IN-VEHICLE COMPUTER

ACO-6000-RPL

Railway & In-Vehicle Computer with LGA 1700 for Intel® Core™ (Series 2)/14th/13th/12th Gen Processors & W680E PCH

Features

- Intel® Core™ Processors Series 2 and 14th/13th/12th Gen Series, LGA1700
- Intel® W680E chipset
- 2x 262-pin DDR5 4800/5600 MT/s SODIMM. Max. up to 96GB (ECC and Non-ECC)
- Triple Independent Display: 2x DisplayPort, 1x DVI-I
- 2x Intel® 2.5 GbE supporting Wake-on-LAN and PXE
- 1x Full-size Mini PCIe for communication or expansion modules, 2x SIM socket
- 3x 2.5" SATA SSD Bays (2x hot-swappable, 1x internal)
- 1x mSATA, 1x M.2 B Key (2242/3042/3052) for AI/Storage/4G/5G
- 1x M.2 E Key (2230) for Wi-Fi/BT
- 6x RS-232/422/485 (4x internal), 8x USB 3.2 Gen 2, 1x USB 3.0 Gen 1 (internal)
- 8x DI + 8x DO with isolation
- 12 to 48VDC Power Input (AT/ATX Mode Support)
- Wide Operating Temperature -25°C to 70°C (35W/65W CPU)
- TPM 2.0 Supported
- Power Ignition Management

Specifications

System	
Processor	
Standard 13th Gen Intel® Core™ Processors (Raptor Lake-S) - Intel® Core™ i7-13700TE, 35W - Intel® Core™ i5-13500TE, 35W 12th Gen Intel® Core™ Processors (Alder Lake-S) - Intel® Core™ i7-12700TE, 35W - Intel® Core™ i5-12500TE, 35W	
Project Based - Intel® Core™ 3 / 5 / 7 (Series 2, Bartlett Lake-S, 45W) - 14th Gen Intel® Core™ i3 / i5 / i7 / i9 (Raptor Lake-S Refresh, 35W~65W) - 13th Gen Intel® Core™ i3 / i5 / i7 / i9 (Raptor Lake-S, 35W~65W) - 12th Gen Intel® Core™ i3 / i5 / i7 / i9 (Alder Lake-S, 35W~65W)	
System Chipset	Intel® W680E Chipset
LAN Chipset	2.5 GbE1: Intel I226 (Support Wake-on-LAN and PXE, Support TSN) 2.5 GbE2: Intel I226 (Support Wake-on-LAN and PXE, Support TSN)
Audio Codec	Realtek ALC888S
System Memory	2x 262-Pin DDR5 4800/5600MHz SODIMM. Max. up to 96GB (ECC and Non-ECC)
Graphics	Intel® UHD Graphics 770/710
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 5120 x 3200 (Up to 7680 x 4320)
DVI	1x DVI-I, support resolution 1920 x 1200
Multiple Display	Triple Display
VGA	Yes (by optional split cable)

Storage	
mSATA	1x mSATA (shared by 1x Mini PCIe)
SIM Socket	2x External SIM socket (Mini PCIe attached)
SSD/HDD	1x Internal 2.5" SATA /SSD Bay (support H=9mm) 2x 2.5" SATA SSD Bays (support H=7mm, Hot-swappable) Support RAID 0, 1

Expansion	
M.2	1x M.2 B Key: 2242/3042/3052 (PCIe x2 for AI/NVMe Storage) (PCIe x1 & USB 3.2 Gen 1 for 4G/5G) 1x M.2 E Key: 2230 (PCIe x1 & USB 2.0) for Wi-Fi/BT)
Mini PCIe	2x Full-size Mini PCIe (1x shared by 1x mSATA)
Expansion Modules	
Occupied One Universal I/O Slot: • 4-port GbE module with Intel® I350 Chipset, RJ45 or M12 connector (PoE optional)	

I/O	
Audio	1x Mic-in, 1x Line-out
CAN	2x CAN 2.0 A/B 2-pin Internal header
COM	6x RS-232/422/485 (4x internal)
DIO	8 in / 8 out (Isolated)
LAN	2x RJ45
Universal I/O Bracket	2x Universal I/O Bracket (By mini PCIe interface)
USB	8x USB 3.2 Gen 2 (10 Gbps) 1x USB 3.2 Gen 1 (5 Gbps, internal) 2x USB 2.0 header (internal)
Others	5x WiFi Antenna Holes 1x Power Switch, 1x AT/ATX Switch, 1x Remote Power On/Off 1x PC/Car Mode Switch, 1x Delay Time Switch 1x Removable CMOS Battery

