



FANLESS EMBEDDED SYSTEMS

# RCO-6122PE series

Superior Fanless Embedded System w/ LGA 1151 for Intel 8<sup>th</sup>/9<sup>th</sup> Gen CPU & Q370 PCH,  
1x PCIe x16, 1x PCI Expansion



## SPECIFICATIONS

### System

#### Processor

Support 8<sup>th</sup>/9<sup>th</sup> 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)<br>GbE2: Intel I210-AT (Support Wake-on-LAN and PXE)<br>GbE3-GbE6: Intel I350-AM4 (Optional)<br>10 GbE1-GbE2: Intel X710-AT2 (Optional) |
| Audio Codec    | Realtek ALC888S                                                                                                                                                                          |
| System Memory  | 2x 260-Pin DDR4 2400/2666MHz SODIMM.<br>Max. up to 64GB (Un-buffered and Non-ECC)                                                                                                        |
| BIOS           | AMI 256Mbit SPI BIOS                                                                                                                                                                     |
| Watchdog       | Software Programmable Supports 1~255 sec. System Reset                                                                                                                                   |
| TPM            | TPM 2.0                                                                                                                                                                                  |

### Display

|                  |                                                |
|------------------|------------------------------------------------|
| Graphics         | Intel® UHD Graphics 610/630                    |
| VGA              | Yes (by optional split cable)                  |
| DVI              | 1x DVI-I, support resolution 1920 x 1200       |
| DisplayPort      | 2x DisplayPort, support resolution 4096 x 2304 |
| Multiple Display | Triple Display                                 |

### Storage

|            |                                                                                                                                              |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| SSD/HDD    | 2x Internal 2.5" SATA HDD Bay (support H=9mm)<br>2x Removable 2.5" SATA HDD Bay<br>(support H=7mm, hot-swappable) , Support RAID 0, 1, 5, 10 |
| mSATA      | 1x mSATA (Shared by 1x Mini PCI Express)                                                                                                     |
| M.2        | 1x M.2 (M Key, NVMe PCIe x4, 2280)<br>1x M.2 (E Key, PCIe x2, 2230, USB 2.0, Support CNVi)                                                   |
| SIM Socket | 2x External SIM socket                                                                                                                       |

### Expansion

|                       |                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Mini PCI Express      | 2x Full-size Mini PCIe (1x shared by 1x mSATA)                                                                              |
| PCI                   | 1x PCI                                                                                                                      |
| PCI Express           | 1x PCIe x16                                                                                                                 |
| 4-Port GbE (Optional) | 4-port GbE module with Intel® I350-AT4 Chipset,<br>RJ-45 or M12 connector (PoE optional)<br>Occupied one Universal I/O Slot |
| 2-Port GbE (Optional) | 2-Port RJ45 10GbE with Intel X710-AT2 Chipset<br>Occupied one Universal I/O Slot                                            |
| 4-Port USB (Optional) | 4-Port USB with Renesas uPD720201K8 host controller<br>Occupied one Universal I/O Slot                                      |

## FEATURES

- LGA 1151 socket for 8<sup>th</sup>/9<sup>th</sup> Gen. Intel® CFL-R S Processor (65W/35W TDP)
- Intel® Q370 chipset
- 2x DDR4 2400/2666Hz SODIMM. Max. up to 64GB
- Triple Independent Display by 1x DVI-I and 2x DisplayPort
- 2x Intel® GbE supporting Wake-on-LAN and PXE
- 2x Full-size mini PCIe for communication or expansion modules, 2x SIM socket
- 4x 2.5" SATA HDD Bay and 1x mSATA with RAID 0, 1, 5, 10 support
- 1x M.2 (M Key, NVMe PCIe x4, 2280),  
1x M.2 (E Key, PCIe x2, 2230, USB 2.0, Support CNVi)
- 6x RS-232/422/485 (w/ 2x internal), 4x USB 3.2 Gen 2, 5x USB 3.2 Gen 1
- 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 (35W CPU);  
-25°C to 60°C (65W CPU)
- 1x PCIe x16, and 1x PCI Expansion
- TPM 2.0 Supported

