



## EC500-KH

CM238  
QM175

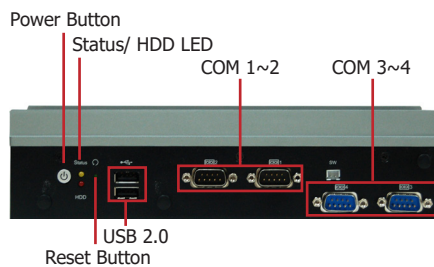


### Features

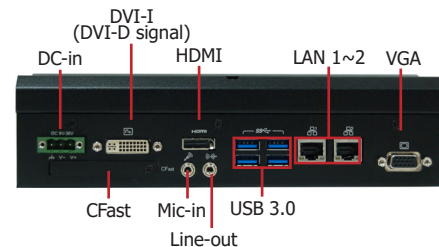
- Supports DDR4 SODIMM up to 64GB
- Three independent displays: 1 VGA + 1 DVI/HDMI + 1 HDMI/DP
- Rugged and Fanless Embedded System
- Rich I/O connectivity: 2 GbE, 4 COM, 4 USB 3.0, 2 USB 2.0, 1 CFast
- Supports 2 Mini PCIe and 1 M.2 NVMe slots
- Operating Temperature: -20 to 60°C, -40 to 70°C (optional)



