



## FEATURES

- Support 8<sup>th</sup>/9<sup>th</sup> Gen Intel® CFL-R S Processor (LGA 1151, 65W/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
- 4x 2.5" SATA HDD Bay with RAID 0, 1, 5, 10 support, 1x mSATA (Shared by 1x Mini PCIe)
- 1x M.2 (M Key, PCIe x4, 2280, Support NVMe), 1x M.2 (E Key, PCIe x2, 2230, USB 2.0, Support CNVi)
- 6x RS-232/422/485 (4x internal)
- 4x USB 3.2 Gen 2 (10 Gbps), 4x USB 3.2 Gen 1 (5 Gbps, internal)
- 8x DI + 8x DO with isolation
- 9 to 48V DC Wide Range Power Input Supporting AT/ATX Mode
- Wide Operating Temperature (-25°C to 70°C)
- TPM 2.0 Supported

## 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) 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)
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) 2x Removable 2.5" SATA HDD Bay (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, PCIe x4, 2280, Support NVMe), 1x M.2 (E Key, PCIe x2, 2230, USB 2.0, Support CNVi)
SIM Socket	2x Internal SIM socket

### Expansion

Mini PCI Express	2x Full-size Mini PCIe (1x shared by 1x mSATA)
Model: VCO-6144P	4x PCI
Model: VCO-6144C	2x PCIe x4, 1x PCIe x16 (8-lane), 1x PCI
Card Dimension	310 (L) x 112 (H) mm

### Operating System

Windows	Windows 10
Linux	Linux kernel 5.X
<b>I/O</b>	
COM	2x RS-232/422/485 4x RS-232/422/485 (Internal)
USB	4x USB 3.2 Gen 2 (10 Gbps) 4x USB 3.2 Gen 1 (5 Gbps, internal)
LAN	2x RJ45
DIO	8 in / 8 out (Isolated)
Universal I/O Bracket	2x Universal I/O Bracket (By mini PCIe interface)
Others	4x WiFi Antenna Holes 1x Power Switch, 1x Remote Power On/Off

### Power

Power Mode	AT, ATX
Power Supply Voltage	9~48V DC
Power Ignition Sensing	Power Ignition Management
Power Connector	3-pin Terminal Block
Power Adaptor	Optional AC/DC 24V/9.2A, 220W Optional AC/DC 24V/11.67A, 280W
Power Protection	OVP (Over Voltage Protection); OCP (Over Current Protection) Reverse Protection

### Environment

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: 3 Grms, 5 - 500 Hz, 0.5 hr/axis With HDD: 1 Grms, 5 - 500 Hz, 0.5 hr/axis
Shock	With SSD: 20G, half sine, 11ms
Standards / Certification	CE, FCC Class A

### Physical

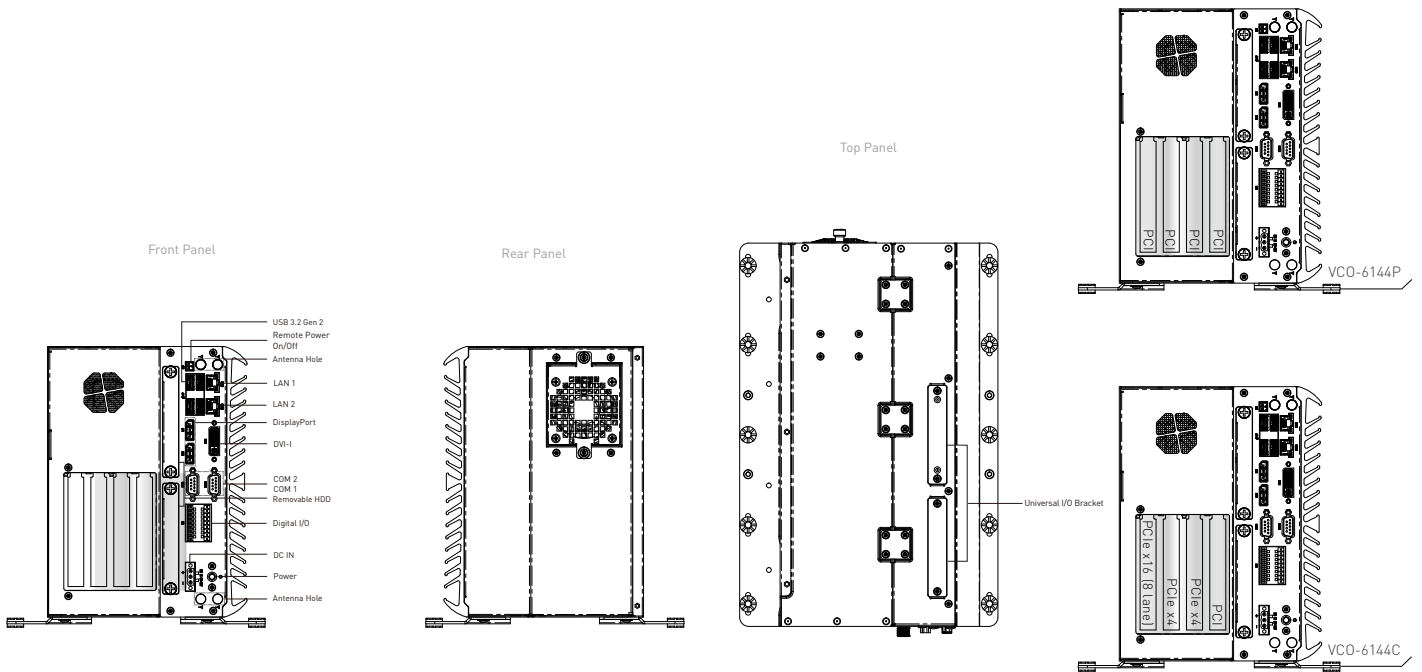
Construction	Extruded Aluminum with Heavy Duty Metal
Dimension	177 (W) x 340 (D) x 240 (H) mm
Weight	9.5 kg
Mounting	Wall Mounting / Book mounting (Optional)

