

ACO-3000

In-Vehicle Fanless System w/ Intel® Broadwell-U Core™
i5/i3 or Celeron® Processor

FEATURES

- Intel® Core™ i5-5350U, i3-5010U, or Celeron® 3765U
- 1x 204-pin DDR3L SO-DIMM, up to 8GB
- 1x DVI-I and 1x DisplayPort
- 2x Intel® GbE supporting Wake-on-LAN and PXE
- 2x 2.5" SATA HDD bay and 2x mSATA (RAID 0/1/5/10)
- 2x mini PCIe for communication or expansion modules
- 2x SIM sockets
- 4x RS-232/422/485, 2x USB 3.0, 2x USB 2.0
- 8x isolated digital I/O
- 1x Universal I/O slot (For mini PCIe application)
- 9 ~ 48VDC wide range input supporting AT/ATX mode
- -40°C to 70°C extended operating temperature
- Power Ignition Management

SPECIFICATIONS

System	
Processor	5th Gen Intel® Core™ i5-5350U Processor, Dual Core, 3MB Cache, up to 2.9 GHz 5th Gen Intel® Core™ i3-5010U Processor, Dual Core, 3MB Cache, 2.1 GHz 5th Gen Intel® Celeron® Processor 3765U, Dual Core, 2MB Cache, 1.9 GHz
System Chipset	SoC integrated
LAN Chipset	GbE1: Intel® I210-AT (Support Wake-on-LAN and PXE) GbE2: Intel® I218-LM (Support Wake-on-LAN and PXE)
Audio Codec	Realtek ALC885S
System Memory	1x 204-Pin DDR3L 1333/1600MHz SO-DIMM Max. up to 8GB
BIOS	AMI 128Mbit SPI BIOS
Watchdog	Software Programmable Supports 1~255 sec. System Reset
Display	
VGA	Yes (by DVI to VGA adapter, included)
DVI	1x DVI-I
DisplayPort	1x DisplayPort
Multiple Display	Triple Display
Storage	
SSD/HDD	1x Internal 2.5" SATA HDD Bay 1x Removable 2.5" SATA HDD Bay Support RAID 0, 1, 5, 10
mSATA	2x mSATA (shared with 2x Mini PCIe)
SIM Socket	2x External SIM socket
I/O	
COM	4x RS-232/422/485 (2x front/2x rear)
USB	2x USB 3.0, 2x USB 2.0 (rear)
LAN	2x GbE RJ45 (rear)
Audio	1x Mic-in, 1x Speaker-out, 2W+2W (rear)
DIO	4 in / 4 out (Isolated, rear)
Universal I/O Slot	2x Universal I/O Slots (front)
Others	3x WiFi Antenna Holes (rear) 1x Power Switch (front), 1x AT/ATX Switch (front) PC/Vehicle Mode, Vehicle Voltage, Delay Off Time (front) 1x Remote Power On/Off (rear)

