



## ACO Series - In-Vehicle Computers

The nature of vehicular environments have always posed a complex challenge for sensitive computer components which face the dangers of high shock, vibration, and overall unstable conditions for a computer to operate successfully without fault. In traditional motor vehicles, electronic components are typically low-powered enough and don't require any high processing power for in-vehicle gadgets and devices. However, as technology advancements continue to expand and new applications are making their way into vehicles for autonomous driving, intelligent surveillance, advanced telematics, and much more which all require rugged and high-performance in-vehicle computers to process heavier data workloads.

The evolution of the Internet of Things (IoT) has introduced the importance of data generation from every device and sensor throughout the modern tech society. Effectively collecting, processing, and utilizing this data has become the competitive advantage for strategic businesses leading the path towards a more connected and data-driven future. For any IoT applications running in a mobile computing environment, data processing at the source of generation or the "edge" is a necessity in comparison to a centralized location such as the cloud. An in-vehicle computer serving as an edge computer is able to instantly respond to signals gathered from sensors rather than send and receive instructions from a distant cloud network. This avoids the risk of any latency delays for applications such as autonomous vehicle navigation where a vehicle's immediate reaction time is imperative.

Premio's ACO series are purpose built in-vehicle computers that handle heavier processing workloads to enable new innovations for Intelligent Transportation Systems (ITS) that involve the integration of IoT and artificial intelligence (AI). In order to meet the design requirements for an in-vehicle computer, Premio's ACO series are certified with E-Mark and EN50155 international standards that regulate for electromagnetic compatibility, temperature, humidity, shock, vibration, and other parameters to ensure that the computer can reliably operate continuously 24/7 without fault given the harsh environments of moving vehicles. The ACO series is able to achieve this feat due to rigorous testing and validation for each factor to guarantee wide operating temperatures from -40° to 70°C, shock measurements of 50G, and sustaining vibration levels of 5Grms which are conditions that are frequently faced when integrated within a vehicle. With stronger system reliability and improved processing performance, Premio's ACO invehicle computers are well-equipped to manage future technological applications involving IoT, ITS, and Artificial Intelligence.

KEY APPLICATIONS



KEY PREMIO BENEFITS:

### POWER IGNITION MANAGEMENT

The ACO series in-vehicle computers feature smart power ignition management for safe computer operation when sourcing power supply from a battery. This feature is linked to a vehicles ignition system to detect engine status and starts a user determined timed delay to control the in-vehicle computer's power function. This prevents potential data loss or corruption from improper shutdowns by allowing a controlled sequence when the engine status is turned on or cut off. Power ignition management also accepts either 12V or 24V electrical systems found in varying consumer, commercial, industrial, and military vehicles.

# POWER PROTECTION

Featuring a wide input voltage range of 9 to 48VDC, Premio's invehicle computers are capable of operating on low voltage drops stemming from fluctuating battery levels before initiating an automatic shutdown sequence when the minimum threshold is met. This automatic procedure, similar to the power ignition management's timed delay, allows the computer to properly save data during the automatic power off sequence before the minimal voltage levels halt all computing operations. The ACO series also features robust fault tolerance with overvoltage, overcurrent, and reverse polarity protections against transient conditions that may occur from the vehicle electrical system, external interaction, or by alternator load dumps.

### RUGGED DESIGN

Purpose-built for mobile computing environments, the ACO series in-vehicle computers excel in harsh operating conditions where high shock and vibration are commonplace with features including a completely cableless internal component design and M12 lockable connectors for secure integration. Constructed with high quality industrial grade aluminum that withstands an extended wide range operating temperature of -40° to 70°C, the ACO series are highly durable for protracted use.

# CERTIFICATIONS AND COMPLIANCE

The ACO in-vehicle computer solutions are fully compliant with international standards for CE, FCC, E-Mark, EN50155, EN50121-3-2 for electronic instruments installed onto rolling stock or into vehicles that ensure EMC compatibility, strict operating reliability, and overall safety regulations that meet the requirements set by an accredited certifying body.



