



Multi-core Processing in a Small Form Factor

Balancing size, performance, and stability are challenges that industrial computers face at the rugged edge. The three characteristics limit each other's capabilities from reaching maximum efficiency. Edge AI and other resource-intensive applications demand higher processing power but are restricted to larger models due to heat instability in smaller computers. Larger models, when paired with accelerators like GPUs, offer better performance but enterprises require smaller dimensions for their deployments.

C&T has overcome this obstacle by implementing a multi-core socket CPU into a small robust enclosure. The RCO-3000-CML Series brings to market Intel's 10th generation processor (also known as Comet Lake) and Q470E chipset for high-performance computing within a small form factor. With condensed dimensions, the RCO-3000-CML can reliably handle real-time workloads and offer ultra-low latency responses for Industry 4.0 applications.



Key Applications



Industrial Automation & Robotics



Machine Vision and Smart Surveillance



Intelligent Transportation



IoT and Edge Compute



Retail & Kiosk Machines



Smart Agriculture



Optimized for Robust IoT Applications

Powered by Intel's 10th Gen Intel CML S Processor and Q470E Chipset, the RCO-3000-CML delivers outstanding performance when handling data-heavy and resource-demanding workloads. The processor utilizes LGA 1200 for greater processing power with additional pins over LGA 1151 while maintaining a low 35W TDP, ensuring stable thermal outputs.

With this advanced processor, the RCO-3000-CML can support up to 64GB of DDR4 RAM at 2666/2933MHz.



Data Storage Adaptability at the Rugged Edge

Industrial deployments operate and generate sensitive business-critical insights. The RCO-3000-CML offers multiple storage options, an internal 2.5" SATA SSD, external 2.5" SATA SSD, and supports multiple RAID protocols (0,1, and 5) for data redundancy to prevent data loss or corruption. The external hot-swappable and tool-less 2.5" SATA SSD Bay allows enterprises to seamlessly offload data for further data analysis.



Immersive Triple 4K Display

For immersive visual experiences, the RCO-3000-CML supports up to three 4K displays. It is capable of driving multiple high-resolution visuals simultaneously for various display applications such as digital signage, industrial automation telemetry, smart kiosks, and more.





High-Speed Connectivity

Enable PoE & I/O Flexibility with EDGEBoost I/O

The RCO-3000-CML is built with an EDGEBoost Bracket, making it compatible for EDGEBoost I/O modules. These modular add-ons are optimized for additional I/O expansion with optional Power-over-Ethernet (PoE), IoT compatibility, 5G wireless connectivity, and even M.2 hardware acceleration. EDGEBoost I/O are interchangeable, making configurability seamless for versatile deployment applications.

Compatible EDGEBoost I/O Modules:



Edge AI

- 1x M.2 M-Key Module
- 2x M.2 B-Key (with 1x SIM Slot) Module



I/O

- 4x USB 3.0, Type-A Ports



Connectivity

- 4x RJ45 LAN/PoE
- 4x M12 LAN/PoE
- 2x 10GbE

5G Wireless Connectivity

For remote or mobile edge deployments, the RCO-3000-CML is equipped with 2x SIM sockets to utilize the latest wireless technologies for consistent, reliable, and high-speed connectivity. Dual-SIM allows the RCO-3000-CML to switch SIM effortlessly to ensure optimal service range and steady connectivity. 5G technology provides a broadened range of bandwidth, as well as machine-to-machine (M2M) communications for wide-range and low latency (<1 ms) wireless connections.



On-board CAN Bus

Intelligent vehicle insights and telemetry applications such as fleet management are enabled through the RCO-3000-CML's on-board CAN Bus.



Built Rugged. Built Ready.



Fanless & Cableless Engineering

The RCO-3000-CML has been specifically engineered for industrial settings where environmental factors such as debris, dust, and contaminants pose a significant threat to the reliability and lifespan of computing solutions. The RCO-3000-CML is designed with a fanless and cableless architecture to eliminate the risk of sensitive internal components being exposed to environmental challenges during mission-critical operations. Through a hardened enclosed chassis and passive cooling technology, the RCO-3000-CML can effectively dissipate heat without a fan and ensure secure connectivity, resulting in a rugged and dependable computing solution for industrial environments.

Wide Operating Temperature Range

From scorching hot heat waves to freezing arctic blizzards, the RCO-3000-CML remains in operation for ultimate industrial reliability with an operating temperature range of **-25°C to 70°C**. This wide operating temperature range displays the true durability of the RCO-3000-CML for ensured reliability in various industrial deployments.