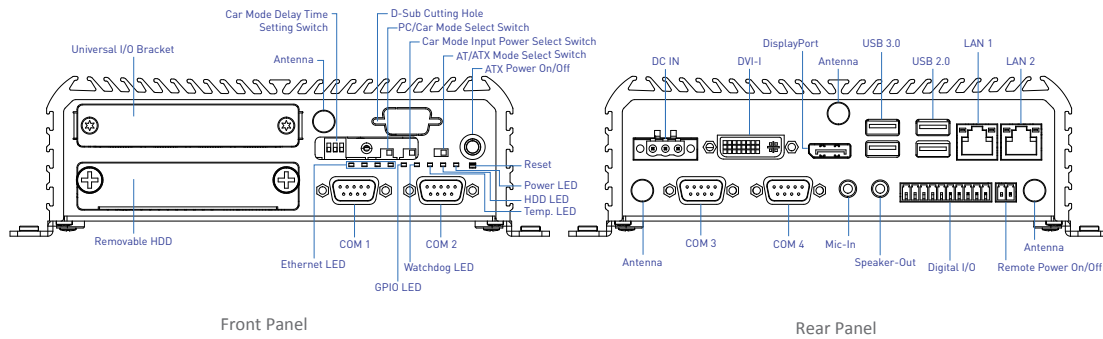


Expansion	
Mini PCI Express	2x Full-size mini-PCIe (shared with mSATA)
4-Port GbE (Optional)	Up to one 4-port GbE modules with Intel® I210-AT Chipset RJ-45 or M12 connector with PoE option One Universal I/O Slot occupied for one 4-port module
Operating System	
Windows	Windows 10, Windows 8.1, WES8.1, Windows 7, WES7
Linux	Linux kernel 3.X
Power	
Power Mode	Vehicle or PC (AT/ATX)
Power Ignition Management	Delay On/Off Battery Voltage Monitoring (12V/24V)
Input Voltage	9 ~ 48 VDC
Power Connector	3-pin Terminal Block
Power Protection	OVP (Over Voltage Protection) OCP (Over Current Protection) RPP (Reverse Polarity Protection)
Power Adapter*	Optional External Power Adapter, 60W, 120W, or 220W
Environment†	
Operating Temp.	-40 °C to 70 °C (-40 °F to 158 °F)
Storage Temp.	-40 °C to 85 °C (-40 °F to 185 °F)
Relative Humidity	10% to 95% (non-condensing)
Vibration	With SSD: 5 Grms, 5 - 500 Hz, 0.5 hr/axis With HDD: 1 Grms, 5 - 500 Hz, 0.5 hr/axis
Shock	With SSD: 50 G, half sine, 11 ms
Certification	CE, FCC Class A, E-Mark, EN50121-3-2
Physical	
Construction	Extruded Aluminum with Heavy Duty Metal
Dimension (W x D x H)	185 x 197 x 57.4 mm 7.3" x 7.6" x 2.2"
Weight	2.1 kg / 4.6 lb
Mounting	Wall Mounting
Packing List	1x ACO-3000 Rugged In-Vehicle Fanless System 1x Wall-mount Bracket 1x DVI to VGA Adapter

* For detailed performance specification, please refer to the data sheet or consult with the technical team.

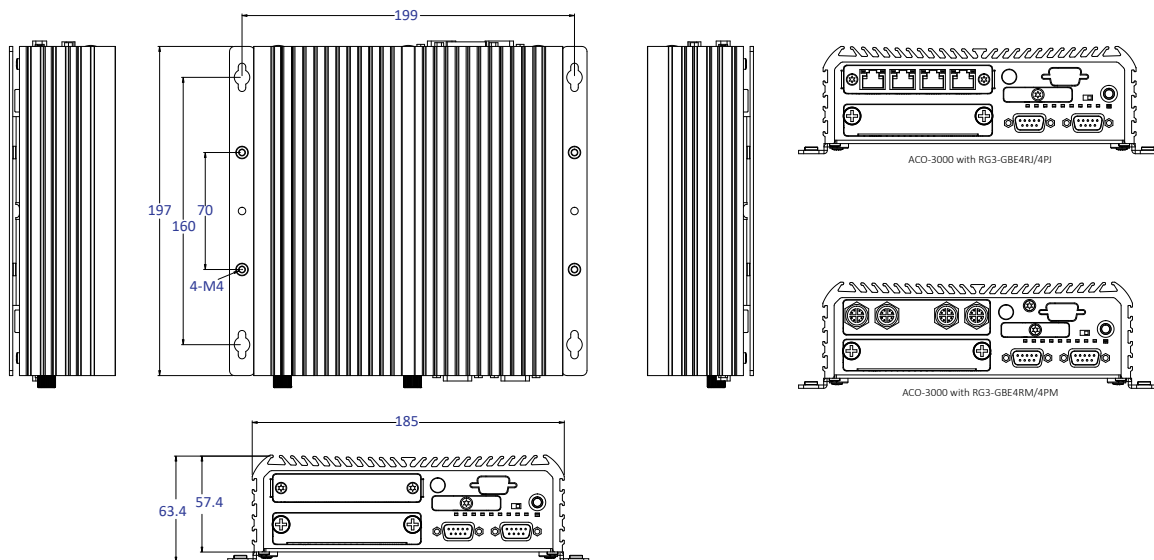
† The environmental specification covers the bare bone systems and does not include other components environmental specification.