#### COMPLETE LINE OF EMBEDDED SYSTEM SOLUTIONS ALSO AVAILABLE:

#### In-Vehicle Computers – ACO Series

Machine Vision Computers – VCO Series Rugged Industrial Computers – RCO Series Fanless Mini PC Computers – BCO Series Industrial Touch Displays and Panel PC Computers – VIO Series



ACO Series	ACO-6000	ACO-6010	ACO-6011E/P
(me) CORE 15 Trade			
Ordering P/N	ACO-6000-P	ACO-6010-16L-P , ACO-6010-16L-P ACO-6010-16L-M12-P , ACO-6010-16P-M12-P	ACO-6011E-P ACO-6011P-P
Processors	7 <sup>th</sup> Gen Intel <sup>®</sup> Core <sup>™</sup> i7-7700T, Quad Core, 8MB cache, up to 3.8 GHz 6 <sup>th</sup> Gen Intel <sup>®</sup> Core <sup>™</sup> i7-6700TE, Quad Core, 8MB Cache, up to 3.4 GHz   7 <sup>th</sup> Gen Intel <sup>®</sup> Core <sup>™</sup> i5-7500T, Quad Core, 6MB cache, up to 3.3 GHz 6 <sup>th</sup> Gen Intel <sup>®</sup> Core <sup>™</sup> i5-6500TE, Quad Core, 6MB Cache, up to 3.3 GHz   7 <sup>th</sup> Gen Intel <sup>®</sup> Core <sup>™</sup> i3-7101TE, Dual Core, 3MB Cache, 3.4 GHz 6 <sup>th</sup> Gen Intel <sup>®</sup> Core <sup>™</sup> i3-6100TE, Dual Core, 4MB Cache, 2.7 GHz		
Memory	2x DDR4 1866/2133MHz SODIMM, Max. up to 32GB		
Storage Bays	2x Internal 2.5 SATA HDD Bay ; 2x Removable 2.5 SATA HDD Bay 2x mSATA (shared by 2x Mini PCle)		
Mini PCIe Slots	3x Full-size Mini PCle (shared by 2x mSATA)		
Universal I/O Slot (Front)	2	2	3
Network Modules (Front)	1x or 2x of the following modules: 4x LAN RJ45, 4x LAN M12, 4x PoE RJ45, or 4x PoE M12 (each module consumes 1x Universal I/O slot)	16x LAN RI45, 16x LAN M12, 16x POE RJ45, or 16x POE M12	1x or 2x of the following modules: 4x LAN RJ45, 4x LAN M12, 4x PoE RJ45, or 4x PoE M12 (each module consumes 1x Universal I/O slot)
Expansion Slots	None	None	ACO-6011E: 1x PCle x16 ACO-6011P: 1x PCl

ACO Series	ACO-3000	ACO-3011E/P	ACO-3022EE/PP		
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Ordering P/N	ACO-3000-P	ACO-3011E-P ACO-311P-P	ACO-3022EE-P ACO-3022PP-P		
Processors	5 <sup>th</sup> Gen Intel® Core™ i5-5350U Processor, Dual Core, 3MB Cache, up to 2.9 GHz 5 <sup>th</sup> Gen Intel® Core™ i3-5010U Processor, Dual Core, 3MB Cache, 2.1 GHz 5 <sup>th</sup> Gen Intel® Celeron® Processor 3765U, Dual Core, 2MB Cache, 1.9 GHz				
Memory	1x 204-Pin DR3L 1333/1600MHz SODIMM, 8GB max				
Storage Bays	1x Internal 2.5 SATA HDD Bay ; 1x Removable 2.5 SATA HDD Bay 2x mSATA (shared by 2x Mini PCIe)				
Mini PCIe Slots	2x Full-size Mini PCIe (shared by 2x mSATA)				
Universal I/O Slot (Front)	1	2	2		
Network Modules (Front)	4x LAN RI45, 4x LAN M12, 4x POE RI45, or 4x POE M12 (consumes 1x Universal I/O slot)				
Expansion Slots	None	ACO-3011E: 1x PCIe x4 ACO-3011P: 1x PCI	ACO-3022EE: 2x PCle x4 ACO-3022PP: 2x PCl		

