



IN-VEHICLE COMPUTER

# ACO-6000-CML

In-Vehicle Computer with LGA 1200 for Intel 10th Gen CPU & W480E PCH, 2x LAN



**Features**

- LGA 1200 socket for 10th Gen. Intel® CML S Processor (65W/35W TDP)
- Intel® W480E chipset
- 2x DDR4 2666/2933MHz SODIMM. Max. up to 64GB
- Triple Independent Display: 2x DisplayPort, 1x DVI-I
- 2x Intel® GbE supporting Wake-on-LAN and PXE
- 2x Full-size Mini PCIe for communication or expansion modules, 2x SIM socket
- 3x 2.5" SATA HDD Bay (1x Internal) with RAID 0, 1, 5 support
- 1x M.2 (E Key, PCIe x1, USB 2.0, 2230)
- 8x RS-232/422/485 (6x internal), 6x USB 3.2 Gen 2, 3x USB 3.2 Gen 1 (1x internal)
- 8x DI + 8x DO with isolation
- 9 to 48 or 48 to 110VDC Wide Range Power Input Supporting AT/ATX Mode
- Wide Operating Temperature -25°C to 70°C (35W/65W CPU)
- TPM 2.0 Supported
- Power ignition management



**Specifications**

**System**

|   |  |
|---|--|
| <b>Processor</b>  |  |
| Support 10th Gen Intel® CML S Processor (LGA 1200, 65W/35W TDP) |  |
| - Intel® Xeon® W-1290TE, 10 Cores, 20MB Cache, up to 4.5 GHz    |  |
| - Intel® Xeon® W-1270TE, 8 Cores, 16MB Cache, up to 4.4 GHz     |  |
| - Intel® Xeon® W-1250TE, 6 Cores, 12MB Cache, up to 3.8 GHz     |  |
| - Intel® Core™ i9-10900E, 10 Cores, 20MB Cache, up to 4.7 GHz   |  |
| - Intel® Core™ i9-10900TE, 10 Cores, 20MB Cache, up to 4.5 GHz  |  |
| - Intel® Core™ i7-10700E, 8 Core, 16MB Cache, up to 4.5 GHz     |  |
| - Intel® Core™ i7-10700TE, 8 Cores, 16MB cache, up to 4.4 GHz   |  |
| - Intel® Core™ i5-10500T, 6 Cores, 12MB Cache, up to 4.2 GHz    |  |
| - Intel® Core™ i5-10500TE, 6 Core, 12MB Cache, 3.7 GHz          |  |
| - Intel® Core™ i3-10100T, 4 Cores, 6MB cache, up to 3.8 GHz     |  |
| - Intel® Core™ i3-10100TE, 4 Cores, 9MB Cache, up to 3.6 GHz    |  |
| System Chipset  | Intel® W480E Chipset   |
| LAN Chipset   | GbE1: Intel I219 (Support Wake-on-LAN and PXE)<br>GbE2: Intel I210 (Support Wake-on-LAN and PXE) |
| Audio Codec   | Realtek ALC888S  |
| System Memory   | 2x 260-Pin DDR4 2666/2933MHz SODIMM.<br>Max. up to 64GB (ECC and Non-ECC)                        |
| Graphics  | Intel® UHD Graphics 630  |
| BIOS  | AMI 256Mbit SPI BIOS   |
| Watchdog  | Software Programmable Supports 1-255 sec. System Reset   |
| TPM   | TPM 2.0  |

**Display**

|                  |  |
|------------------|--|
| Display Port     | 2x DisplayPort, support resolution 4096 x 2304, DP++ |
| DVI              | 1x DVI-I, support resolution 1920 x 1200             |
| Multiple Display | Triple Display                                       |
| VGA              | Yes (by optional split cable)                        |

**Storage**

|            |  |
|------------|--|
| SIM Socket | 2x External SIM socket (Mini PCIe attached)  |
| SSD/HDD    | 1x Internal 2.5" SATA HDD/SSD Bay (support H=9mm)<br>2x Removable 2.5" SATA HDD/SSD Bay (support H=7mm, Hot-swappable)<br>Support RAID 0, 1, 5 |

**Expansion**

|           |  |
|-----------|--|
| M.2       | 1x M.2 (E Key, PCIe x1, USB 2.0, 2230) |
| Mini PCIe | 2x Full-size Mini PCIe                 |

**Expansion Modules**  
Occupied One Universal I/O Slot:

- 4-port GbE module with Intel® I350 Chipset, RJ-45 or M12 connector (PoE optional)
- 2-Port RJ45 10GbE with Intel X710 Chipset
- 4-Port USB with Renesas uPD720201K8 host controller (share PCIe Gen2 x1 bandwidth)
- 1x M.2 for 5G (B Key, PCIe x4, USB 3.0, 3042/3052), Including 2x SIM socket, 1x SIM switch (1x Universal Slot Only)