I/O LAYOUT



DIMENSION

Unit: mm



ORDERING INFO

Part No.	Description
ACO-3000-5350U	Rugged in-vehicle fanless embedded system with Intel® Core™ i5-5350U processor, 2x LAN
ACO-3000-5010U	Rugged in-vehicle fanless embedded system with Intel® Core™ i3-5010U processor, 2x LAN
ACO-3000-3765U	Rugged in-vehicle fanless embedded system with Intel® Celeron® 3765U processor, 2x LAN

OPTIONAL ACCESSORIES

Part No.	Description
RG3-GBE4RJ	4-port GbE cableless module 4x RJ-45
RG3-GBE4PJ	4-port PoE GbE cableless module 4x RJ-45
RG3-GBE4RM	4-port GbE cableless module 4x M12
RG3-GBE4PM	4-port PoE GbE cableless module 4x M12
1-E09A06002	Adapter AC/DC 12V 5A 60W with 3-pin Terminal Block Plug 5.0-mm Pitch
1-E09A12001	Adapter AC/DC 24V 5A 120W with 3-pin Terminal Block Plug 5.0-mm Pitch
1-E09A22001	Adapter AC/DC 24V 9.2A 220W with 3-pin Terminal Block Plug 5.0-mm Pitch

ACO-3011E/P

In-Vehicle Fanless System w/ Intel® Broadwell-U Core™
i5/i3 or Celeron® Processor, 1x PCIe x4 or 1x PCI Expansion

FEATURES

- Intel® Core™ i5-5350U, i3-5010U, or Celeron® 3765U
- 1x 204-pin DDR3L SO-DIMM, up to 8GB
- 1x DVI-I and 1x DisplayPort
- 2x Intel® GbE supporting Wake-on-LAN and PXE
- 2x 2.5" SATA HDD bay and 2x mSATA (RAID 0/1/5/10)
- 2x mini PCIe for communication or expansion modules
- 1x PCIe x4 (ACO-3011E) or 1x PCI (ACO-3011P)
- 2x SIM sockets
- 4x RS-232/422/485, 2x USB 3.0, 2x USB 2.0, 8-bit DIO
- 2x Universal I/O slot (For mini PCIe application)
- 9 ~ 48VDC wide range input supporting AT/ATX mode
- -40°C to 70°C extended operating temperature
- Power Ignition Management

SPECIFICATIONS

System	
Processor	5th Gen Intel® Core™ i5-5350U Processor, Dual Core, 3MB Cache, up to 2.9 GHz 5th Gen Intel® Core™ i3-5010U Processor, Dual Core, 3MB Cache, 2.1 GHz 5th Gen Intel® Celeron® Processor 3765U, Dual Core, 2MB Cache, 1.9 GHz
System Chipset	SoC integrated
LAN Chipset	GbE1: Intel® I210-AT (Support Wake-on-LAN and PXE) GbE2: Intel® I218-LM (Support Wake-on-LAN and PXE)
Audio Codec	Realtek ALC888S
System Memory	1x 204-Pin DDR3L 1333/1600MHz SO-DIMM Max. up to 8GB
BIOS	AMI 128Mbit SPI BIOS
Watchdog	Software Programmable Supports 1~255 sec. System Reset
Display	
VGA	Yes (by DVI to VGA adapter, included)
DVI	1x DVI-I
DisplayPort	1x DisplayPort
Multiple Display	Triple Display
Storage	
SSD/HDD	1x Internal 2.5" SATA HDD Bay 1x Removable 2.5" SATA HDD Bay Support RAID 0, 1, 5, 10
mSATA	2x mSATA (shared with 2x Mini PCIe)
SIM Socket	2x External SIM socket
I/O	
COM	4x RS-232/422/485 (2x front/2x rear)
USB	2x USB 3.0, 2x USB 2.0 (rear)
LAN	2x GbE RJ45 (rear)
Audio	1x Mic-in, 1x Speaker-out, 2W+2W (rear)
DIO	4 in / 4 out (Isolated, rear)
Universal I/O Slot	2x Universal I/O Slots (front)
Others	3x WiFi Antenna Holes (rear) 1x Power Switch (front), 1x AT/ATX Switch (front) PC/Vehicle Mode, Vehicle Voltage, Delay Off Time (front) 1x Remote Power On/Off (rear)

