



Embedded Products – Key Differentiator Overview

Calvin Chen, Product Manager/Embedded Computing

Embedded Product Family

- Vehicle Fanless System (ACO)
- Rugged Fanless System (RCO)
- Basic Fanless System (BCO)
- Machine Vision System (VCO)
- Waterproof Fanless System (WCO)



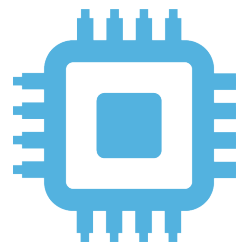
RCO Series



VCO Series



ACO Series



BCO Series



WCO Series

COMING SOON

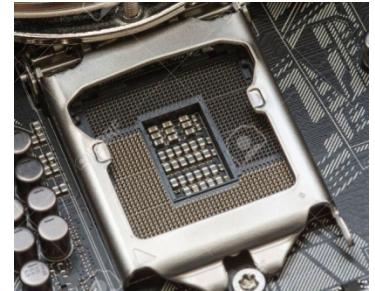
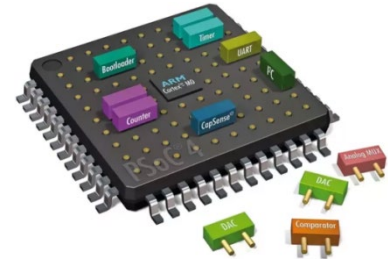
COMING SOON

Key Differentiators

- SoC or Socket
- Processor Family
- Core Count
- Windows Operating System Support
- Operating Temperature Range
- Power Ignition Management

SoC or Socket

- SoC stands for System on a Chip
- SoC is a single package that combines both the CPU and chipset
- This allows for smaller form factor design
- Improves thermal profile
- Overall cost and power consumption reduction
- Unlike a socket design, the CPU is locked to the system board



Processor Family

- Bay Trail (SoC) – released in Q4/2013
- Broadwell (SoC) – released in Q1/2015
- Skylake (Socket / SoC) – released in Q4/2015
 - Skylake-S is the desktop variant (socket)
 - Skylake-U is the mobile variant (SoC)
- Apollo Lake (SoC) – released in Q3/2016
- Kaby Lake (Socket) – released in Q1/2017



Core Count

- Bay Trail J1900 – Quad Core
- Broadwell (SoC) – Dual Core
- Skylake (Socket / SoC) – i3 or lower (Dual Core), i5/i7 (Quad Core)
- Apollo Lake (SoC) – Quad Core
- Kaby Lake (Socket) – i3 (Dual Core), i5/i7 (Quad Core)



Windows Operating System Support

- Windows 7 was designed more than 10 years ago before any SoC existed
- For Windows 7 to properly run on any modern SoC device, device drivers and firmware need to emulate Windows 7's expectations for interrupt processing, bus support, and power states
- In order for Intel to maintain legacy Windows 7 support, they will need to add additional hardware to their CPU design



Bay Trail
Broadwell
Skylake



Apollo Lake
Kaby Lake
Coffee Lake

Operating Temperature Range

- -20C to 50C (SoC)
 - BCO-1000 (Bay Trail)
- -25C to 50C (Socket)
 - RCO/WCO-3600 (Skylake-S)
- -25C to 70C (Socket)
 - RCO/ACO-6000 (Skylake-S / Kaby Lake)
 - ACO-6000 (Skylake-S / Kaby Lake)
 - VCO-6000 (Skylake-S / Kaby Lake)
- -40C to 70C (SoC)
 - RCO-1000 (Bay Trail)
 - RCO/ACO-3000 (Broadwell)
 - RCO/VCO/WCO-3100 (Bay Trail)
 - RCO/VCO/WCO-3200 (Apollo Lake)
 - RCO/VCO/WCO-3400 (Skylake-U)