\* 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.

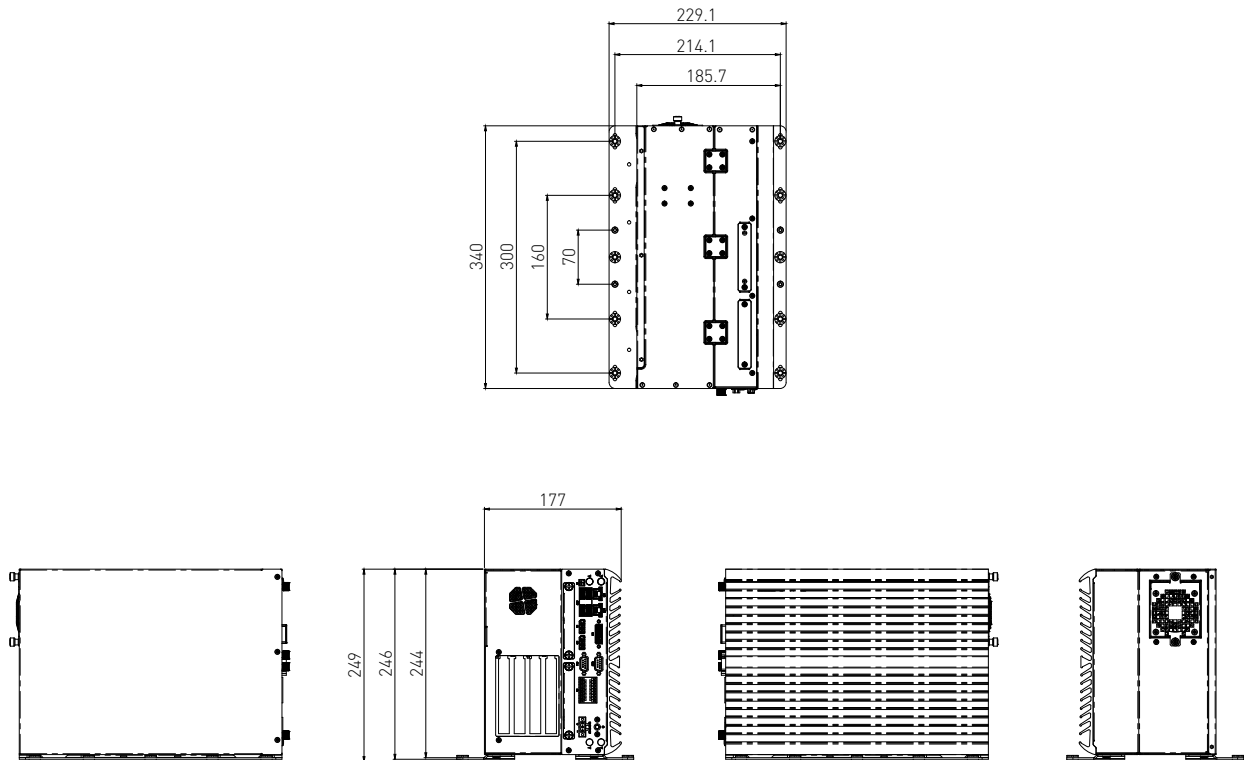
\*\*\* All specifications and photos are subject to change without notice.

## EXTERNAL I/O MECHANICAL LAYOUT



## DIMENSION

Unit: mm



**ORDERING INFORMATION**

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 VCO-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
VCO-6144P	Superior Machine Vision System with LGA 1151 for Intel 8 <sup>th</sup> /9 <sup>th</sup> Gen CPU & Q370 PCH, 4x PCI
VCO-6144C	Superior Machine Vision System with LGA 1151 for Intel 8 <sup>th</sup> /9 <sup>th</sup> Gen CPU & Q370 PCH, 2x PCIe x4, 1x PCIe x8, 1x PCI