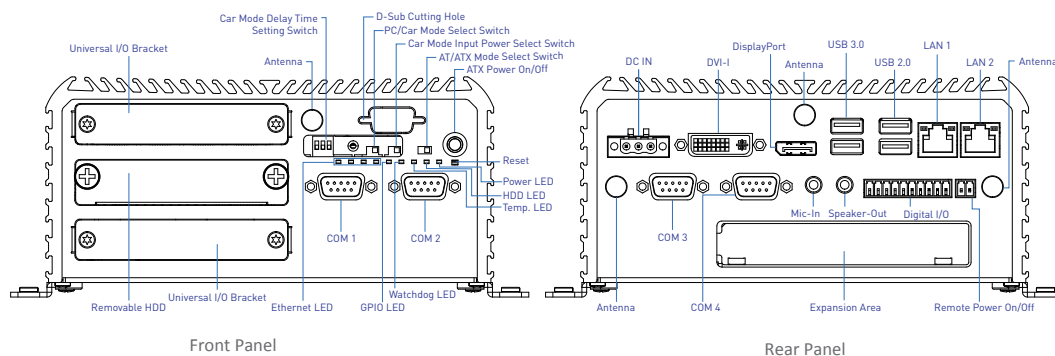


Expansion	
Mini PCI Express	2x Full-size mini-PCIe (shared with mSATA)
PCI Express/PCI	1x PCIe x4 (ACO-3011E) or 1x PCI (ACO-3011P) 106.65 x 174 mm (FHHL)
4-Port GbE (Optional)	Up to one 4-port GbE modules with Intel® I210-AT Chipset RJ-45 or M12 connector with PoE option One Universal I/O Slot occupied for one 4-port module
Operating System	
Windows	Windows 10, Windows 8.1, WES8.1, Windows 7, WES7
Linux	Linux kernel 3.X
Power	
Power Mode	Vehicle or PC (AT/ATX)
Power Supply Voltage	9 ~ 48 VDC
Power Ignition Management	Delay On/Off Battery Voltage Monitoring (12V/24V)
Power Connector	3-pin Terminal Block
Power Protection	OVP (Over Voltage Protection) OCP (Over Current Protection) RPP (Reverse Polarity Protection)
Power Adapter*	Optional External Power Adapter, 60W, 120W, or 220W
Environment†	
Operating Temp.	-40 °C to 70 °C (-40 °F to 158 °F)
Storage Temp.	-40 °C to 85 °C (-40 °F to 185 °F)
Relative Humidity	10% to 95% (non-condensing)
Vibration	With SSD: 5 Grms, 5 - 500 Hz, 0.5 hr/axis With HDD: 1 Grms, 5 - 500 Hz, 0.5 hr/axis
Shock	With SSD: 50 G, half sine, 11ms
Certification	CE, FCC Class A, E-Mark, EN50121-3-2
Physical	
Construction	Extruded Aluminum with Heavy Duty Metal
Dimension (W x D x H)	185 x 197 x 85 mm 7.3" x 7.6" x 3.3"
Weight	2.65 kg (5.83 lb)
Mounting	Wall Mount
Packing List	1x ACO-3011x Rugged In-Vehicle Fanless System 1x Wall-mount Bracket 1x DVI to VGA Adapter

* For detailed performance specification, please refer to the data sheet or consult with the technical team.

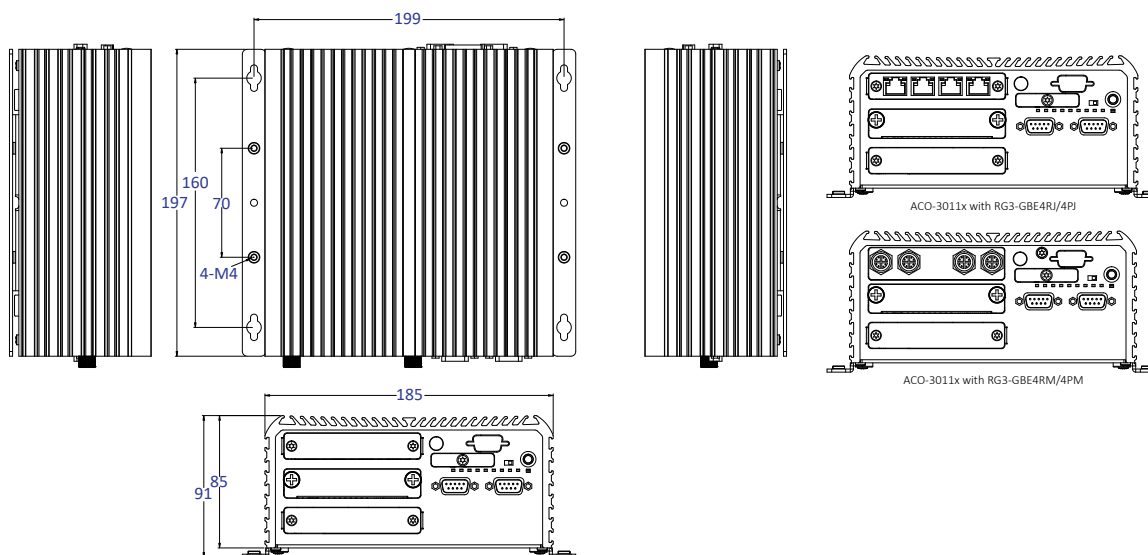
† The environmental specification covers the bare bone systems and does not include other components environmental specification.