### Panel

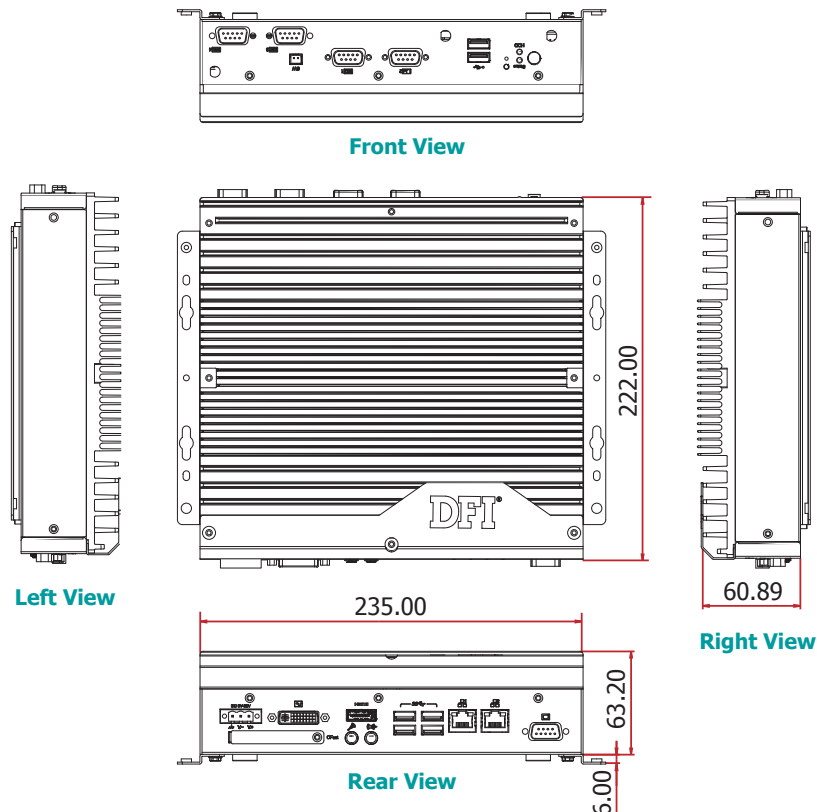


Front View



Rear View

### Dimensions

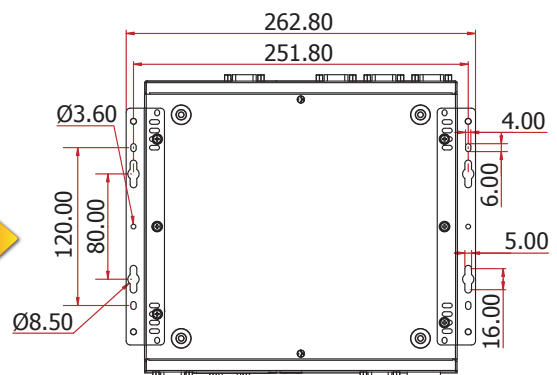
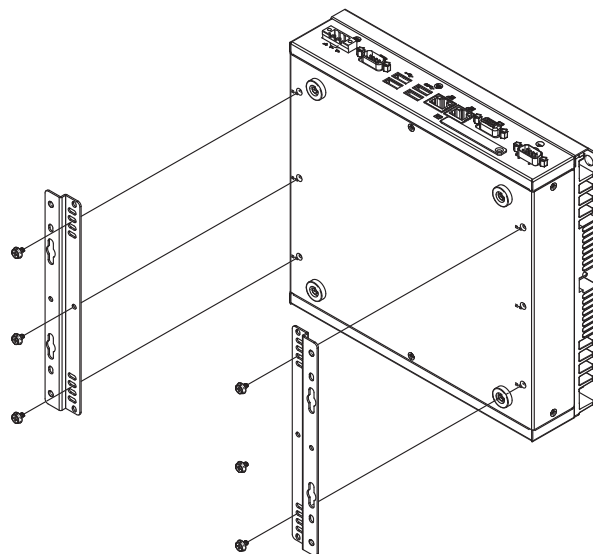


## Specifications

|                                     |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                        |
|-------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SYSTEM</b>                       | <b>Processor</b>              | 7th Generation Intel® Core™ Processors, BGA 1440<br>Intel® Xeon® Processor E3-1535M v6, Quad Core, 8M Cache, 3.1GHz (4.2GHz), 45W<br>Intel® Core™ i7-7820EQ Processor, Quad Core, 8M Cache, 3.0GHz (3.7GHz), 45W<br>Intel® Core™ i5-7440EQ Processor, Quad Core, 6M Cache, 2.9GHz (3.6GHz), 45W<br>Intel® Core™ i5-7442EQ Processor, Quad Core, 6M Cache, 2.1GHz (2.9GHz), 25W<br>Intel® Core™ i3-7100E Processor, Dual Core, 3M Cache, 2.9GHz, 35W<br>Intel® Core™ i3-7102E Processor, Dual Core, 3M Cache, 2.1GHz, 25W |                                                                                                                                                                        |
|                                     | <b>Chipset</b>                | Intel® CM238 Chipset                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Intel® QM175 Chipset                                                                                                                                                   |
|                                     | <b>Memory</b>                 | Two 260-pin SODIMM up to 64GB (CM238 supports ECC) Dual Channel DDR4 2400MHz                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                        |
|                                     | <b>BIOS</b>                   | Insyde SPI 128Mbit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                        |
|                                     | <b>Controller</b>             | Intel® HD Graphics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                        |
| <b>GRAPHICS</b>                     | <b>Feature</b>                | 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                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                        |
|                                     | <b>Display</b>                | 1 x VGA<br>1 x HDMI/DVI (DVI-D signal) (DVI available upon request)<br>1 x HDMI/DP++ (DP++ available upon request)                                                                                                                                                                                                                                                                                                                                                                                                       | VGA: resolution up to 1920x1200 @ 60Hz<br>DVI: resolution up to 1920x1200 @ 60Hz<br>HDMI: resolution up to 4096x2160 @ 24Hz<br>DP++: resolution up to 4096x2304 @ 60Hz |
|                                     | <b>Triple Displays</b>        | VGA + HDMI/DVI (DVI-D signal) + HDMI/DP++                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                        |
|                                     | <b>Internal</b>               | 1 x 2.5" SATA 3.0 Drive Bay<br>1 x CFast Socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                        |
| <b>STORAGE</b>                      | <b>Interface</b>              | 1 x Full-size Mini PCIe with micro SIM socket (PCIe/USB)<br>1 x Full-size Mini PCIe with micro SIM socket (USB)<br>1 x M.2 2280 M key (PCIe x4 NVMe, Intel optane memory support)                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                        |
| <b>EXPANSION</b>                    | <b>Controller</b>             | 1 x Intel® I211AT PCIe (10/100/1000Mbps)<br>1 x Intel® I219LM with iAMT11.0 PCIe (10/100/1000Mbps) (only Core i7/i5 supports iAMT)                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                        |
| <b>ETHERNET</b>                     | <b>Indicators</b>             | 1 x Power LED<br>1 x Status LED<br>1 x HDD LED                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                        |
| <b>LED</b>                          | <b>Serial</b>                 | 2 x RS-232/422/485 (DB-9) (RS-232 with power)<br>2 x RS-232/422/485 (DB-9)                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                        |
