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INDUSTRIAL COMPUTER
RCO-3000-CML

Small Form Factor Computer with LGA 1200 for 10th Gen Intel 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
- Edge AI Ready with Hailo-8™ (26 TOPS / 2.5W)
- 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
	- Intel® Core™ i7-10700TE, 8 Cores, 16MB cache, up to 4.4 GHz
	- Intel® Core™ i5-10500TE, 6 Core, 12MB Cache, 3.7 GHz
	- Intel® Core™ i3-10100TE, 4 Cores, 9MB Cache, up to 3.6 GHz
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
AI Accelerator	Supports 3x Hailo-8™ modules
TPM	TPM 2.0

Display

Display Port	3x DisplayPort 1.4a, 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 10/11
Linux	Linux kernel

Power

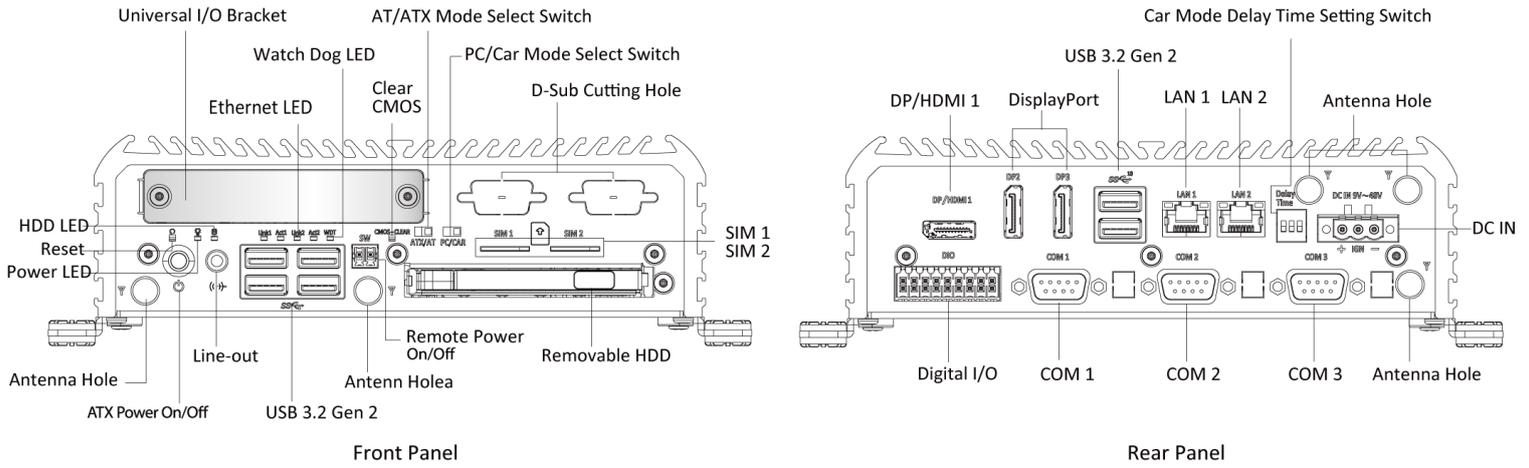|	
Power Adapter	Optional AC/DC 24V/5A, 120W
	Optional AC/DC 24V/9.2A, 220W
Power Mode	AT, ATX
Power Ignition Sensing	Power Ignition Management
Power Supply Voltage	9~48VDC
Power Connector	3-pin Terminal Block
Power Protection	OVP (Over Voltage Protection)
	OCP (Over Current Protection)
	Reverse Protection

Environment

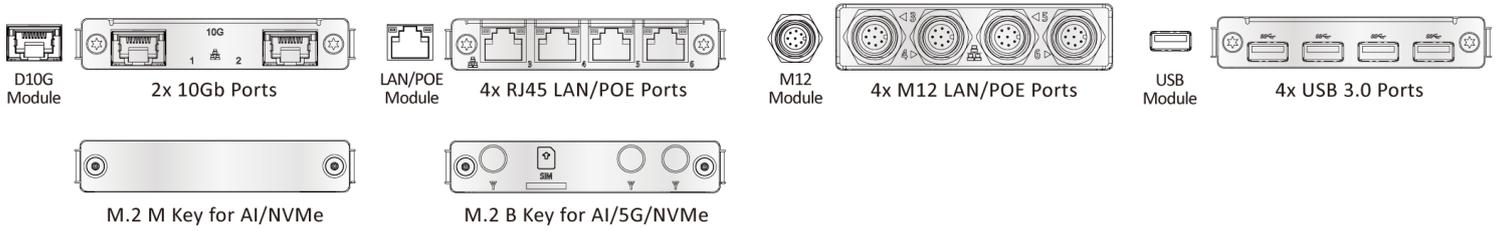|	
Operating Temperature	-25°C to 70°C (35W CPU)
Storage Temperature	-30°C ~ 85°C
Relative Humidity	10% to 95% (non-condensing)
Certification	UL 62368 Ed. 3, CE, FCC Class A,
	EMC Conformity with EN50155 & EN50121-3-2
Vibration	With HDD: 1 Grms (5 - 500 Hz, 0.5 hr/axis)
	With SSD: 5 Grms (5 - 500 Hz, 0.5 hr/axis)
Shock	With SSD: 50G half-sin 11ms

