

RCO-3000-CML

Superior Fanless Embedded System with LGA 1200 for Intel 10th Gen CPU & Q470E PCH

Features

- Support 10th Gen Intel® CML S Processor (LGA 1200, 35W TDP)
- Intel® Q470E Express Chipset
- Triple Independent Display by 3x DisplayPort
- 2x Intel® GbE supporting Wake-on-LAN and PXE
- 1x Full-size Mini PCIe and 2x External SIM socket
- 2x 2.5" SATA HDD Bay (1x Internal) and 1x mSATA, with RAID 0, 1, 5 support
- 1x M.2 (E Key, PCIe x1, USB 2.0, 2230)
- 1x M.2 (B Key, 2242/3042/3052, Support NVMe/5G/AI)
- 5x RS-232/422/485 (2x internal)
- 6x USB 3.2 Gen 2 (10 Gbps), 1x USB 3.2 Gen 1 (internal)
- 8x DI + 8x DO with isolation
- 9 to 48VDC Wide Range Power Input Supporting AT/ATX Mode
- Wide Operating Temperature (-25°C to 70°C)
- TPM 2.0 Supported
- UL Listed



Specifications

System

Processor
Support 10th Gen Intel® CML S Processor (LGA 1200, 35W TDP)
- Intel® Core™ i9-10900TE, 10 Cores, 20MB Cache, up to 4.5 GHz, TDP 35W
- Intel® Core™ i7-10700TE, 8 Cores, 16MB cache, up to 4.4 GHz, TDP 35W
- Intel® Core™ i5-10500TE, 6 Core, 12MB Cache, up to 3.7 GHz, TDP 35W
- Intel® Core™ i3-10100TE, 4 Cores, 9MB Cache, up to 3.6 GHz, TDP 35W
- Intel® Pentium® G6400TE, 2 Cores, 4MB Cache, 3.2 GHz, TDP 35W
- Intel® Celeron® G5900TE, 2 Cores, 2MB Cache, 3.0 GHz, TDP 35W

System Chipset	Intel® Q470E Express Chipset
LAN Chipset	GbE1: Intel I219 (Support Wake-on-LAN and PXE) 2.5 GbE2: Intel I225 (Support Wake-on-LAN and PXE)
Audio Codec	Realtek ALC888S
System Memory	2x 260-Pin DDR4 2666/2933MHz SODIMM. Max. up to 64GB
BIOS	AMI 256Mbit SPI BIOS
Watchdog	Software Programmable Supports 1~255 sec. System Reset
TPM	TPM 2.0

Display

Display Port	3x DisplayPort, support resolution 4096 x 2304 (1x DP Port Co-layout HDMI Connector)
HDMI	Yes, Shared by 1x DP port
Multiple Display	Triple Display

Storage

mSATA	1x mSATA
SIM Socket	2x External SIM socket (Mini PCIe attached)
SSD/HDD	1x Internal 2.5" SATA HDD Bay (support H=9mm) 1x Removable 2.5" SATA HDD Bay (support H=7mm, hot-swappable) Support RAID 0, 1, 5

Expansion

M.2	1x M.2 (E Key, PCIe x1, USB 2.0, 2230), 1x M.2 B Key, 2242/3042/3052 (PCIex2, Support AI Module/NVMe Storage) (PCIex1&USB 3.2 Gen1, Support 4G/5G)
Mini PCIe	1x Full-size Mini PCIe

Expansion Modules
Occupied One Universal I/O Slot:
• 4-port GbE module with Intel® I350 Chipset, RJ-45 or M12 connector (PoE optional)
• 2-Port 10GbE RJ45 with Intel X710 Chipset
• 4-Port USB with Renesas uPD720201K8 host controller (share PCIe Gen2 x1 bandwidth)
• 1x M.2 M-Key (PCIe x4 Lane, 2242/2260) for NVMe/AI Module
• 2x M.2 B-Key 2242/3042/3052:
- 2x M.2 (PCIe x2 Lane) for NVMe/AI Module
- 1x M.2 (PCIe x2 Lane) for NVMe/AI Module and 1x M.2 (PCIe x1 Lane + USB 3.2 Gen 1) for 4G/5G Module, 1x External SIM socket (M.2 attached)

I/O

Audio	1x Line-out
CAN	2x CAN 2.0 A/B 2-pin Internal header
COM	3x RS-232/422/485 ; 2x RS-232/422/485 (internal)
DIO	8 in / 8 out (Isolated)
LAN	2x RJ45
Universal I/O Bracket	1x Universal I/O Bracket (By mini PCIe interface)

USB	6x USB 3.2 Gen 2 (10Gbps) 1x USB 3.2 Gen 1 (5 Gbps, internal) 1x USB 2.0 (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 CMOS Battery 1x 4-Pin FAN Connector

