

Superior Fanless Embedded System with LGA 1151 for Intel 8th/9th Gen CPU & Q370 PCH



Features

- Support 9th Gen Intel® CFL-R S Processor (LGA 1151, 35W TDP)
- Intel® Q370 Chipset
- Triple Independent Display by 1x DVI-I and 2x DisplayPort
- 2x Intel® GbE supporting Wake-on-LAN and PXE
- 2x Full-size Mini PCIe (shared by 1x mSATA), and 2x SIM socket
- 2x 2.5" SATA HDD Bay with RAID 0, 1, 5 support, 1x mSATA (Shared by 1x Mini PCIe)
- 1x M.2 (E Key, PCIe x1, USB 2.0, 2230, Support CNVi))
- 5x RS-232/422/485 (2x internal)
- 4x USB 3.2 Gen 2 (10 Gbps), 4x USB 2.0 (2x internal)
- 8x DI + 8x DO with isolation
- 9 to 48VDC Wide Range Power Input Supporting AT/ATX Mode
- Wide Operating Temperature (-25°C to 60°C)
- TPM 2.0 Supported
- 2x PCIe x16 (8-Lane)

Specifications

System	
Processor	Support 8th/9th Gen Intel® CFL-R S Processor (LGA 1151, 65W/35W TDP) - Intel® Core™ i7-9700E, 8 Cores, 12MB cache, up to 4.4 GHz - Intel® Core™ i5-9500E, 6 Cores, 9MB Cache, up to 4.2 GHz - Intel® Core™ i3-9100E, 4 Core, 6MB Cache, 3.7 GHz - Intel® Core™ i7-9700TE, 8 Cores, 12MB cache, up to 3.8 GHz - Intel® Core™ i5-9500TE, 6 Cores, 9MB Cache, up to 3.6 GHz - Intel® Core™ i3-9100TE, 4 Core, 6MB Cache, 3.2 GHz - Intel® Core™ i7-8700T, 6 Cores, 12MB cache, up to 4.0 GHz - Intel® Core™ i5-8500T, 6 Cores, 9MB Cache, up to 3.5 GHz - Intel® Core™ i3-8100T, 4 Cores, 6MB Cache, 3.1 GHz - Intel® Pentium® G5400T, 2 Cores, 4MB Cache, up to 3.1 GHz - Intel® Celeron® G4900T, 2 Cores, 2MB Cache, up to 2.9 GHz
System Chipset	Intel® Q370 Express Chipset
LAN Chipset	GbE1: Intel I219LM (Support Wake-on-LAN and PXE) GbE2: Intel I210-AT (Support Wake-on-LAN and PXE)
Audio Codec	Realtek ALC888S
System Memory	2x 260-Pin DDR4 2400/2666MHz SODIMM. Max. up to 64GB (Un-buffered and Non-ECC)
Graphics	Intel® UHD Graphics 610/630
BIOS	AMI 256Mbit SPI BIOS
Watchdog	Software Programmable Supports 1~255 sec. System Reset
TPM	TPM 2.0
Display	
Display Port	2x DisplayPort, support resolution 4096 x 2304
DVI	1x DVI-I, support resolution 1920 x 1200
Multiple Display	Triple Display
VGA	Yes (by optional split cable)
Storage	
M.2	1x M.2 (E Key, PCIe x1, USB 2.0, 2230, Support CNVi)
mSATA	1x mSATA (shared by 1x Mini PCIe)
SIM Socket	2x External SIM socket
SSD/HDD	1x Internal 2.5" SATA HDD Bay (support H=9mm) 1x Hotswap 2.5" SATA HDD Bay (support H=7mm) Support RAID 0, 1, 5
Expansion	
Mini PCIe	2x Full-size Mini PCIe (1x Shared with mSATA)
PCIe	2x PCIe x16 (8-lane)
Expansion Modules	
4-port GbE module with Intel® I350-AT4 Chipset, RJ-45 or M12 connector	
4-Port USB with Renesas uPD720201K8 host controller	
2-Port RJ45 10GbE with Intel X710-AT2 Chipset	
Card Dimension	175 (L) x 111.15 (H) mm
I/O	
Audio	1x Line-out
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	4x USB 3.2 Gen 2 (10Gbps) 4x USB 2.0 (2x 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

