

# VC300-CS

Q370



8th/9th Gen Intel® Core™  
AI-Enabled In-vehicle Embedded System

## KEY FEATURES



### High Performance CPU

Intel® Coffee Lake Core i7 processor



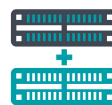
### 802.3af PoE Ports

4x RJ45 or M12 type PoE ports at 15W



### AI Accelerated

Support up to 150W MXM GPU module



### Scalability

Multiple expansion slots for 4G/LTE/5G cellular support



### Support 5G Communication

Support M.2 B key 3042/3052 5G-NR module

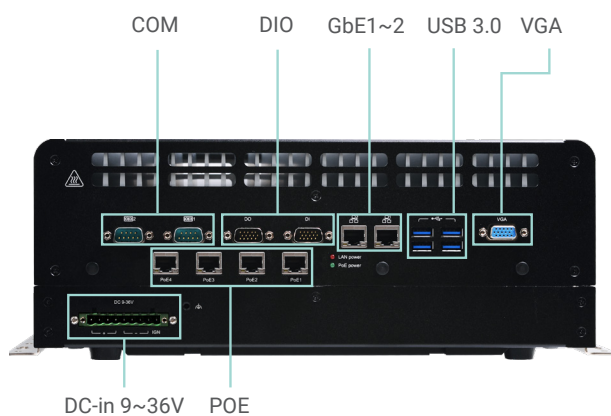


### Wide-Temperature

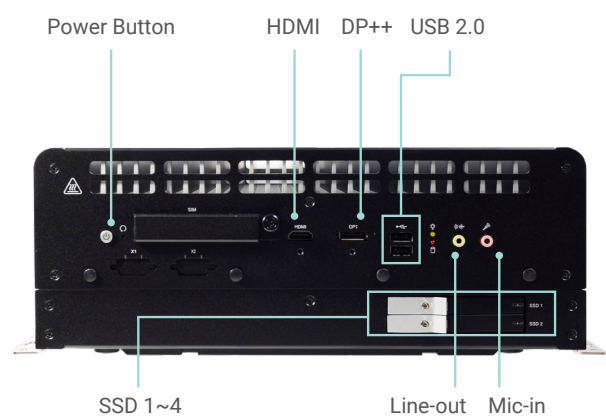
Up to -20°C~70°C operation without active fan