Operating System

Windows	Windows 10
Linux	Linux kernel

Power

Power Adapter	Optional AC/DC 24V/5A, 120W Optional AC/DC 24V/9.2A, 220W
Power Mode	AT, ATX
Power Ignition Sensing	Power Ignition Management
Power Supply Voltage	9~48VDC
Power Connector	3-pin Terminal Block
Power Protection	OVP (Over Voltage Protection) OCP (Over Current Protection) Reverse Protection

Environment

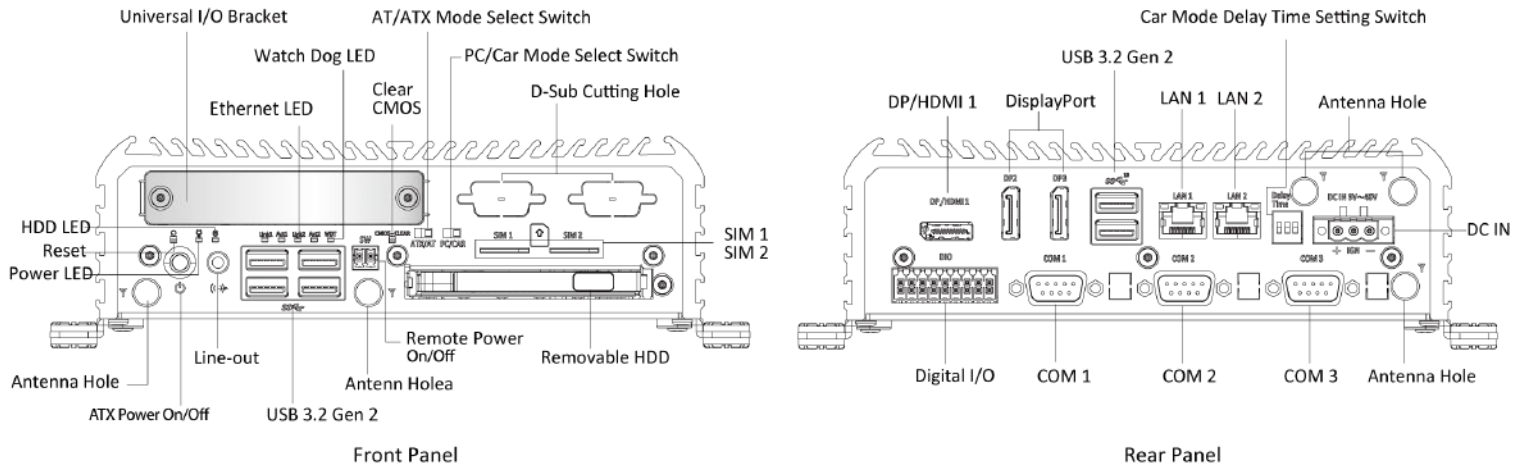
Operating Temperature	-25°C to 70°C (35W CPU)
Storage Temperature	-30°C ~ 85°C
Relative Humidity	10% to 95% (non-condensing)
Certification	UL, CE, FCC Class A, EMC Conformity with EN50155 & EN50121-3-2
Vibration	IEC60068-2-64:2008 With HDD: 1 Grms (5 - 500 Hz, 0.5 hr/axis) With SSD: 5 Grms (5 - 500 Hz, 0.5 hr/axis) Designed to comply with MIL-STD-810G Method 514.7 Procedure I
Shock	IEC60068-2-27:2008 With SSD: 50G half-sin 11ms Designed to comply with MIL-STD-810G Method 516.7 Procedure I

Physical

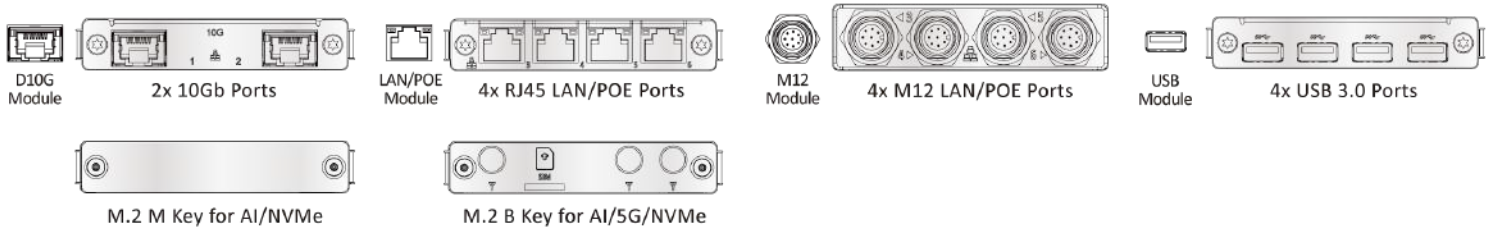
Dimensions	192 (W) x 227 (D) x 60.3 (H) mm
Weights	3.3kg ~ 4.1 kg
Construction	Extruded Aluminum with Heavy Duty Metal
Mounting Options	Wall Mounting

- For 10th CPUs configured to run at 35W, operating temperatures will be limited to 70°C.
- 35W 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 10 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 requirements.
- All specifications and photos are subject to change without notice.