**I/O**

|                       |  |
|-----------------------|--|
| Audio                 | 1x Mic-in, 1x Line-out   |
| CAN                   | 2x CAN 2.0 A/B 2-pin Internal header   |
| COM                   | 2x RS-232/422/485 ; 6x RS-232/422/485 (internal)   |
| DIO                   | 8 in / 8 out (Isolated)  |
| LAN                   | 2x RJ45  |
| Universal I/O Bracket | 2x Universal I/O Bracket (By mini PCIe interface)  |
| USB                   | 6x USB 3.2 Gen 2 (10 Gbps)<br>3x USB 3.2 Gen 1 (5 Gbps, 1x Internal)<br>2x USB 2.0 header (internal) |

|        |  |
|--------|--|
| Others | 5x WiFi Antenna Holes<br>1x Power Switch, 1x AT/ATX Switch, 1x Remote Power On/Off<br>1x PC/Car Mode Switch, 1x Delay Time Switch<br>1x Removable CMOS Battery<br>4x 4-Pin Power Connector, 1x 4-PIN FAN Connector |
|--------|--|

**Operating System**

|         |              |
|---------|--------------|
| Windows | Windows 10   |
| Linux   | Linux kernel |

**Power**

|                        |   |
|------------------------|---|
| Power Adapter          | Optional AC/DC 24V/5A, 120W<br>Optional AC/DC 24V/9.2A, 220W                          |
| Power Mode             | AT, ATX   |
| Power Ignition Sensing | Power Ignition Management   |
| Power Supply Voltage   | 9-48VDC<br>48-110VDC (Optional)   |
| Power Connector        | 5-pin Terminal Block (9-48VDC)<br>3-pin Terminal Block (48-110VDC, Optional)          |
| Power Protection       | OVP (Over Voltage Protection);<br>OCP (Over Current Protection)<br>Reverse Protection |

**Environment**

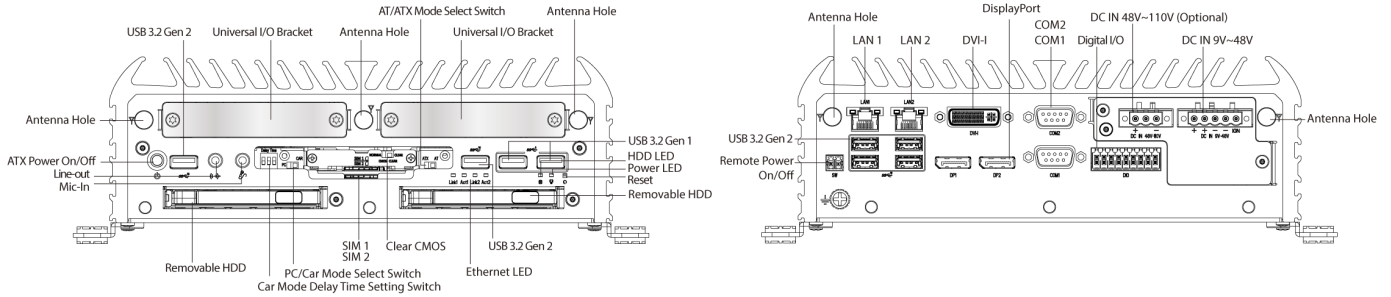
|                       |  |
|-----------------------|--|
| Operating Temperature | -25°C to 70°C (35W/65W CPU)  |
| Storage Temperature   | -30°C to 85°C  |
| Relative Humidity     | 10% to 95% (non-condensing)  |
| Certification         | CE, FCC Class A,<br>E-Mark, EMC Conformity with EN50155 & EN50121-3-2                  |
| Vibration             | With SSD: 5 Grms, 5 - 500 Hz, 0.5 hr/axis<br>With HDD: 1 Grms, 5 - 500 Hz, 0.5 hr/axis |
| Shock                 | With SSD: 50G, half sine, 11ms   |

**Physical**

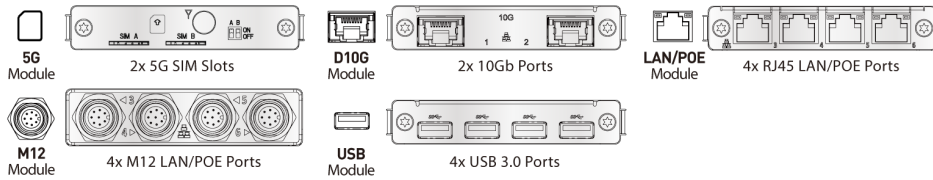
|                  |   |
|------------------|---|
| Dimensions       | 240 (W) x 261 (D) x 79.2 (H) mm         |
| Weights          | 3.1-3.5 kg                              |
| Construction     | Extruded Aluminum with Heavy Duty Metal |
| Mounting Options | Wall Mounting                           |

\* For 10th Gen Intel CPUs configured to run at 65W, operating temperatures will be limited to 70°C.  
\*\* 65W CPU may experience thermal throttling depending on extreme application workloads; this is also due to an increase in the physical CPU cores from the Intel silicon (up to 10 cores). Please note, this does not indicate system malfunction or problems in the fanless design. Please consult our embedded engineers for the best configuration to match your application requirements.  
\*\*\* All specifications and photos are subject to change without notice.