## PANEL

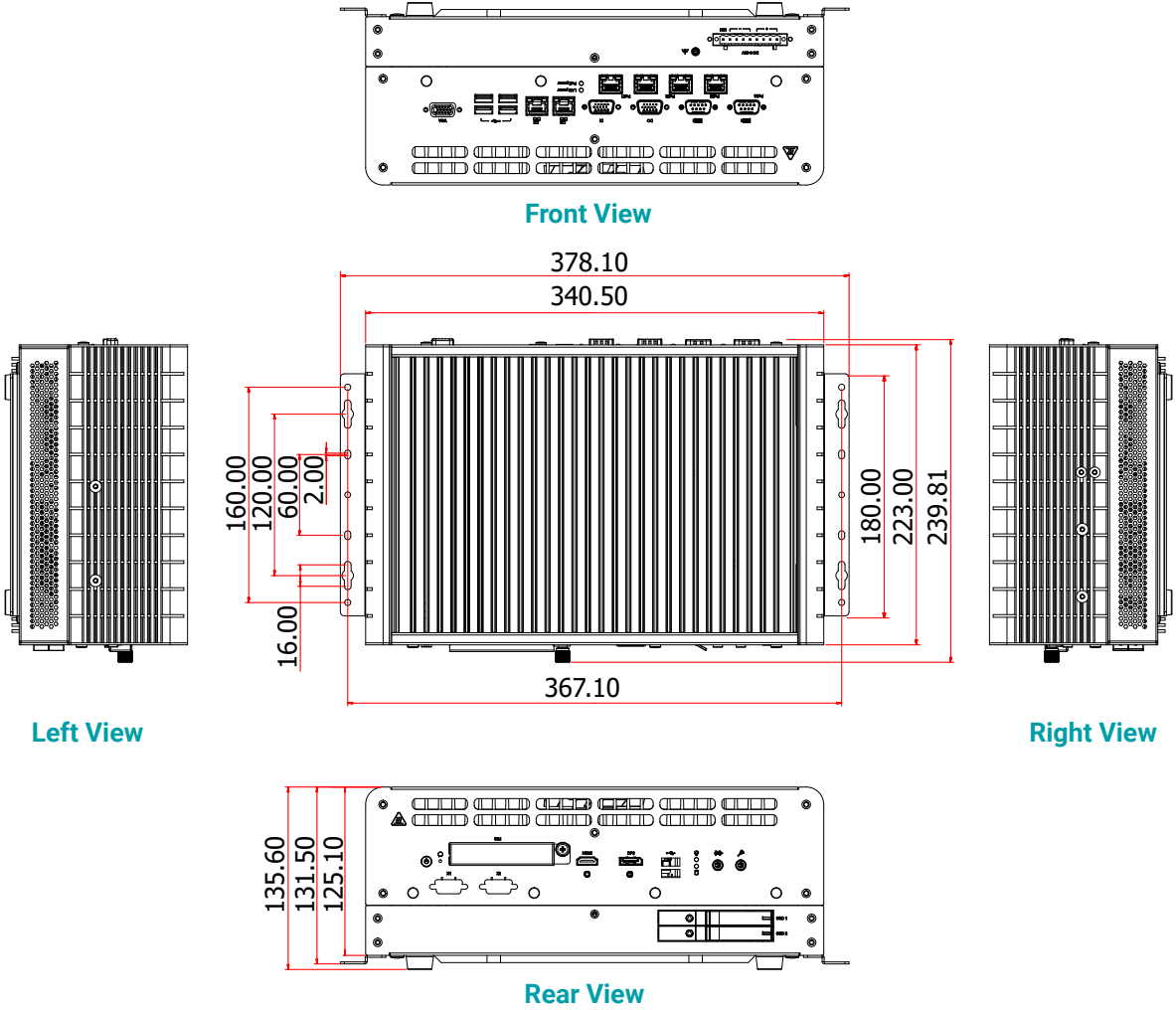


Front View

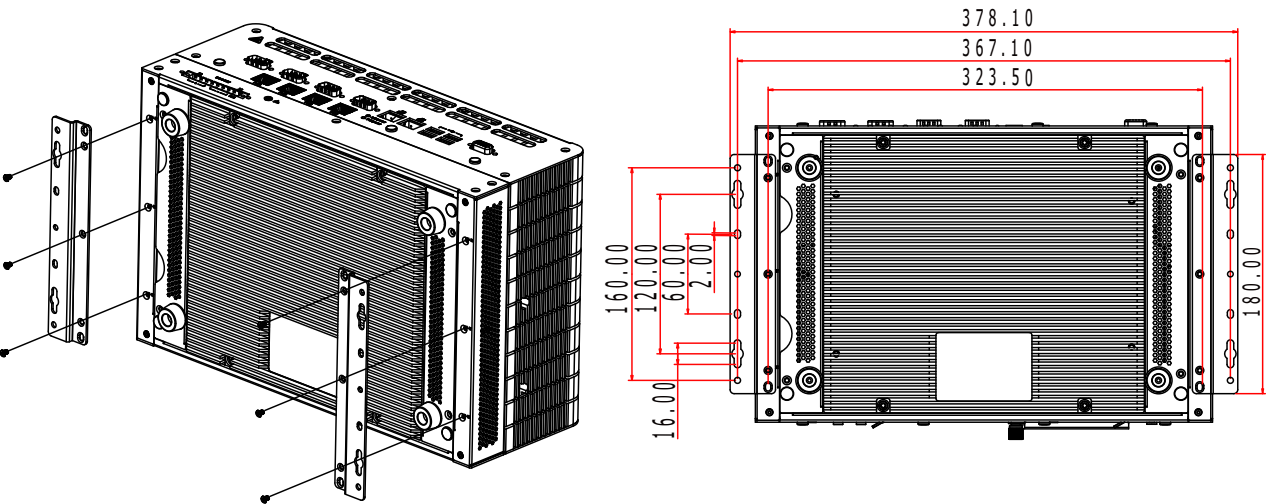


Rear View

DIMENSIONS



WALL MOUNTING



## SPECIFICATION

|                |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                        |
|----------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| SYSTEM         | Processor              | 8th/9th Generation Intel® Core™ Processors, LGA 1151<br>Intel® Core™ i7-9700TE 8C/8T 1.8GHz 12MB cache, TDP 35W with Q370PCH<br>Intel® Core™ i7-8700T 6C/12T 2.4GHz 12MB cache, TDP 35W with Q370PCH<br>Intel® Core™ i7-9700E 8C/8T 2.6GHz 12MB cache, TDP 65W with Q370PCH<br>Intel® Core™ i5-9500TE 6C/6T 2.2GHz 9MB cache, TDP 35W with Q370PCH<br>(Other CPU support upon request)                                                        |                                                                                                                        |
|                | Chipset                | Intel® Q370 Chipset                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                        |
|                | Memory                 | Dual Channel DDR4 2666/2400 MHz by SODIMMs up to 64GB                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                        |
|                | BIOS                   | AMI SPI 128Mbit                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                        |
| GRAPHICS       | Controller             | Intel® HD Graphics                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                        |
|                | Display                | 1 x VGA (display out by DB-15 connector)<br>1 x HDMI (with screw lock)<br>1 x DP++ (standard display port connector DIP type with screw lock)<br>Support NVIDIA Optimus technology                                                                                                                                                                                                                                                            | VGA: resolution up to 1920x1200@60Hz<br>HDMI: resolution up to 4096x2160@24Hz<br>DP++: resolution up to 4096x2304@60Hz |
| AI ACCELERATOR | Interface              | MXM Type A, B, C on x16 PCIe 3.0                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                        |
|                | Controller             | Nvidia Quadro embedded/ Geforce series                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                        |
| STORAGE        | External               | 2 x Swappable 2.5" 7mm SSD storage bays with lock                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                        |
|                | Internal               | 1 x M.2 2280 M key supports SATA SSD                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                        |
| EXPANSION      | Interface              | 1 x Half-size Mini PCIe for WiFi/BT modules, with PCIe x1 & USB signal<br>2 x Full-size Mini PCIe support PCIe x1, USB 2.0 signal with SIM card socket of each<br>1 x M.2 B key supports 3042, 3052 devices or 5G module on PCIe x1, USB2.0, USB3.0 signal with SIM card slot bracket<br>- SIM card can all be external accessible<br>1 x M.2 2280 M key supports 2242, 2260 & 2280 devices (PCIe x4 & SATA signal, support boot up function) |                                                                                                                        |
| AUDIO          | Audio Codec            | Realtek ALC888                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                        |
|                | Interface              | 1 x Mic-in<br>1 x Line-out                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                        |
| ETHERNET       | Controller             | 5 x Intel® I210IT NIC (10/100/1000Mbps)<br>1 x Intel® I219LM with iAMT11.0 PCIe (10/100/1000Mbps) (only Core i7/i5 supports iAMT)                                                                                                                                                                                                                                                                                                             |                                                                                                                        |
|                | Interface              | 2 x RJ45 GbE<br>4 x RJ45 802.3af 15W PoE ports                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                        |
| LED            | Indicators             | 1 x Power LED (green)<br>5 x Storage LED (red)<br>4 x PoE LED                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                        |