Power Ignition Management

- For in-vehicle use which ties the system to the vehicle's ignition system
- Allows the system to safely power off when the vehicle's ignition is turned off
- This ensure the OS will not be corrupted when the vehicle is turned off
- Allows the user to set the power off delay time from 0 second up to 2 hours intervals
- This feature is available now only on the ACO series
- **Going forward, this will be a standard feature on all new RCO series (3100, 3200, 3400, and 3600)**



New Model # Naming Convention

- 3100 series = Bay Trail (SoC)
- 3200 series = Apollo Lake (SoC)
- 3400 series = Skylake-U (SoC)
- 3600 series = Skylake-S / Kaby Lake (Socket)

Key Differentiator Matrix

Model	Core Count	Windows	Temp Range	Power Ignition
Bay Trail (SoC)				
BCO-1000	Quad	Windows 7 / 10	-20C to 50C	
RCO-1000	Quad	Windows 7 / 10	-40C to 70C	
RCO-3100	Quad	Windows 7 / 10	-40C to 70C	Yes
VCO-3100	Quad	Windows 7 / 10	-40C to 70C	Yes
WCO-3100	Quad	Windows 7 / 10	-40C to 70C	Yes
Broadwell (SoC)				
RCO-3000	Dual	Windows 7 / 10	-40C to 70C	
ACO-3000	Dual	Windows 7 / 10	-40C to 70C	Yes
Apollo Lake (SoC)				
RCO-3200	Quad	Windows 10	-40C to 70C	Yes
VCO-3200	Quad	Windows 10	-40C to 70C	Yes
WCO-3200	Quad	Windows 10	-40C to 70C	Yes
Skylake-U (SoC)				
RCO-3400	Dual	Windows 7 / 10	-40C to 70C	Yes
VCO-3400	Dual	Windows 7 / 10	-40C to 70C	Yes
WCO-3400	Dual	Windows 7 / 10	-40C to 70C	Yes
Skylake-S / Kaby Lake (Socket)				
RCO-6000	Dual / Quad	Windows 7 / 10	-25C to 70C	
ACO-6000	Dual / Quad	Windows 7 / 10	-25C to 70C	Yes
VCO-6000	Dual / Quad	Windows 7 / 10	-25C to 70C	
RCO-3600	Dual / Quad	Windows 7 / 10	-25C to 50C	Yes
WCO-3600	Dual / Quad	Windows 7 / 10	-25C to 50C	Yes

ACO (Vehicle Fanless System)

ACO-6000

Windows 10 only w/ Kaby Lake

Skylake / Kaby Lake i3 / i5 / i7 CPU
2x SO-DIMM (32GB max)
8x USB, 4x COM, 2x GbE
-25 ~ 70 °C, 9~48VDC
Ignition Power Management



ACO-6010-16X

Windows 10 only w/ Kaby Lake

Skylake / Kaby Lake i3 / i5 / i7 CPU
2x SO-DIMM (32GB max)
8x USB, 4x COM, 2x GbE
16x PoE / LAN w/ M12 optional
-25 ~ 70 °C, 9~48VDC
Ignition Power Management



ACO-3000

Broadwell i5-5350U/i3-5010U/3765U
1x SO-DIMM (8GB max)
8x USB, 4x COM, 2x GbE
-25 ~ 70 °C, 9~48VDC
Ignition Power Management



Q4/2018

RCO (Rugged Fanless System)

Windows 10 only w/ Kaby Lake

RCO-6000

Skylake / Kaby Lake i3 / i5 / i7 CPU
2x SO-DIMM (32GB max)
8x USB, 4x COM, 2x GbE
-25 ~ 70 °C, 9~48VDC



Windows 10 only

RCO-3200

Apollo Lake N4200 (2.5Ghz, quad core)
1x SO-DIMM (8GB max)
Up to 10 x LAN or 8 x PoE
-40 ~ 70°C, 9~50VDC



RCO-3600

Skylake / Kaby Lake i3 / i5 / i7 CPU
2x SO-DIMM (32GB max)
-25 ~ 50 °C, 9~50VDC



COMING SOON

RCO-3000

Broadwell i5-5350U/i3-5010U/3765U
1x SO-DIMM (8GB max)
4x USB, 2x COM, 2x GbE
-25 ~ 70 °C, 9~48VDC