I/O LAYOUT



DIMENSION

Unit: mm



ORDERING INFO

Part No.	Description
ACO-3011E-5350U	Rugged in-vehicle fanless embedded system with Intel® Core™ i5-5350U processor, 1x PCIe x4
ACO-3011E-5010U	Rugged in-vehicle fanless embedded system with Intel® Core™ i3-5010U processor, 1x PCIe x4
ACO-3011E-3765U	Rugged in-vehicle fanless embedded system with Intel® Celeron® 3765U processor, 1x PCIe x4
ACO-3011P-5350U	Rugged in-vehicle fanless embedded system with Intel® Core™ i5-5350U processor, 1x PCI
ACO-3011P-5010U	Rugged in-vehicle fanless embedded system with Intel® Core™ i3-5010U processor, 1x PCI
ACO-3011P-3765U	Rugged in-vehicle fanless embedded system with Intel® Celeron® 3765U processor, 1x PCI

OPTIONAL ACCESSORIES

Part No.	Description
RG3-GBE4RJ	4-port GbE cableless module 4x RJ-45
RG3-GBE4PJ	4-port PoE GbE cableless module 4x RJ-45
RG3-GBE4RM	4-port GbE cableless module 4x M12
RG3-GBE4PM	4-port PoE GbE cableless module 4x M12
1-E09A06002	Adapter AC/DC 12V 5A 60W with 3-pin Terminal Block Plug 5.0-mm Pitch
1-E09A12001	Adapter AC/DC 24V 5A 120W with 3-pin Terminal Block Plug 5.0-mm Pitch
1-E09A22001	Adapter AC/DC 24V 9.2A 220W with 3-pin Terminal Block Plug 5.0-mm Pitch

ACO-3022EE/PP

In-Vehicle Fanless System w/ Intel® Broadwell-U Core™
i5/i3 or Celeron® Processor, 2x PCIe x4 or 2x PCI Expansion

FEATURES

- Intel® Core™ i5-5350U, i3-5010U, or Celeron® 3765U
- 1x 204-pin DDR3L SO-DIMM, up to 8GB
- 1x DVI-I and 1x DisplayPort
- 2x Intel® GbE supporting Wake-on-LAN and PXE
- 2x 2.5" SATA HDD bay and 2x mSATA (RAID 0/1/5/10)
- 2x mini PCIe for communication or expansion modules
- 2x PCIe x4 (ACO-3022EE) or 2x PCI (ACO-3022PP)
- 2x SIM sockets
- 4x RS-232/422/485, 2x USB 3.0, 2x USB 2.0, 8-bit DIO
- 2x Universal I/O slot (For mini PCIe application)
- 9 ~ 48VDC wide range input supporting AT/ATX mode
- -40°C to 70°C extended operating temperature
- Power Ignition Management