| FRONT I/O      | PoE                    | 4 x PoE ports at RJ45 or M12 X-coded connectors<br>Support 802.3af, max 15.4W (PSE side)<br>NOT support Wake on Lan                                                                                                                                                                                                                                                                                                                           |                                                                                                                        |
|                | Ethernet               | 2 x GbE (RJ-45) support Wake on Lan                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                        |
|                | Serial                 | 2 x High speed full RS-232/422/485 (DB-9)<br>2 x RS-232/422/485 (pin headers)                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                        |
|                | DIO                    | 1 x 8bit isolated DI port by DB-9 connector<br>1 x 8bit isolated DO port by DB-9 connector<br>2KV isolation                                                                                                                                                                                                                                                                                                                                   |                                                                                                                        |
|                | Display                | 1 x VGA display out by DB15 connector                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                        |
|                | USB                    | 4 x USB 3.0 (type A)                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                        |
|                | Power-in               | 1 x 6pins 5.0mm terminal block                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                        |
| REAR I/O       | USB                    | 2 x USB 2.0 (type A)                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                        |
|                | Display                | 1 x HDMI<br>1 x DP++                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                        |
|                | Audio                  | 1 x Mic-in<br>1 x Line-out<br>by 3.5mm 3P phone jack                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                        |
|                | Buttons                | 1 x Power button<br>1 x Reset button                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                        |
|                | SIM                    | 3 x SIM sockets (external accessible with cover)                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                        |
|                | Antenna Holes          | 7 x SMA type antenna hole for GNSS, WWAN/LTE MIMO, WLAN/ BT MIMO, 5G                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                        |
| WATCHDOG TIMER | Output & Interval      | System reset, programmable via software from 1 to 255 seconds                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                        |
| SECURITY       | TPM                    | TPM 2.0                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                        |
| POWER          | Type                   | +12VDC (9~36V), +24VDC(14.4~33.6)<br>+12V and +24V compliant to eMark with power ignition function<br>Reverse polarity protection                                                                                                                                                                                                                                                                                                             |                                                                                                                        |
|                | Connector              | 9-pin 5.0mm terminal block                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                        |
| OS SUPPORT     | Microsoft              | Windows 10 IoT Enterprise 64 Bit                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                        |
|                | Linux                  | Ubuntu 18.04                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                        |
| MECHANISM      | Construction           | Metal + Aluminum                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                        |
|                | Mounting               | Wall mount                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                        |
|                | Dimensions (W x H x D) | 340.5 x 132 x 223mm (3U height, excluding rubber foot)                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                        |
|                | Weight                 | 9.85 kg                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                        |