COMING SOON

RCO-1000

Bay Trail J1900/E3827/E3845
1x SO-DIMM (8GB max)
4x USB, 2x COM, 2x GbE
-25 ~ 70 °C, 9~48VDC



Windows 10 only w/ Kaby Lake

RCO-6020-1050Ti

Skylake / Kaby Lake i3 / i5 / i7 CPU
GTX 1050Ti GPU (1.98 TFLOPS)
2x SO-DIMM (32GB max)
8x USB, 4x COM, 2x GbE
-25 ~ 60 °C, 9~48VDC



RCO-3400

Skylake-U i3 / i5 / i7 CPU (dual core)
1x SO-DIMM (16GB max)
Up to 4x PoE
-40 ~ 70°C, 9~50VDC



COMING SOON

RCO-3100

Bay Trail J1900 (2.0Ghz, quad core)
1x SO-DIMM (8GB max)
Up to 10x LAN or 8x PoE
-40 ~ 70°C, 9~50VDC



Q4/2018

Q1/2019

BCO (Basic Fanless System)

BCO-1000

- Bay Trail J1900 (2.0Ghz, quad core)
- 1x SO-DIMM (8GB max)
- 1x LAN
- 2 x COM port (up to six)
- 4x DIO optional
- -20 ~ 50°C, 9~30VDC



Q4/2018

VCO (Machine Vision System)

VCO-6000

Windows 10 only w/ Kaby Lake

- Skylake / Kaby Lake, i3 / i5 / i7
- Triple display
- Up to 5 expansion slots
- -25~70°C, 9~50VDC
- GTX 1050Ti GPU optional



VCO-6020-1050Ti

Windows 10 only w/ Kaby Lake

- Skylake / Kaby Lake, i3 / i5 / i7
- GTX 1050Ti GPU (1.98 TFLOPS)
- Triple display
- -25~60°C, 9~50VDC
- GTX 1050Ti GPU



VCO-3200

Windows 10 only

- Apollo Lake N4200 (2.5Ghz, quad core)
- Triple display
- Up to 4 expansion slots
- -40~70°C, 9~50VDC



VCO-3100

- Bay Trail J1900 (2.0Ghz, quad core)
- Dual display
- Up to 4 expansion slots
- -40~70°C, 9~50VDC



COMING SOON

VCO-3400

- Skylake-U i3-6100U / i5-6300U / i7-6600U (dual core)
- Triple display
- Up to 4 expansion slots
- -40 ~ 70°C, 9~50VDC



COMING SOON

Q4/2018

Q1/2019

WCO (Waterproof Fanless System)

WCO-3100 (IP65/IP67)

- Bay Trail J1900 (2.0Ghz, quad core)
- 1x VGA waterproof
- 2x LAN by M12
- 1 x COM
- 1x USB 3.0, 2x USB 2.0
- -40~70°C, 9~50VDC



WCO-3400 (IP65/IP67)

- Skylake-U SoC / i7, i5, and i3 (dual core)
- 1x VGA waterproof
- 2x LAN by M12
- 1 x COM
- 1x USB 3.0, 2x USB 2.0
- -40~70°C, 9~50VDC



WCO-3200 (IP65/IP67)

- Apollo Lake N4200 (2.5Ghz, quad core)
- 1x VGA waterproof
- 2x LAN by M12
- 1 x COM
- 1x USB 3.0, 2x USB 2.0
- -40~70°C, 9~50VDC



Windows 10 only

WCO-3600 (IP65/IP67)

- Skylake-S i3, i5, i7 (dual / quad core)
- 1x VGA waterproof
- 2x LAN by M12
- 1 x COM
- 1x USB 3.0, 2x USB 2.0
- -25~50°C



IP65 is dustproof and water splash



IP65 + temporarily water immersion

Q1/2019