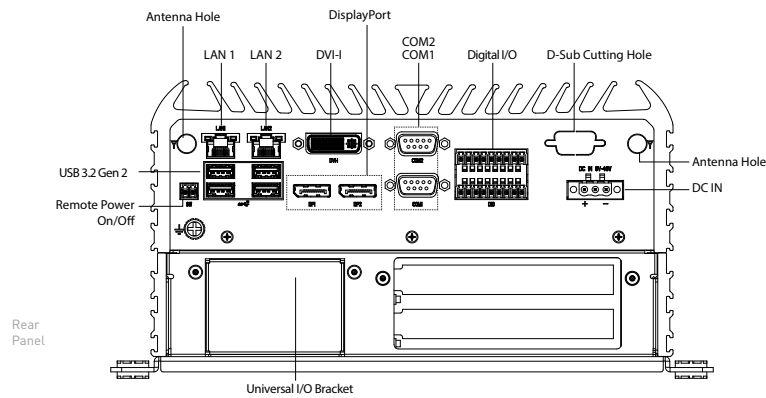
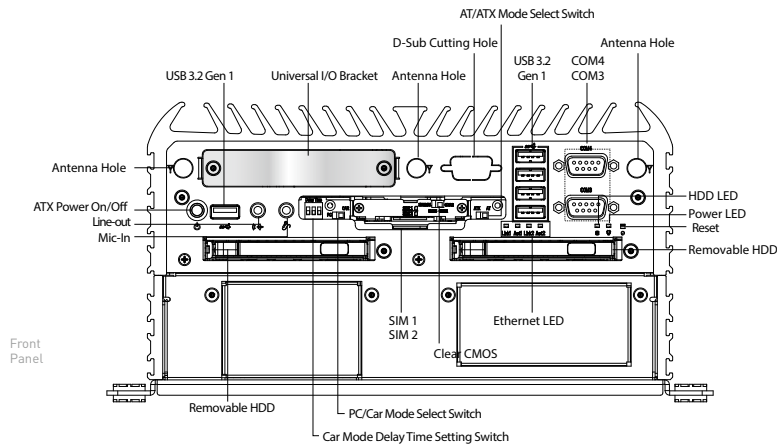
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|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5G (Optional)             | 1x M.2 for 5G (B Key, PCIe x4, USB 3.0, 3042/3052)<br>Including 2x SIM socket, 1x SIM switch<br>Occupied one Universal I/O Slot                                |
| Card Dimension            | 235 (L) x 112 (H) mm                                                                                                                                           |
| <b>Operating System</b>   |                                                                                                                                                                |
| Windows                   | Windows 10                                                                                                                                                     |
| Linux                     | Linux kernel 5.X                                                                                                                                               |
| <b>I/O</b>                |                                                                                                                                                                |
| COM                       | 4x RS-232/422/485 ; 2x RS-232/422/485 (internal)                                                                                                               |
| USB                       | 4x USB 3.2 Gen 2 (10 Gbps)<br>5x USB 3.2 Gen 1 (5 Gbps)<br>1x USB 3.2 Gen 1 header (5 Gbps, internal)                                                          |
| LAN                       | 2x RJ45                                                                                                                                                        |
| Audio                     | 1x Mic-in, 1x Line-out                                                                                                                                         |
| DIO                       | 8 in / 8 out (Isolated)                                                                                                                                        |
| Universal I/O Bracket     | 3x Universal I/O Bracket (By mini PCIe interface)                                                                                                              |
| Others                    | 5x WiFi Antenna Holes<br>1x Power Switch, 1x AT/ATX Switch, 1x Remote Power On/Off<br>1x PC/Car Mode Switch, 1x Delay Time Switch<br>1x Removable CMOS Battery |
| <b>Power</b>              |                                                                                                                                                                |
| Power Mode                | AT, ATX                                                                                                                                                        |
| Power Supply Voltage      | 9~48VDC                                                                                                                                                        |
| Power Ignition Sensing    | Power Ignition Management                                                                                                                                      |
| Power Connector           | 3-pin Terminal Block                                                                                                                                           |
| Power Adaptor             | Optional AC/DC 24V/9.2A, 220W<br>Optional AC/DC 24V/11.67A, 280W                                                                                               |
| Power Protection          | OVP (Over Voltage Protection);<br>OCP (Over Current Protection)<br>Reverse Protection                                                                          |
| <b>Environment</b>        |                                                                                                                                                                |
| Operating Temp.           | -25°C to 70°C (35W CPU) ; -25°C to 60°C (65W CPU)                                                                                                              |
| Storage Temp.             | -30°C to 85°C                                                                                                                                                  |
| Relative Humidity         | 10% to 95% (non-condensing)                                                                                                                                    |
| Vibration                 | With SSD: 5 Grms, 5 - 500 Hz, 0.5 hr/axis<br>With HDD: 1 Grms, 5 - 500 Hz, 0.5 hr/axis                                                                         |
| Shock                     | With SSD: 50G, half sine, 11ms                                                                                                                                 |
| Standards / Certification | CE, FCC Class A, E-Mark,<br>EMC Conformity with EN 50155, EN 50121-3-2                                                                                         |
| <b>Physical</b>           |                                                                                                                                                                |
| Construction              | Extruded Aluminum with Heavy Duty Metal                                                                                                                        |
| Dimension                 | 240 (W) x 261 (D) x 127.3 (H) mm                                                                                                                               |
| Weight                    | 8.25 ~ 9.3 kg                                                                                                                                                  |
| Mounting                  | Wall Mounting                                                                                                                                                  |

\* For 8<sup>th</sup>/9<sup>th</sup> CPUs configured to run at 65W, operating temperatures will be limited to 60°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.