Operating System	
Windows	Windows 11
Linux	Linux kernel

Power	
Power Adapter	Optional AC/DC 24V/9.2A, 220W Optional AC/DC 24V/9.2A, 280W Optional AC/DC 24V/15A, 360W (i7/i9 CPU)
Power Mode	AT, ATX
Power Ignition Sensing	Power Ignition Management
Power Supply Voltage	12~48VDC
Power Connector	5-pin Terminal Block
Power Protection	OVP (Over Voltage Protection); OCP (Over Current Protection) Reverse Protection

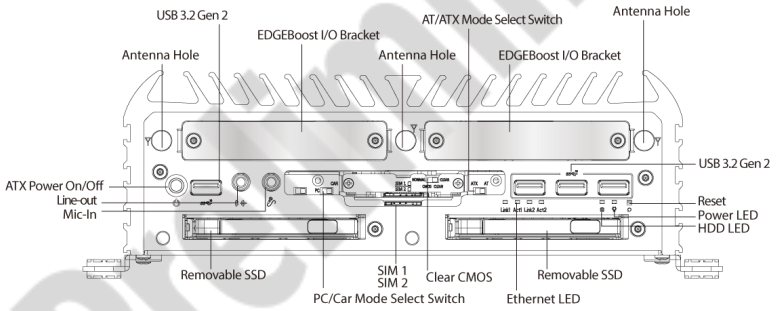
Environment	
Operating Temperature	-25°C to 70°C (35W/45W CPU) -25°C to 60°C (65W CPU)
Storage Temperature	-30°C to 85°C
Relative Humidity	10% to 95% (non-condensing)
Certification	CE, FCC Class A, EN50155 EMC Conformity: EN50121-3-2, UL 62368-1
Vibration	With SSD: 5 Grms, 5 - 500 Hz, 0.5 hr/axis
Shock	With SSD: 50G, half sine, 11ms

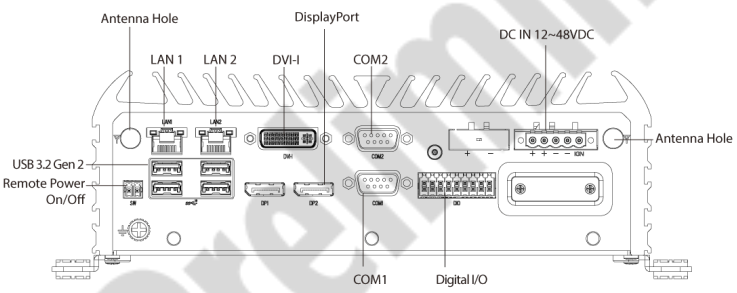
Physical	
Dimensions	240 (W) x 261 (D) x 79.1 (H) mm
Weights	4.5kg
Construction	Extruded Aluminum with Heavy Duty Metal
Mounting Options	Wall Mounting

• Processor Base Power: 35W, 45W, 60W, 65W (CPU-dependent); View appendix for complete supported processors table.
• 65W CPUS 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 24 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 equirements.
• All specifications and photos are subject to change without notice.