External I/O Mechanical Layout

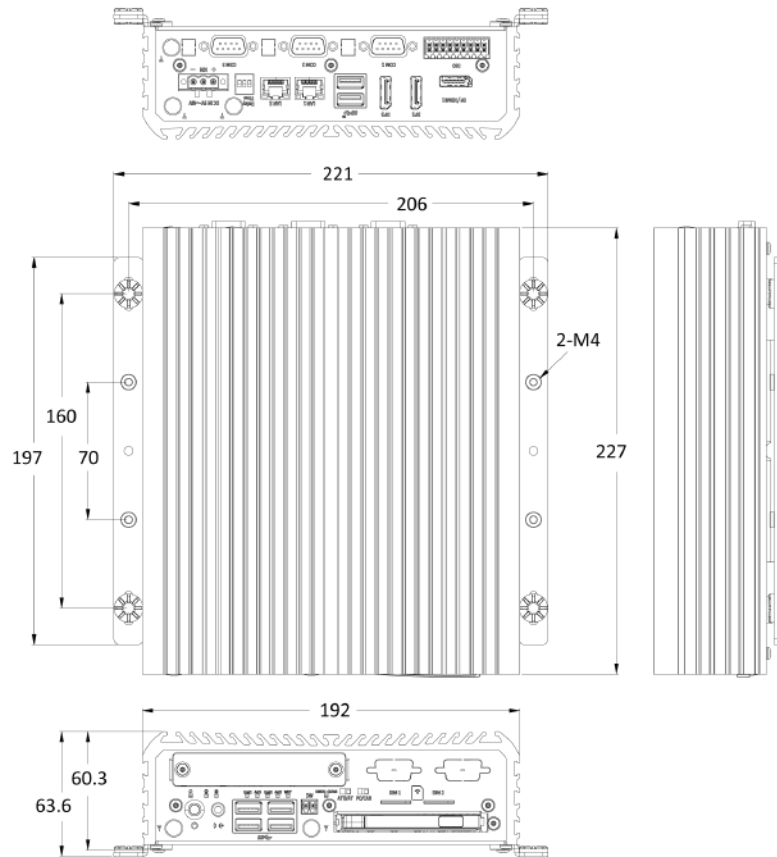


Available Modules



Dimension

Unit: mm



Available Models

Model No.	Description
RCO-3000-CML	Advanced Fanless Embedded System w/ LGA 1200 for Intel® 10th Gen CPU & Q470E PCH, 2x LAN
RCO-3000-CML-4L	Advanced Fanless Embedded System w/ LGA 1200 for Intel® 10th Gen CPU & Q470E PCH, 6x LAN
RCO-3000-CML-4LM12	Advanced Fanless Embedded System w/ LGA 1200 for Intel® 10th Gen CPU & Q470E PCH, 2x LAN, 4x M12 LAN
RCO-3000-CML-4P	Advanced Fanless Embedded System w/ LGA 1200 for Intel® 10th Gen CPU & Q470E PCH, 2x LAN, 4x PoE
RCO-3000-CML-4PM12	Advanced Fanless Embedded System w/ LGA 1200 for Intel® 10th Gen CPU & Q470E PCH, 2x LAN, 4x M12 PoE
RCO-3000-CML-D10G	Advanced Fanless Embedded System w/ LGA 1200 for Intel® 10th Gen CPU & Q470E PCH, 2x LAN, 2x 10G LAN
RCO-3000-CML-4U3	Advanced Fanless Embedded System w/ LGA 1200 for Intel® 10th Gen CPU & Q470E PCH, 2x LAN, 10x USB
RCO-3000-CML-M2MK	Advanced Fanless Embedded System w/ LGA 1200 for Intel® 10th Gen CPU & Q470E PCH, 2x LAN, 1x M.2 M Key
RCO-3000-CML-2M2BK	Advanced Fanless Embedded System w/ LGA 1200 for Intel® 10th Gen CPU & Q470E PCH, 2x LAN, 3x M.2 B Key

Optional Accessories

Model No.	Description
1-E09A12002	Adapter AC/DC 24V 5A 120W with 3pin Terminal Block Plug 5.0mm Pitch
1-E09A22102	Adapter AC/DC 24V 9.2A 220W with 3pin Terminal Block Plug 5.0mm Pitch
SFICBL022	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 RCO-3000-CML
- 1x Wall Mount Kit
- 1x Accessory Kit