SPECIFICATIONS

System	
Processor	5th Gen Intel® Core™ i5-5350U Processor, Dual Core, 3MB Cache, up to 2.9 GHz 5th Gen Intel® Core™ i3-5010U Processor, Dual Core, 3MB Cache, 2.1 GHz 5th Gen Intel® Celeron® Processor 3765U, Dual Core, 2MB Cache, 1.9 GHz
System Chipset	SoC integrated
LAN Chipset	GbE1: Intel® I210-AT (Support Wake-on-LAN and PXE) GbE2: Intel® I218-LM (Support Wake-on-LAN and PXE)
Audio Codec	Realtek ALC888S
System Memory	1x 204-Pin DDR3L 1333/1600MHz SO-DIMM Max. up to 8GB
BIOS	AMI 128Mbit SPI BIOS
Watchdog	Software Programmable Supports 1~255 sec. System Reset
Display	
VGA	Yes (by DVI to VGA adapter, included)
DVI	1x DVI-I
DisplayPort	1x DisplayPort
Multiple Display	Triple Display
Storage	
SSD/HDD	1x Internal 2.5" SATA HDD Bay 1x Removable 2.5" SATA HDD Bay Support RAID 0, 1, 5, 10
mSATA	2x mSATA (shared with 2x Mini PCIe)
SIM Socket	2x External SIM socket
I/O	
COM	4x RS-232/422/485 (2x front/2x rear)
USB	2x USB 3.0, 2x USB 2.0 (rear)
LAN	2x GbE RJ45 (rear)
Audio	1x Mic-in, 1x Speaker-out, 2W+2W (rear)
DIO	4 in / 4 out (isolated, rear)
Universal I/O Slot	2x Universal I/O Slots (front)
Others	3x WiFi Antenna Holes (rear) 1x Power Switch (front), 1x AT/ATX Switch (front) PC/Vehicle Mode, Vehicle Voltage, Delay Off Time (front) 1x Remote Power On/Off (rear)



Expansion

Mini PCI Express	2x Full-size mini-PCIe (shared with mSATA)
PCI Express/PCI	2x PCIe x4 (ACO-3022EE) or 2x PCI (ACO-3022PP) 106.65 x 174 mm (FHHL)
4-Port GbE (Optional)	Up to one 4-port GbE modules with Intel® I210-AT Chipset RJ-45 or M12 connector with PoE option One Universal I/O Slot occupied for one 4-port module

Operating System

Windows	Windows 10, Windows 8.1, WES8.1, Windows 7, WES7
Linux	Linux kernel 3.X

Power

Power Mode	Vehicle or PC (AT/ATX)
Power Supply Voltage	9~48VDC
Power Ignition Management	Delay On/Off Battery Voltage Monitoring (12V/24V)
Power Connector	3-pin Terminal Block
Power Protection	OVP (Over Voltage Protection) OCP (Over Current Protection) RPP (Reverse Polarity Protection)
Power Adapter*	Optional External Power Adapter, 60W, 120W, or 220W

Environment†

Operating Temp.	-40 °C to 70 °C (-40 °F to 158 °F)
Storage Temp.	-40 °C to 85 °C (-40 °F to 185 °F)
Relative Humidity	10% to 95% (non-condensing)
Vibration	With SSD: 5 Grms, 5 - 500 Hz, 0.5 hr/axis With HDD: 1 Grms, 5 - 500 Hz, 0.5 hr/axis
Shock	With SSD: 50 G, half sine, 11ms
Certification	CE, FCC Class A, E-Mark, EN50121-3-2

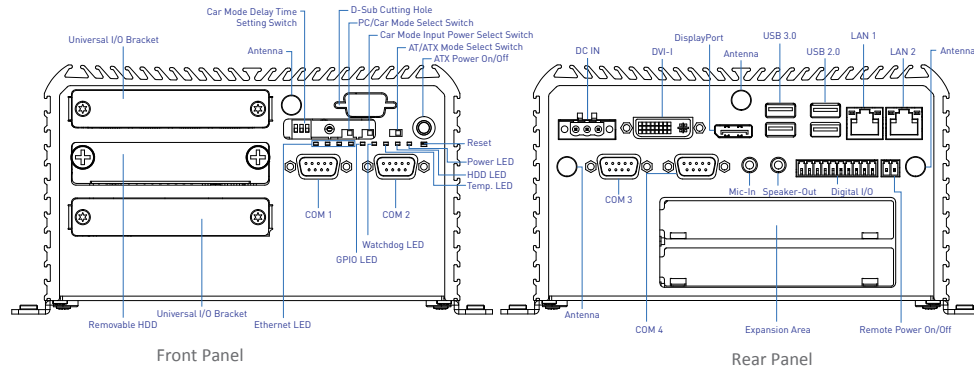
Physical

Construction	Extruded Aluminum with Heavy Duty Metal
Dimension (W x D x H)	185 x 197 x 105 mm 7.3" x 7.6" x 4.1"
Weight	2.87 kg (6.31 lb)
Mounting	Wall Mount
Packing List	1x ACO-3022xx Rugged In-Vehicle Fanless System 1x Wall-mount Bracket 1x DVI to VGA Adapter

* For detailed performance specification, please refer to the data sheet or consult with the technical team.