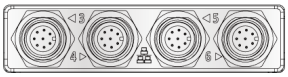
Preliminary

External I/O Mechanical Layout

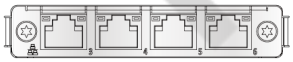




Available EDGEBoost I/O



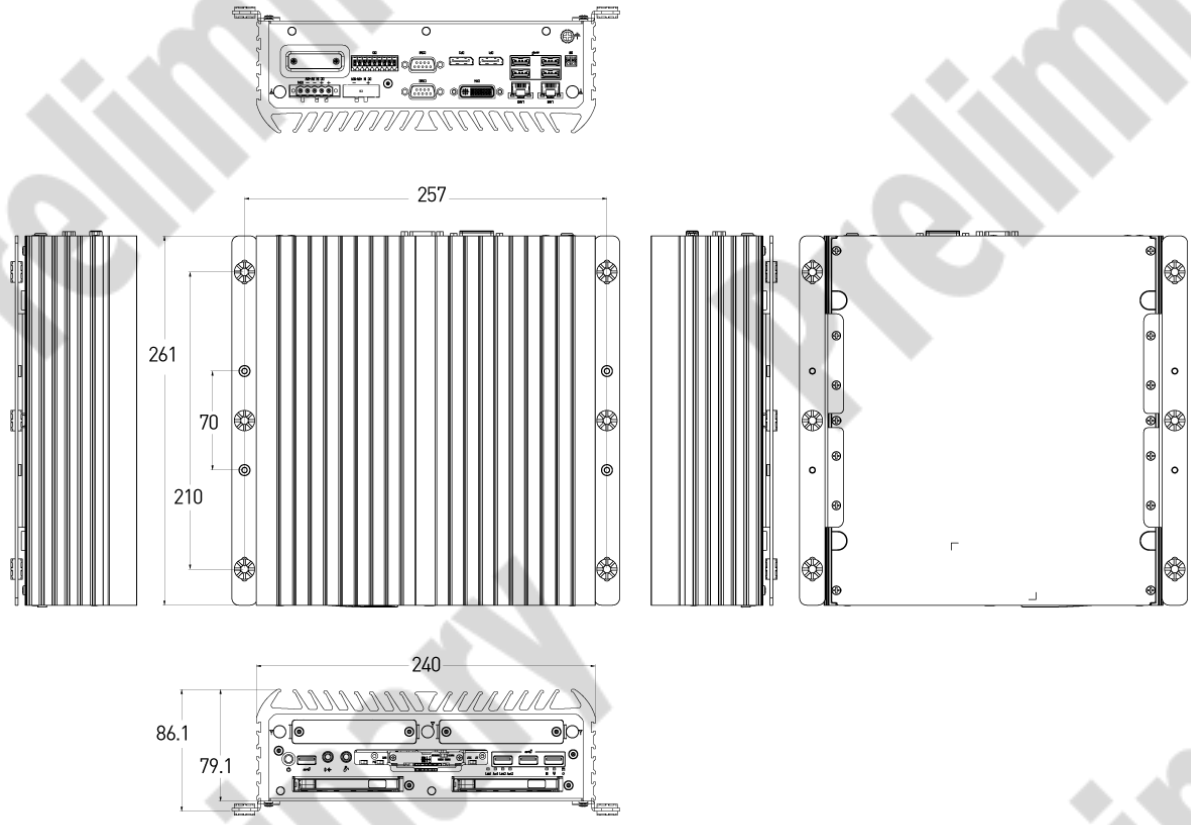
4x M12 LAN/POE Ports



4x RJ45 LAN/POE Ports

Dimension

Unit: mm



Preliminary

Compliances and Standards

Vibration	With SSD: 5 Grms, 5 - 500 Hz, 0.5 hr/axis IEC60068-2-64:2008 Designed to comply with MIL-STD-810H Method 514.8 Procedure I
Shock	With SSD: 50G, half sine, 11ms IEC60068-2-27:2008 Designed to comply with MIL-STD-810H Method 516.8 Procedure I
Operating Temperature	-25°C to 70°C (35W/45W CPU) -25°C to 60°C (65W CPU) IEC60068-2-1:2007 (Cold test procedure) IEC60068-2-2:2007 (Dry heat test procedure) IEC60068-2-3:2007 (Damp heat, steady state, test procedure) IEC60068-2-14:2009 (Wide temperature range thermal shock)
EMC	• FCC Class A • CE • ICES-003 • UKCA • Railway EMC Compliance - EN 50155: 2017 - EN 50121-1: 2017 - EN 50121-3-2: 2016 • Industrial EMC Compliance - EN 61000-4-2: 2009 - EN 61000-4-3: 2020 - EN 61000-4-4: 2012 - EN 61000-4-5: 2014 +A1: 2017 - EN 61000-4-6: 2014
Safety	• UL Safety: UL62368-1, 3rd Ed., (cULus) - Test procedure: CB Scheme - Standard: IEC 62368-1:2018

Available Models

Model No.	Description
ACO-6000-RPL	Railway & In-Vehicle Computer with LGA 1700 for Intel® 12th/13th/14th Gen CPU and W680E PCH, 2x LAN
ACO-6000-RPL-P	Railway & In-Vehicle Computer with LGA 1700 for Intel® Core™ (Series 2)/14th/13th/12th Gen Processors & W680E PCH, w/ Power Adapter

Optional Accessories

Model No.	Description
1-E09A22102	Adapter AC/DC 24V 9.2A 220W with 3pin Terminal Block Plug 5.0mm Pitch
1-E09A28001	Adapter AC/DC 24V 9.2A 280W with 5pin Terminal Block Plug 5.0mm Pitch
1-E09A36003	Adapter AC/DC 24V/11.67A 360W with 5pin Terminal Block Plug 5.0mm Pitch
1-TPCD00005	Power Cord, 3-pin US Type, 180cm
1-TPCD00002	Power Cord, European Type, 180cm
1-TPCD00001	Power Cord, 3-pin UK Type, 180cm

Packing List

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

US Exports And Tariff Codes

ECCN	5A992.c
HTS	8471.50.0150
ScheduleB	84.71

Preliminary

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