| <b>FRONT I/O</b>                    | <b>USB</b>                    | 2 x USB 2.0 (type A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                        |
|                                     | <b>Buttons</b>                | 1 x Power Button<br>1 x Reset Button                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                        |
|                                     | <b>Wi-Fi Antenna</b>          | 4 x Antenna Hole                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                        |
|                                     | <b>Ethernet</b>               | 2 x GbE (RJ-45)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                        |
| <b>REAR I/O</b>                     | <b>USB</b>                    | 4 x USB 3.0 (type A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                        |
|                                     | <b>Display</b>                | 1 x VGA<br>1 x HDMI/DVI (DVI-D signal) (DVI available upon request)<br>1 x HDMI/DP++ (DP++ available upon request)                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                        |
|                                     | <b>Audio</b>                  | 1 x Line-out<br>1 x Mic-in (available upon request)                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                        |
|                                     | <b>Output &amp; Interval</b>  | System Reset, Programmable via Software from 1 to 255 Seconds                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                        |
| <b>WATCHDOG TIMER</b>               | <b>TPM</b>                    | TPM 2.0 (optional)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                        |
| <b>SECURITY</b>                     | <b>Type</b>                   | Wide Range 9~36V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                        |
| <b>POWER</b>                        | <b>Connector</b>              | 3-pole Terminal Block                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2-pin Power Extension Switch Connector                                                                                                                                 |
| <b>OS SUPPORT</b>                   |                               | Windows 10 IoT Enterprise 64 Bit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Linux (available upon request)                                                                                                                                         |
| <b>MECHANISM</b>                    | <b>Construction</b>           | Metal + Aluminum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                        |
|                                     | <b>Mounting</b>               | Wall Mount                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                        |
|                                     | <b>Dimensions (W x H x D)</b> | 235 x 60.89 x 222mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                        |
|                                     | <b>Weight</b>                 | 3.5kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                        |
| <b>ENVIRONMENT</b>                  | <b>Operating Temperature</b>  | 0 to 50°C (HDD)<br>-20 to 60°C (SSD)<br>-40 to 70°C (optional)                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                        |
|                                     | <b>Storage Temperature</b>    | -20 to 85°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                        |
|                                     | <b>Relative Humidity</b>      | 5 to 95% RH (non-condensing)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                        |
|                                     | <b>Shock</b>                  | Half sine wave 3G, 11ms, 3 shock per axis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                        |
| <b>STANDARDS AND CERTIFICATIONS</b> | <b>Vibration</b>              | IEC68-2-64                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                        |
|                                     | <b>Certification</b>          | CE, FCC Class A, Microsoft Azure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                        |