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.
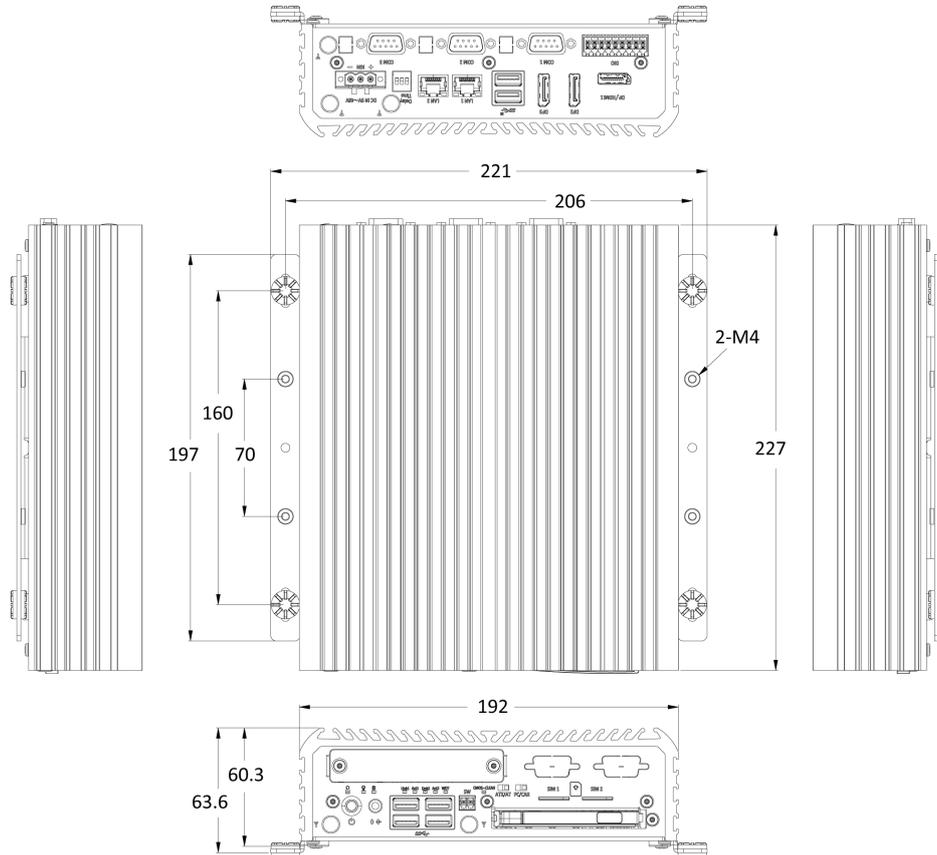
External I/O Mechanical Layout

Universal I/O Bracket
Watch Dog LED
Ethernet LED
AT/ATX Mode Select Switch
PC/Car Mode Select Switch
Clear CMOS
D-Sub Cutting Hole

HDD LED
Reset
Power LED

SIM 1
SIM 2

Antenna Hole
ATX Power On/Off
Line-out
USB 3.2 Gen 2
Antenn Holea
Remote Power On/Off
Removable HDD

Front Panel

Car Mode Delay Time Setting Switch
USB 3.2 Gen 2
DP/HDMI 1
DisplayPort
LAN 1 LAN 2
Antenna Hole

DC IN

Digital I/O
COM 1
COM 2
COM 3
Antenna Hole

Rear Panel

Available Modules

D10G Module

2x 10Gb Ports

LAN/POE Module

4x RJ45 LAN/POE Ports

M12 Module

4x M12 LAN/POE Ports

USB Module

4x USB 3.0 Ports

M.2 M Key for AI/NVMe

M.2 B Key for AI/5G/NVMe

Dimension

Unit: mm

221
206
2-M4
160
197   70
227
192
60.3
63.6

Available Models

Model No.	Description
RCO-3000-CML-P	Small Form Factor Computerw/ LGA 1200 for Intel® 10th Gen CPU & Q470E PCH, 2x LAN

Optional Accessories

Model No.	Description
1-E09A22801	Adapter AC/DC 24V/11.67A 280W 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
999930	Power Cord, 3-pin US Type, 180cm
1-TPCD00002	Power Cord, European Type, 180cm
1-TPCD00001	Power Cord, 3-pin UK Type, 180cm
3-DINR-0004	DIN rail mounting kit

Packing List
• 1x RCO-3000-CML
• 1x Wall Mount Kit
• 1x Accessory Kit

Compliances and Standards

Vibration	With HDD: 1 Grms (5 - 500 Hz, 0.5 hr/axis) With SSD: 5 Grms (5 - 500 Hz, 0.5 hr/axis) IEC60068-2-64:2008 Designed to comply with MIL-STD-810G Method 514.7 Procedure I
Shock	With SSD: 50G half-sin 11ms IEC60068-2-27:2008 Designed to comply with MIL-STD-810G Method 516.7 Procedure I
Operating Temperature	-25°C to 70°C (35W CPU) IEC60068-2-1:2007 (Cold test procedure) IEC60068-2-2:2007 (Dry heat test procedure) IEC60068-2-3:2007 (Damp heat, steady state, test procedure) IEC60068-2-14:2009 (Wide temperature range thermal shock)
EMC	• FCC Class A • CE • ICES-003 • UKCA • Industrial EMC Compliance - EN 61000-4-2: 2009 - EN IEC 61000-4-3: 2020 - EN 61000-4-4: 2012 - EN 61000-4-5: 2014 +A1: 2017 - EN 61000-4-6: 2014
Safety	• UL Safety: UL62368-1, 3rd Ed., (cULus) • Test procedure: CB Scheme • Standard: IEC 62368-1:2018

Exports And Tariff Codes

ECCN	5A992.c
HTS	8471.50.0150
ScheduleB	84.71