

# P2102 Series

Intel® 8th Generation Core™ U Series Slim Embedded Computer  
with CDS Technology



## Overview

[CONTACT](#)

The P2102 Series is a slim embedded computer with onboard 8th generation Intel® Core™ U series processor that brings outstanding computing performance boost up to 84% at a TDP of 15 watts, compared to 6th generation Intel® Core™ U series. To enable faster responsiveness and deal with multi tasks with ease, the computer is equipped with two DDR4 2400 SODIMM sockets for up to 64 GB memory. Powered by Intel® UHD graphics 620, the P2102 Series supports triple independent displays (CDS/VGA/DisplayPort) and can play 4K UHD video smoothly via DisplayPort. At only 41.5 mm thickness, the P2102 Series offers extensive I/O to fulfill different connectivities and can easily fit into almost any space limited environment such as industrial control cabinet. For wireless connectivity, the computer has 1x M.2 2230 E key and 2x full-size Mini-PCIe expansions to support Wi-Fi, 3G, and LTE modules. Besides, the P2102 Series supports Control Function Module (CFM) Technology to install optional CFM modules for increasing power over ethernet and power ignition sensing functions according to user's specific applications. Featuring rigorous industrial protection, fanless/jumper-less design, wide operating temperature (-40°C to +70°C), wide range DC power input (9~48 VDC), high tolerance for vibration/shock (5/50 Grms), the P2102 is appropriate for harsh environments and critical industrial applications. Furthermore, by taking advantage of Cincoze patented Convertible Display System (CDS) technology, the P2102 Series is compatible with CDS display modules and can be easily converted to an industrial panel PC of different sizes for selection.

## Key Features

- Onboard Intel® 8th Generation Core™ U Series Processor
- 2x DDR4 SO-DIMM Socket, Supports Up to 2400MHz, 64GB
- Supports Triple Independent Display (CDS / DP / VGA)
- Integrated USB 3.2 Gen 2 supports up to 10Gbps
- M.2 E Key Socket for Intel CNVi / Wireless Module
- CFM Technology for Power Ignition Sensing & PoE Function
- Supports Cincoze Patent CDS Technology (Patent No. M482908)
- Safety Standard: UL, cUL, CB, IEC/EN62368-1
- PCI/PCIe Expandable Version Available (For P2102E only)

## Certifications



## High Performance Per Watt

Powered by 8th generation Intel® Core™ U series processor (up to 4 cores, 4.10 GHz) at a TDP of only 15W, the P2102 can fulfill a variety of applications that require high-performance computing and low power budget simultaneously.



**4X Cores**



## Flexible Expansions

Featuring 1x PCI/PCIe x4 slot, 1x M.2 2230 E key socket, and 2x full-size Mini-PCIe slots, the P2102E is capable of increasing additional I/O, or expansion cards to match your desired applications, such as data acquisition, motion control, and wireless communication.

## Patented CDS Technology

Based on Cincoze patented Convertible Display System (CDS) technology, the P2102 can be easily converted to an industrial panel PC of different sizes by configuring with a variety of CDS display modules.