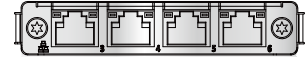
## EXTERNAL I/O MECHANICAL LAYOUT



Universal I/O Bracket



LAN Port  
PoE Port



**RCO-6122PE-4L**  
**RCO-6122PE-4P**



M12 LAN Port  
M12 PoE Port



**RCO-6122PE-4L-M12**  
**RCO-6122PE-4P-M12**



D10G Port



**RCO-6122PE-D10G**



USB Port



**RCO-6122PE-4U3**



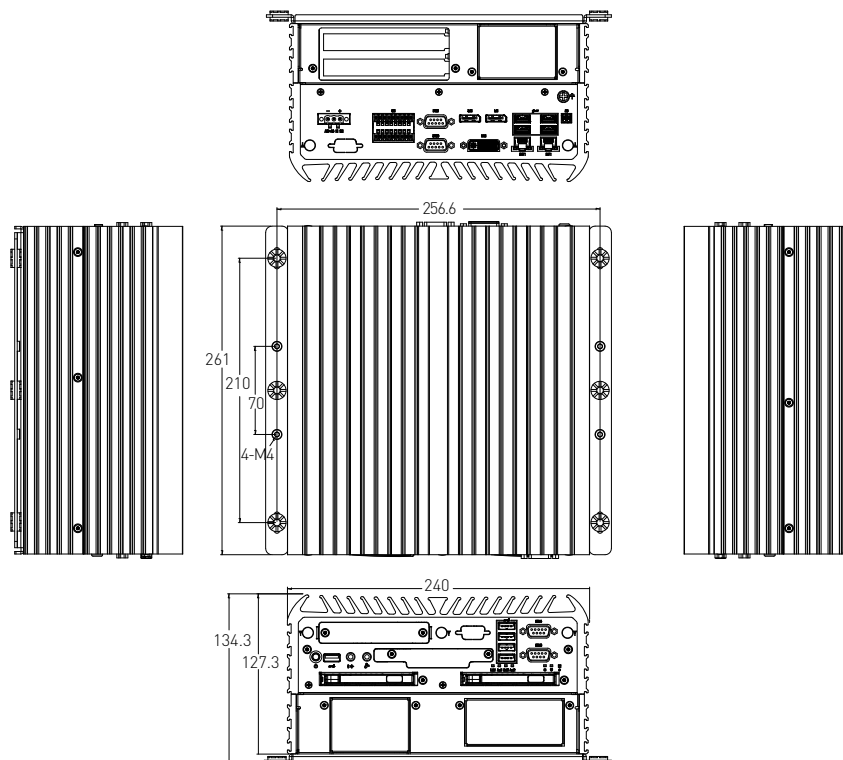
SIM Slot



**RCO-6122PE-5G**

## DIMENSION

Unit: mm



## ORDERING INFORMATION

| MODEL NO.   | DESCRIPTION                                                           |
|-------------|-----------------------------------------------------------------------|
| 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-6100 Series Embedded System
- 1x Utility DVD Driver
- 1x Wall Mount Kit
- 1x Accessory Kit
- 1x DVI to VGA Adapter

## AVAILABLE MODELS

| MODEL NO.         | DESCRIPTION                                                                                                                                                    |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RCO-6122PE        | Superior Fanless Embedded System w/ LGA 1151 for Intel® 8 <sup>th</sup> /9 <sup>th</sup> Gen CPU & Q370 PCH, 2x LAN, 1x PCIe x16, 1x PCI Expansion             |
| RCO-6122PE-4L     | Superior Fanless Embedded System w/ LGA 1151 for Intel® 8 <sup>th</sup> /9 <sup>th</sup> Gen CPU & Q370 PCH, 6x LAN, 1x PCIe x16, 1x PCI Expansion             |
| RCO-6122PE-4L-M12 | Superior Fanless Embedded System w/ LGA 1151 for Intel® 8 <sup>th</sup> /9 <sup>th</sup> Gen CPU & Q370 PCH, 2x LAN, 4x M12 LAN, 1x PCIe x16, 1x PCI Expansion |
| RCO-6122PE-4P     | Superior Fanless Embedded System w/ LGA 1151 for Intel® 8 <sup>th</sup> /9 <sup>th</sup> Gen CPU & Q370 PCH, 2x LAN, 4x PoE, 1x PCIe x16, 1x PCI Expansion     |
| RCO-6122PE-4P-M12 | Superior Fanless Embedded System w/ LGA 1151 for Intel® 8 <sup>th</sup> /9 <sup>th</sup> Gen CPU & Q370 PCH, 2x LAN, 4x M12 PoE, 1x PCIe x16, 1x PCI Expansion |
| RCO-6122PE-D10G   | Superior Fanless Embedded System w/ LGA 1151 for Intel® 8 <sup>th</sup> /9 <sup>th</sup> Gen CPU & Q370 PCH, 2x LAN, 2x 10G LAN, 1x PCIe x16, 1x PCI Expansion |
| RCO-6122PE-4U3    | Superior Fanless Embedded System w/ LGA 1151 for Intel® 8 <sup>th</sup> /9 <sup>th</sup> Gen CPU & Q370 PCH, 2x LAN, 13x USB, 1x PCIe x16, 1x PCI Expansion    |
| RCO-6122PE-5G     | Superior Fanless Embedded System w/ LGA 1151 for Intel® 8 <sup>th</sup> /9 <sup>th</sup> Gen CPU & Q370 PCH, 2x LAN, 1x PCIe x16, 1x PCI Expansion, 5G Module  |