Wide Power Input Voltage Range

In deployments where power is fluctuating and disruptive, the RCO-3000-CML continues to persevere with a widened power input voltage range of **9~48VDC**. Different power protection protocols are also incorporated such as overvoltage, overcurrent, and reverse polarity protection for advanced ruggedness.



Shock & Vibration Resistance

It is important to recognize the incompatibility between shock/vibrations and computers. When consumer-grade computers are exposed to even minor levels of shock or vibration in certain applications, they are highly vulnerable to system failure. In contrast, the RCO-3000-CML is well-suited to operate reliably in rugged environments with frequent shock and vibration, such as vehicular deployments. Tested under MIL-STD-810G, the RCO-3000-CML is capable of resistance up to **50G shock and 5Grms vibration** for the toughest deployment applications.



TPM 2.0 Encryption

Data security and protection is critical to edge deployments. By integrating TPM 2.0 into the RCO-3000-CML, all sensitive information and data are encrypted at a root-level to ensure the highest level of cybersecurity. Because TPM 2.0 is hardware-based, it can detect physical tampering and identify data breaches during system startup.



Certifications

For safety assurance and accredited testing, the RCO-3000-CML has undergone numerous testing protocols to ensure product reliability and safety under strict industry standards. The RCO-3000-CML small form factor industrial computer carries full certifications under UL, an NRTL (Nationally Recognized Testing Laboratory), CE, and FCC.

We Create World-Class Edge Computers For Your Industry-Leading Solutions

NEW

Multi-core Processing in a Small Form Factor

RCO-3000-CFL VS RCO-3000-CML



RCO-3000-CFL / RCO-3000-CFL-2E

RCO-3000-CML

Processor	Support 8 th /9 th Gen Intel® CFL-R S Processor (LGA 1151, 65W/35W TDP)	Support 10 th Gen Intel® CML S Processor (LGA 1200, 35W TDP)
Memory	2x 260-Pin DDR4 2400/2666MHz SODIMM. Max. up to 64GB (Un-buffered and Non-ECC)	2x 260-Pin DDR4 2666/2933MHz SODIMM. Max. up to 64GB
Display	2x DP 4K, 1x DVI-I (WUXGA)	3x DisplayPort with Real 4K Quality (1x support HDMI)
System Chipset	Intel® Q370 Express Chipset	Intel® Q470E Express Chipset
LAN Chipset	2x 1GbE Ethernet	1x 1GbE, 1x 2.5 GbE2: Intel I225 (Support Wake-on-LAN and PXE)
Expansion	1x M.2 E-Key, 2x Mini PCIe	1x M.2 E Key, 1x M.2 B Key, 1x mPCIe
PCIe	Model: RCO-3000-CFL-2E 2x PCIe x16 (8-lane)	-
I/O	4x USB 3.2 Gen 2, 4x USB2.0 (2x internal), 5x RS-232/422/485 (2x internal), 16x isolated digital I/O, 2x GbE RJ45 (Support Wake-on-LAN and PXE)	6x USB 3.2 Gen 2, 1x USB 3.2 Gen 1 (internal), 1x USB 2.0 (internal) 5x RS-232/422/485 (2x internal), 16x isolated digital I/O, 2x GbE RJ45 (Support Wake-on-LAN and PXE)
Expansion Modules	<ul style="list-style-type: none"> • 2x 10Gb Ports • 4x RJ45 LAN • 4x M12 LAN • 4x USB 3.0 Ports 	<ul style="list-style-type: none"> • 2x 10Gb Ports • 4x RJ45 LAN / PoE Ports • 4x M12 LAN / PoE Ports • 4x USB 3.0 Ports • M.2 M Key for AI/NVMe • M.2 B Key for AI/5G/NVMe
Power	Optional AC/DC 24V/11.67A, 280W Optional AC/DC 24V/9.2A, 220W	Optional AC/DC 24V/5A, 120W Optional AC/DC 24V/9.2A, 220W
Certification	CE, FCC Class A	CE, FCC Class A, UL, EMC Conformity with EN50155 & EN50121-3-2
CAN	-	2x CAN 2.0 A/B 2-pin Internal header
Operating Temperature	-25°C to 60°C (35W CPU) -25°C to 50°C (65W CPU)	-25°C to 70°C (35W CPU)
Dimension	RCO-3000-CFL: 192 (W) x 197 (D) x 60.3 (H) mm RCO-3000-CFL-2E: 192 (W) x 197 (D) x 107.8 (H) mm	192 (W) x 227 (D) x 60.3 (H) mm