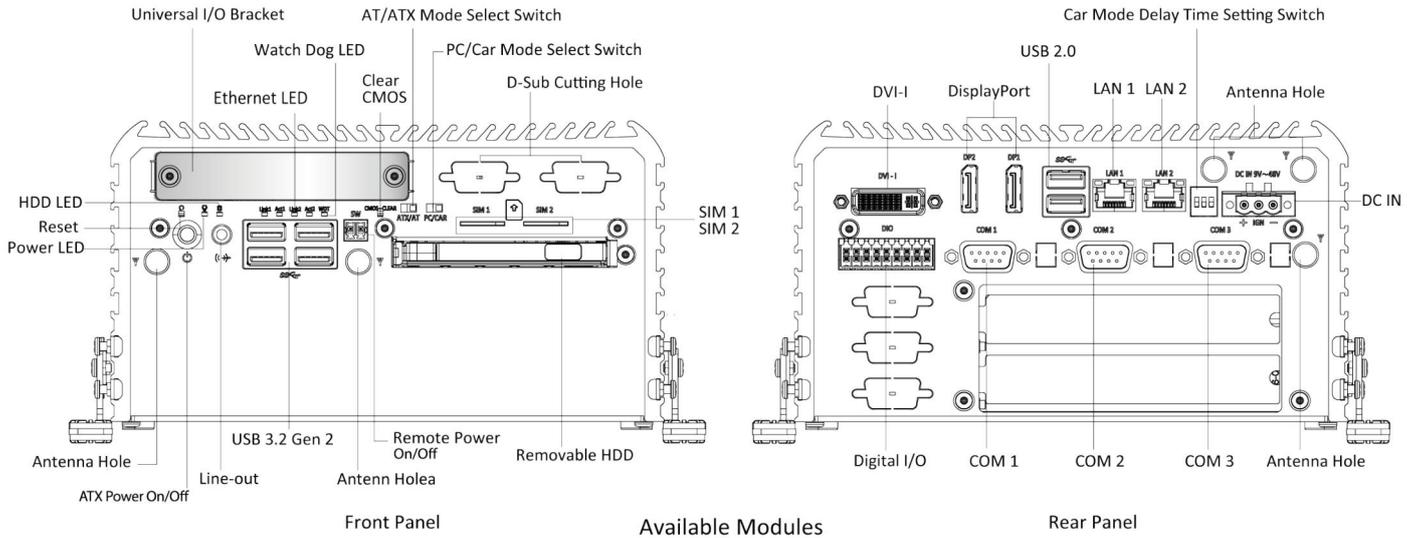
Operating System	
Windows	Windows 10
Linux	Linux kernel
Power	
Power Adapter	Optional AC/DC 24V/11.67A, 280W Optional AC/DC 24V/9.2A, 220W
Power Mode	AT, ATX
Power Ignition Sensing	Power Ignition Management
Power Supply Voltage	9~48VDC
Power Connector	3-pin Terminal Block
Power Protection	Over-Voltage Protection (OVP) Over-Current Protection (OCP) Reverse Polarity Protection (RPP)
Environment	
Operating Temperature	-25°C to 60°C (35W CPU) -25°C to 50°C (65W CPU)
Storage Temperature	-30°C ~ 85°C
Relative Humidity	10% to 95% (non-condensing)
Certification	CE, FCC Class A
Vibration	5 Grms, 5 ~ 500 Hz, 0.5 hr/axis (SSD) 1 Grms, 5 ~ 500 Hz, 0.5 hr/axis (HDD)
Shock	50G, half-sine, 11 ms (SSD)
Physical	
Dimensions	192 (W) x 197 (D) x 107.8 (H) mm
Weights	3.6kg - 4.3 kg
Construction	Extruded aluminum with heavy duty metal
Mounting Options	Wall Mounting / DIN Rail (Optional)

* For 8th/9th CPUs configured to run at 65W, operating temperatures will be limited to 50°C.