External I/O Mechanical Layout

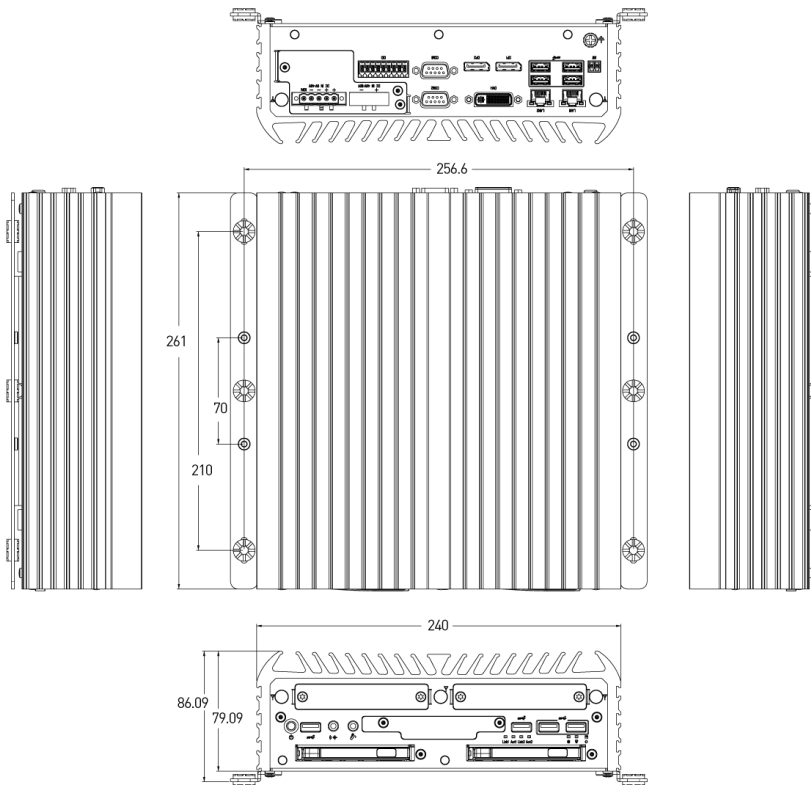


Available Modules



Dimension

Unit: mm





## ACO-6000-CML

### Available Models

| Model No.               | Description   |
|-------------------------|---|
| ACO-6000-CML            | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN                |
| ACO-6000-CML-4L         | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 6x LAN                |
| ACO-6000-CML-4LM12      | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 4x M12 LAN    |
| ACO-6000-CML-8L         | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 10x LAN               |
| ACO-6000-CML-8LM12      | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 8x M12 LAN    |
| ACO-6000-CML-4P         | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 4x PoE        |
| ACO-6000-CML-4PM12      | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 4x M12 PoE    |
| ACO-6000-CML-8P         | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 8x PoE        |
| ACO-6000-CML-8PM12      | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 8x M12 PoE    |
| ACO-6000-CML-D10G       | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 2x 10G LAN    |
| ACO-6000-CML-4U3        | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 12x USB       |
| ACO-6000-CML-8U3        | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 16x USB       |
| ACO-6000-CML-5G         | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 1x M.2 for 5G |
| ACO-6000-CML-110V       | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN                |
| ACO-6000-CML-4L-110V    | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 6x LAN                |
| ACO-6000-CML-4LM12-110V | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 4x M12 LAN    |
| ACO-6000-CML-8L-110V    | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 10x LAN               |
| ACO-6000-CML-8LM12-110V | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 8x M12 LAN    |
| ACO-6000-CML-4P-110V    | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 4x PoE        |
| ACO-6000-CML-4PM12-110V | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 4x M12 PoE    |
| ACO-6000-CML-8P-110V    | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 8x PoE        |
| ACO-6000-CML-8PM12-110V | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 8x M12 PoE    |
| ACO-6000-CML-D10G-110V  | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 2x 10G LAN    |
| ACO-6000-CML-4U3-110V   | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 12x USB       |
| ACO-6000-CML-8U3-110V   | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 16x USB       |
| ACO-6000-CML-5G-110V    | In-Vehicle Fanless Computer with LGA 1200 for Intel 10th Gen CPU and W480E PCH, 2x LAN, 1x M.2 for 5G |

### Optional Accessories

| Model No.   | Description   |
|-------------|---|
| 1-E09A12002 | Adapter AC/DC 24V 5A 120W with 3pin Terminal Block Plug 5.0mm Pitch   |
| 1-E09A22102 | Adapter AC/DC 24V 9.2A 220W with 3pin Terminal Block Plug 5.0mm Pitch |
| 1-TPCD00002 | Power Cord, European Type, 180cm                                      |
| 1-TPCD00001 | Power Cord, 3-pin UK Type, 180cm                                      |
| 1-TPCD00005 | Power Cord, 3-pin US Type, 180cm                                      |

### Packing List

1x ACO-6000-CML Series Embedded System  
 1x Wall Mount Kit  
 1x Accessory Kit  
 1x DVI to VGA Adapter



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## 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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