P2102 Series Specifications

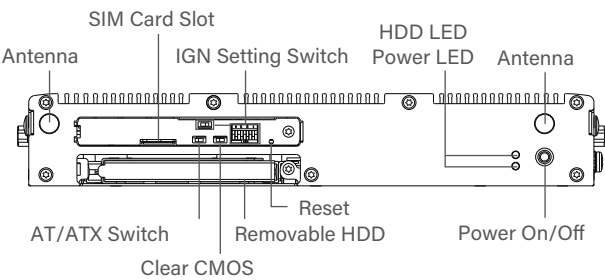
Model Name	P2102		P2102E
System			
Processor	<ul style="list-style-type: none"><li>Onboard 8th Intel® Core™ U Processors (Whiskey Lake)<ul style="list-style-type: none"><li>Intel® Core™ i5-8365UE Quad Core Processor (6M Cache, up to 4.10 GHz)</li><li>Intel® Core™ i3-8145UE Dual Core Processor (4M Cache, up to 3.90 GHz)</li></ul></li><li>TDP: 15 W</li></ul>		
Memory	<ul style="list-style-type: none"><li>2x DDR4 2400 MHz 260-Pin SO-DIMM Socket</li><li>Support Un-buffered and Non-ECC Type up to 64 GB</li></ul>		
Graphics			
Graphics Engine	<ul style="list-style-type: none"><li>Integrated Intel® UHD Graphics 620</li></ul>		
Maximum Display Output	<ul style="list-style-type: none"><li>Supports Triple Independent Display</li></ul>		
CDS	<ul style="list-style-type: none"><li>1x CDS Connector for Cincoze Display Module</li></ul>		
VGA	<ul style="list-style-type: none"><li>1x VGA Connector(1920 x 1200 @60Hz)</li></ul>		
DP	<ul style="list-style-type: none"><li>1x DisplayPort Connector (4096 x 2304 @ 60Hz, According to CPU Specifications)</li><li>* Verified maximum resolution: 3840 x2160 @ 60Hz</li></ul>		
Audio			
Audio Codec	<ul style="list-style-type: none"><li>Realtek® ALC888, High Definition Audio</li></ul>		
Line-out	<ul style="list-style-type: none"><li>1x Line-out, Phone Jack 3.5mm</li></ul>		
Mic-in	<ul style="list-style-type: none"><li>1x Mic-in, Phone Jack 3.5mm</li></ul>		
I/O			
LAN	<ul style="list-style-type: none"><li>2x GbE LAN (Supports WoL, Teaming, Jumbo Frame &amp; PXE), RJ45<ul style="list-style-type: none"><li>GbE1: Intel® I219LM</li><li>GbE2: Intel® I210</li></ul></li></ul>		
USB	<ul style="list-style-type: none"><li>3x USB 3.2 Gen2 (Type A), 2x USB 2.0 (Type A)</li></ul>		
Serial Port	<ul style="list-style-type: none"><li>4x RS-232/422/485 with Auto Flow Control Support 5V/12V, DB9</li></ul>		
DIO	<ul style="list-style-type: none"><li>16x Isolated Digital I/O (8in/8out), 20-Pin Terminal Block</li></ul>		
Storage			
SSD/HDD	<ul style="list-style-type: none"><li>2x 2.5” HDD/SSD Drive Bay (SATA 3.0), Supports RAID 0/1</li></ul>		
Expansion			
Mini PCI Express	<ul style="list-style-type: none"><li>2x Full-size Mini-PCIe Sockets</li></ul>		
PCI Express		<ul style="list-style-type: none"><li>1x PCI or 1x PCIe x4 Expansion slot with Optional Riser Card</li><li>* Supports maximum dimensions of add-on card (H x L) : 111 x 169mm</li></ul>	
M.2 E Key Socket	<ul style="list-style-type: none"><li>1x M.2 2230 E Key Socket for Wireless Module, Supports Intel CRF Module</li></ul>		
SIM Socket	<ul style="list-style-type: none"><li>1x Front Accessible SIM Socket</li></ul>		
Universal Bracket		<ul style="list-style-type: none"><li>2x Universal I/O Bracket</li></ul>	
CFM (Control Function Module) Interface	<ul style="list-style-type: none"><li>2x CFM Interface for optional IGN or PoE Module Expansion</li></ul>		
CDS (Convertible Display System) Technology	<ul style="list-style-type: none"><li>1x Convertible Display System (CDS) Interface</li></ul>		