** 65W 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 8 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.

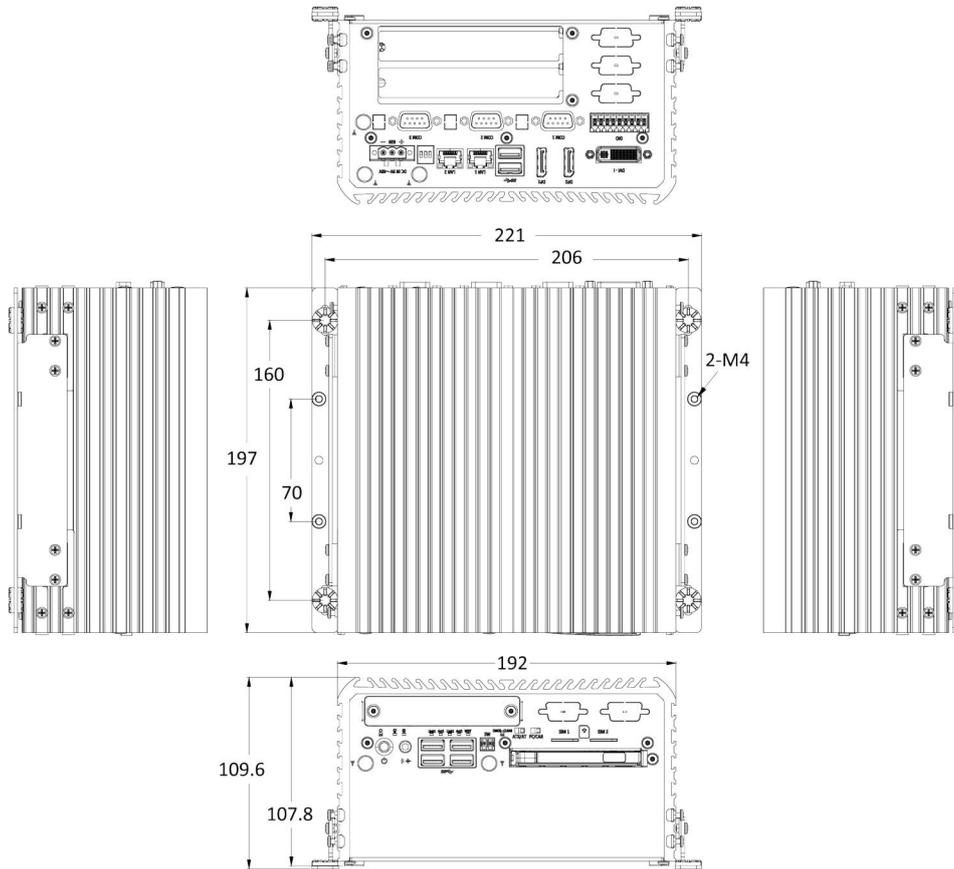
*** All specifications and photos are subject to change without notice.

External I/O Mechanical Layout



Dimension

Unit: mm



Available Models

Model No.	Description
RCO-3000-CFL-2E	Advanced Fanless Embedded System w/ LGA 1151 for Intel® 8th/9th Gen CPU & Q370 PCH, 2x LAN, 2x PCIe x8 Expansion
RCO-3000-CFL-2E-4L	Advanced Fanless Embedded System w/ LGA 1151 for Intel® 8th/9th Gen CPU & Q370 PCH, 6x LAN, 2x PCIe x8 Expansion
RCO-3000-CFL-2E-4LM12	Advanced Fanless Embedded System w/ LGA 1151 for Intel® 8th/9th Gen CPU & Q370 PCH, 2x LAN, 4x M12 LAN, 2x PCIe x8 Expansion
RCO-3000-CFL-2E-D10G	Advanced Fanless Embedded System w/ LGA 1151 for Intel® 8th/9th Gen CPU & Q370 PCH, 2x LAN, 2x 10G LAN, 2x PCIe x8 Expansion
RCO-3000-CFL-2E-4U3	Advanced Fanless Embedded System w/ LGA 1151 for Intel® 8th/9th Gen CPU & Q370 PCH, 2x LAN, 10x USB, 2x PCIe x8 Expansion

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
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-CFL-2
- 1x Utility DVD Driver
- 1x Wall Mount Kit
- 1x Accessory Kit
- 1x DVI to VGA Adapter