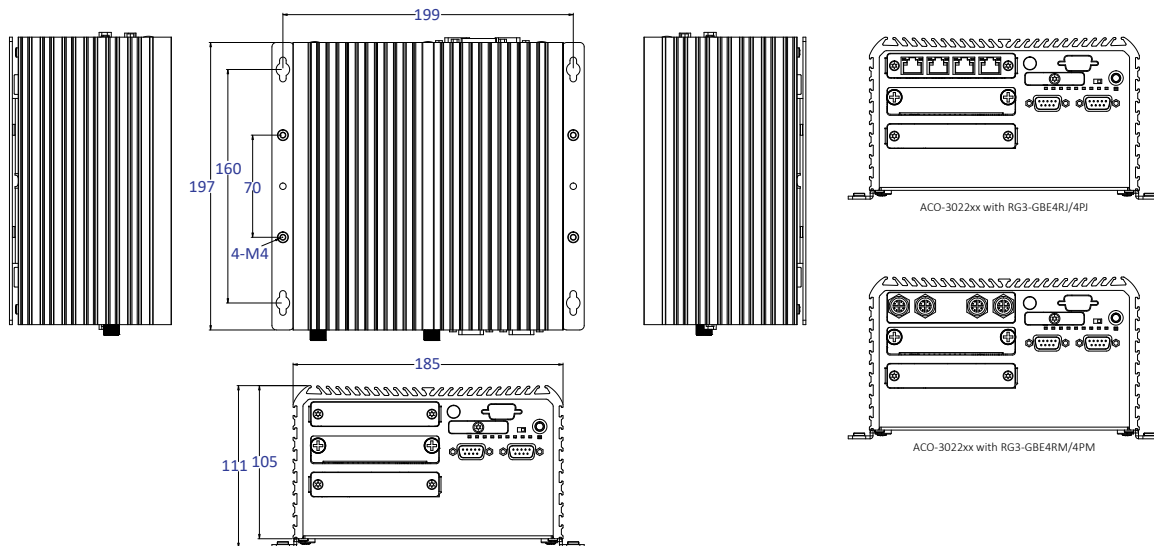
† The environmental specification covers the bare bone systems and does not include other components environmental specification.

I/O LAYOUT



DIMENSION

Unit: mm



ORDERING INFO

Part No.	Description
ACO-3022EE-5350U	Rugged in-vehicle fanless embedded system with Intel® Core™ i5-5350U processor, 2x PCIe x4
ACO-3022EE-5010U	Rugged in-vehicle fanless embedded system with Intel® Core™ i3-5010U processor, 2x PCIe x4
ACO-3022EE-3765U	Rugged in-vehicle fanless embedded system with Intel® Celeron® 3765U processor, 2x PCIe x4
ACO-3022PP-5350U	Rugged in-vehicle fanless embedded system with Intel® Core™ i5-5350U processor, 2x PCI
ACO-3022PP-5010U	Rugged in-vehicle fanless embedded system with Intel® Core™ i3-5010U processor, 2x PCI
ACO-3022PP-3765U	Rugged in-vehicle fanless embedded system with Intel® Celeron® 3765U processor, 2x PCI

OPTIONAL ACCESSORIES

Part No.	Description
RG3-GBE4RJ	4-port GbE cableless module 4x RJ-45
RG3-GBE4PJ	4-port PoE GbE cableless module 4x RJ-45
RG3-GBE4RM	4-port GbE cableless module 4x M12
RG3-GBE4PM	4-port PoE GbE cableless module 4x M12
1-E09A06002	Adapter AC/DC 12V 5A 60W with 3-pin Terminal Block Plug 5.0-mm Pitch
1-E09A12001	Adapter AC/DC 24V 5A 120W with 3-pin Terminal Block Plug 5.0-mm Pitch
1-E09A22001	Adapter AC/DC 24V 9.2A 220W with 3-pin Terminal Block Plug 5.0-mm Pitch

