-out<br>1 x Mic-in                                                                                                                         |
|                              | WATCHDOG TIMER         | Output & Interval<br>System reset, programmable via software from 1 to 255 seconds                                                                 |
| SECURITY                     | TPM                    | TPM 2.0                                                                                                                                            |
| POWER                        | Type                   | Wide range 9~36V                                                                                                                                   |
|                              | Connector              | 3-pole terminal block<br>2-pin power extension switch connector                                                                                    |
| OS SUPPORT                   | OS Support             | Windows 10 IoT Enterprise 64 Bit<br>Linux (available upon request)                                                                                 |
| ENVIRONMENT                  | Operating Temperature  | -20 to 70°C (2.5" SSD or M.2 SSD)                                                                                                                  |
|                              | Storage Temperature    | -20 to 85°C                                                                                                                                        |
|                              | Relative Humidity      | 5 to 95% RH (non-condensing)                                                                                                                       |
| MECHANICAL                   | Construction           | Metal + Aluminum                                                                                                                                   |
|                              | Mounting               | Wall mount                                                                                                                                         |
|                              | Dimensions (W x H x D) | 255.3 x 124.6 x 224mm                                                                                                                              |
|                              | Weight                 | 5.1 kg                                                                                                                                             |
| STANDARDS AND CERTIFICATIONS | Shock                  | Half sine wave 3G, 11ms, 3 shock per axis                                                                                                          |
|                              | Vibration              | IEC68-2-64                                                                                                                                         |
|                              | Certifications         | CE, FCC Class A                                                                                                                                    |

## ORDERING INFORMATION

| Model Name | Part Number     | Description                                                                                                                                                                    |
|------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EC510-CS   | 750-EC5102-000G | EC510-CS6G86E-Q:Fanless, CS263,Q370, 6 COM, 16 DIO, 6 USB, 2 HDMI/DP, 1 VGA, 2 LAN, 1 Line-out, 1 Mic-in, 4 POE (802.3af), 1 PCI, DC 9~36V input, TPM2.0, F/G SYSTEM RoHS      |
| EC510-CS   | 750-EC5102-100G | EC510-CS6G86-Q:Fanless, CS263,Q370, 6 COM, 16 DIO, 6 USB, 2 HDMI/DP, 1 VGA, 6 LAN, 1 Line-out, 1 Mic-in, 1 PCI, DC 9~36V input, TPM2.0, F/G SYSTEM RoHS                        |
| EC510-CS   | 750-EC5102-200G | EC510-CS98A1-H:Fanless, CS263,H310, 9 COM, 16 DIO, 10 USB, 1 HDMI/DP, 1 VGA, 2 LAN, 1 Line-out, 1 Mic-in, 1 PCI, DC 9~36V input, TPM2.0, F/G SYSTEM RoHS                       |
| EC511-CS   | 750-EC5113-000G | EC511-CS6G86E-Q:Fanless, CS263,Q370, 6 COM, 16 DIO, 6 USB, 2 HDMI/DP, 1 VGA, 2 LAN, 1 Line-out, 1 Mic-in, 4 POE (802.3af), 1 PCIe x16, DC 9~36V input, TPM2.0, F/G SYSTEM RoHS |
| EC511-CS   | 750-EC5113-100G | EC511-CS6G86-Q:Fanless, CS263,Q370, 6 COM, 16 DIO, 6 USB, 2 HDMI/DP, 1 VGA, 6 LAN, 1 Line-out, 1 Mic-in, 1 PCIe x16, DC 9~36V input, TPM2.0, F/G SYSTEM RoHS                   |
| EC511-CS   | 750-EC5113-200G | EC511-CS98A1-H:Fanless, CS263,H310, 9 COM, 16 DIO, 10 USB, 1 HDMI/DP, 1 VGA, 2 LAN, 1 Line-out, 1 Mic-in, 1 PCIe x16, DC 9~36V input, TPM2.0, F/G SYSTEM RoHS                  |

## PACKING LIST

|                                                    |
|----------------------------------------------------|
| 1 EC510/EC511-CS system unit                       |
| 1 M.2 slot screws                                  |
| 1 terminal block 3-pole for DC input               |
| 1 cable with 2 wire stripped and tinned to DC jack |

## Assured Systems

Assured Systems is a leading technology company with over 1,500 regular clients in 80 countries, deploying over 85,000 systems to a diverse customer base in 12 years of business. We offer high-quality and innovative rugged computing, display, networking and data collection solutions to the embedded, industrial, and digital-out-of-home market sectors.

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