All product specifications are subject to change without notice.

► Wall Mounting



### ► Ordering Information

| Model Name      | Part Number     | Description                                                                                                              |
|-----------------|-----------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>EC500-KH</b> | 750-EC5002-000G | EC500-KH Fanless, KH263-QM175, I7-7820EQ, 4 COM, 6 USB, 2 LAN DC 9~36V input, F/G SYSTEM RoHS, Op. temp. -40 to +70°C    |
| <b>EC500-KH</b> | 750-EC5002-100G | EC500-KH Fanless, KH263-QM175, I3-7102E, 4 COM, 6 USB, 2 LAN DC 9~36V input, F/G SYSTEM RoHS, Op. temp. -40 to +70°C     |
| <b>EC500-KH</b> | 750-EC5002-200G | EC500-KH Fanless, KH263-CM238, E3-1535M v6, 4 COM, 6 USB, 2 LAN, DC 9~36V input, F/G SYSTEM RoHS, Op. temp. -20 to +60°C |
| <b>EC500-KH</b> | 750-EC5002-300G | EC500-KH Fanless, KH263-QM175, I5-7440EQ, 4 COM, 6 USB, 2 LAN, DC 9~36V input, F/G SYSTEM RoHS, Op. temp. -40 to +70°C   |

### ► Optional Items

| Optional Items  | Part Number     | Description                                                   |
|-----------------|-----------------|---------------------------------------------------------------|
| <b>SO-DIMM</b>  | 138-540002-106G | 4GB DDR4 2666Mhz SO-DIMM 1Rx8 512Mx8 CL19 1.2V                |
|                 | 138-580004-102G | 8GB DDR4 2666Mhz SO-DIMM 1Rx8 1Gx8 CL19 1.2V                  |
|                 | 138-5G0163-102G | 16GB DDR4 2666Mhz SO-DIMM 2Rx8 1Gx8 CL19 1.2V                 |
|                 | TBD             | 32GB DDR4 2666Mhz SO-DIMM 2Rx8 2Gx8 CL19 1.2V                 |
|                 | TBD             | 4GB DDR4 2666Mhz SO-DIMM 1Rx8 512Mx8 CL19 1.2V, wide temp.    |
|                 | 138-580004-104G | 8GB DDR4 2666Mhz SO-DIMM 1Rx8 IND 1Gx8 CL19 1.2V, wide temp.  |
|                 | 138-5G0163-103G | 16GB DDR4 2666Mhz SO-DIMM 2Rx8 IND 1Gx8 CL19 1.2V, wide temp. |
|                 | TBD             | 32GB DDR4 2666Mhz SO-DIMM 2Rx8 IND 2Gx8 CL19 1.2V, wide temp. |
|                 | 138-540002-107G | 4GB DDR4 2666Mhz ECC-SO-DIMM 1Rx8 512Mx8 CL19 1.2V            |
|                 | 138-580004-103G | 8GB DDR4 2666Mhz ECC-SO-DIMM 1Rx8 1Gx8 CL19 1.2V              |
|                 | TBD             | 16GB DDR4 2666Mhz ECC-SO-DIMM 2Rx8 1Gx8 CL19 1.2V             |
|                 | TBD             | 32GB DDR4 2666Mhz ECC-SO-DIMM 2Rx8 2Gx8 CL19 1.2V             |
| <b>M.2 SSD</b>  | 785-M2PCIE032G  | 32GB, M.2 2280 SSD, PCIE x4, M Key, TLC, RoHS                 |
|                 | 785-M2PCIE064G  | 64GB, M.2 2280 SSD, PCIE x4, M Key, TLC, RoHS                 |
|                 | 785-M2PCIE128G  | 128GB, M.2 2280 SSD, PCIE x4, M Key, TLC, RoHS                |
|                 | 785-M2PCIE256G  | 256GB, M.2 2280 SSD, PCIE x4, M Key, TLC, RoHS                |
| <b>2.5" SSD</b> | 785-S25032G     | 32GB, 2.5" SSD, SATA3, MLC, RoHS                              |
|                 | 785-S25064G     | 64GB, 2.5" SSD, SATA3, MLC, RoHS                              |
|                 | 785-S25128G     | 128GB, 2.5" SSD, SATA3, MLC, RoHS                             |
|                 | 785-S25256G     | 256GB, 2.5" SSD, SATA3, MLC, RoHS                             |
|                 | 785-S25512G     | 512GB, 2.5" SSD, SATA3, MLC, RoHS                             |
| <b>CFast</b>    | 785-CFS256G     | 256GB CFast, RoHS                                             |
|                 | 785-CFS128G     | 128GB CFast, RoHS                                             |
|                 | 785-CFS64G      | 64GB CFast, RoHS                                              |
|                 | 785-CFS32G      | 32GB CFast, RoHS                                              |
|                 | 785-CFS16G      | 16GB CFast, RoHS                                              |
|                 | 785-CFS8G       | 8GB CFast, RoHS                                               |



### ► Optional Items

| Optional Items | Part Number     | Description                                                    |
|----------------|-----------------|----------------------------------------------------------------|
| Wi-Fi/BT Kit   | 612-WPEQ26-000G | MINI-CARD 802.11ac/a/b/g/n+BT, 2T2R, WPEQ-261ACN(BT), SPARKLAN |
| Power Cord     | 785-PWRD        | Power Cord, Standards (USA/EUR/CH/UK), 1.8m, RoHS              |
| Power Adapter  | 671-110002-100G | 100W, 12V, Level 6, RoHS                                       |
|                | 671-110003-100G | 120W, 19V, Level 6, RoHS                                       |
|                | 671-112005-100G | 120W, 24V, Level 6, Wide Temp, RoHS                            |
|                | 671-116003-000G | 160W, 19V, Level 6, RoHS                                       |
| Wall Mount     | 761-EC5410-000G | Wall Mount Kit, RoHS                                           |

### ► Packing List

|                                                      |
|------------------------------------------------------|
| • 1 EC500-KH system unit                             |
| • 1 Extend power switch cable                        |
| • 1 terminal block 3pole for DC input                |
| • 1 cable with 2 wire stripped and tinned to DC jack |