## SPECIFICATION

|                              |                       |                                                                                                                                                                                                   |
|------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ENVIRONMENT                  | Operating Temperature | -20°C to 70°C when CPU+GPU<100W without fan<br>-20°C to 60°C when CPU+GPU<160W without fan<br>-20°C to 70°C when CPU+GPU<190W with active fan<br>CPU & GPU will be throttling at high temperature |
|                              | Storage Temperature   | -40 to 85°C                                                                                                                                                                                       |
|                              | Relative Humidity     | 10% to 90% (non-condensing)                                                                                                                                                                       |
| STANDARDS AND CERTIFICATIONS | Shock (SSD/HDD)       | MIL-STD-810G Method 516.6, Procedure 1, OP:10G 11ms, Non-OP: 40G 11ms (Test by SSD, HDD is not support)                                                                                           |
|                              | Vibration             | MIL-STD-810G Method 514.6C-3, Category 4 Composite wheeled vehicle Table 514.6C-VI                                                                                                                |
|                              | IP rating             | IP40                                                                                                                                                                                              |
|                              | Certification         | CE, FCC, UKCA, RoHS, E-Mark                                                                                                                                                                       |

## Compatible MXM modules

| Type   | Model   | CUDA cores | Power | Support operating temperature             |
|--------|---------|------------|-------|-------------------------------------------|
| Quadro | P1000   | 512        | 47W   | -20°C to +70°C                            |
|        | P2000   | 768        | 58W   | -20°C to +70°C                            |
|        | T1000   | 896        | 50W   | -20°C to +70°C                            |
|        | RTX3000 | 1920       | 80W   | -20°C to +55°C                            |
|        | RTX5000 | 3072       | 150W  | -20°C to +70°C (external air flow needed) |

## OPTIONAL ITEMS

| Optional Items     | Part Number     | Description                                                                              |
|--------------------|-----------------|------------------------------------------------------------------------------------------|
| 2.5" SSD           | 785-S251TBG     | 2.5" SATA SSD, 1TB MLC, -40 to 85°C, RoHS                                                |
|                    | 785-S25512G     | 2.5" SATA SSD, 512GB MLC, -40 to 85°C, RoHS                                              |
|                    | 785-S25256G     | 2.5" SATA SSD, 256GB MLC, -40 to 85°C, RoHS                                              |
|                    | 785-S25128G     | 2.5" SATA SSD, 128GB MLC, -40 to 85°C, RoH                                               |
| M.2 SATA SSD       | 785-M2SATA64G   | 64GB, M.2 2280 SSD, SATA3 B+M Key, MLC, Wide Temp.                                       |
|                    | 785-M2SATA128G  | 128GB, M.2 2280 SSD, SATA3 B+M Key, MLC, Wide Temp.                                      |
|                    | 785-M2SATA256G  | 256GB, M.2 2280 SSD, SATA3 B+M Key, MLC, Wide Temp.                                      |
|                    | 785-M2SATA512G  | 512GB, M.2 2280 SSD, SATA3 B+M Key, 3D TLC, PE: 3K, 30u" -20~75                          |
| Memory             | 138-580004-104G | 8GB DDR4 2666Mhz SO-DIMM 1Rx8 IND 1Gx8 CL19 1.2V                                         |
|                    | 138-540002-121G | 4GB DDR4 2666Mhz SO-DIMM, -40 to 85C                                                     |
| WiFi/BT module kit | 761-AP1235-000G | WiFi/Bluetooth Module AP12356, antenna *2, 200mm SMA cables*2, Mini PCIe Bracket, screws |
| LTE module kit     | 761-RC3000-001G | EG25GGB CAT4 miniPCIe module, antenna*2, 300mm SMA cables*2                              |
| 5G module kit      | 761-RC3000-100G | SIM8202G-M2 M.2 module, antenna*4, 184mm SMA cables *4                                   |
| M12 Cable          | A81-005038-054G | 8-pin M12 X-coded to RJ45 PoE cable                                                      |
| CAN bus module     | 770-MPE21-100G  | MPE-CAN2 MiniPCIe Full CAN Module Card Assembly                                          |

## PACKING LIST

|                        |
|------------------------|
| 1 VC300-CS system unit |
| 1 Power connector      |
| 1 Mounting bracket     |