Other Function		
Clear CMOS Switch	▪ 1 x Clear CMOS Switch	
Instant Reboot	▪ Support 0.2sec Instant Reboot technology	
Watchdog Timer	▪ Software Programmable Supports 256 Levels System Reset	
Internal Speaker	▪ AMP 2W + 2W	
OSD Function	▪ LCD On/Off, Brightness Up, Brightness Down	
Reset Button	▪ 1x Reset Button	
Power		
Power Button	▪ 1x ATX Power On/Off Switch	
Power Mode Switch	▪ 1x AT/ATX Mode Switch	
Power Input	▪ 1x 3-pin Terminal Block Connector with Power Input 9~48VDC	
Power Adapter (Optional)	▪1x Optional AC/DC 12V/5A, 60W or 24V/5A 120W	
Remote Power On/Off	▪ 1x Remote Power On/Off Connector, 2-pin Terminal Block	
Physical		
Dimension( W x D x H )	▪ 254.5 x 190 x 41.5mm	▪ 254.5 x 190 x 61 mm
Weight Information	▪ 2.2 kg	▪ 2.7 kg
Mechanical Construction	▪ Extruded Aluminum with Heavy Duty Metal	
Mounting	▪ Wall / VESA / CDS / DIN Rail	
Physical Design	▪ Fanless Design ▪ Jumper-less Design	
Reliability & Protection		
Reverse Power Input	▪ Yes	
Over Voltage Protection	▪ Protection Range: 51~58V ▪ Protection Type: shut down operating voltage, re-power on at the present level to recover	
Over Current Protection	▪ 15A	
CMOS Battery Backup	▪ SuperCap Integrated for CMOS Battery Maintenance-free Operation	
MTBF	▪ 231,243 hours	
Operating System		
Microsoft® Windows®	▪ Windows®10	
Linux	▪ Supports by project	
Environment		
Operating Temperature	▪ Ambient with Air Flow: -40°C to 70°C (with Extended Temperature Peripherals)	
Storage Temperature	▪ -40°C to 70°C	
Relative humidity	▪ 95% RH @ 70°C (Non-condensing)	
Shock	▪ Operating, 50 Grms, Half-sine 11ms Duration (w/ SSD, according to IEC60068-2-27)	
Vibration	▪ Operating, 5 Grms, 5-500 Hz, 3 Axes (w/ SSD, according to IEC60068-2-64)	▪ Operating, 5 Grms, 5-500 Hz, 3 Axes (w/ SSD, according to IEC60068-2-64) ▪ Operating, 1 Grms, 10-500 Hz, 3 Axes (w/ CV-W124 only, according to IEC60068-2-6)
EMC	▪ CE, UKCA, FCC, ICES-003 Class A	

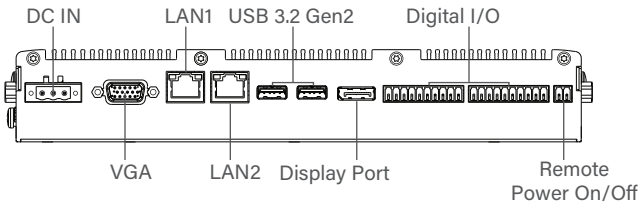
EMI	<ul style="list-style-type: none"><li>• CISPR 32 Conducted &amp; Radiated: Class A</li><li>• EN/BS EN 55032 Conducted &amp; Radiated: Class A</li><li>• EN/BS EN IEC 61000-3-2 Harmonic current emissions: Class A</li><li>• EN/BS EN61000-3-3 Voltage fluctuations &amp; flicker</li><li>• FCC 47 CFR Part 15B, ICES-003 Conducted &amp; Radiated: Class A</li></ul>
EMS	<ul style="list-style-type: none"><li>• EN/IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV</li><li>• EN/IEC 61000-4-3 RS: 80 MHz to 1000 MHz: 3 V/m</li><li>• EN/IEC 61000-4-4 EFT: AC Power: 1 kV; DC Power: 0.5 kV; Signal: 0.5 kV</li><li>• EN/IEC 61000-4-5 Surges: AC Power: 2 kV; Signal: 1 kV</li><li>• EN/IEC 61000-4-6 CS: 3V</li><li>• EN/IEC 61000-4-8 PFMF: 50 Hz, 1A/m</li><li>• EN/IEC 61000-4-11 Voltage Dips &amp; Voltage Interruptions: 0.5 cycles at 50 Hz</li></ul>
Safety	<ul style="list-style-type: none"><li>• UL, cUL, CB, IEC, EN62368-1</li></ul>
Fire Protection	<ul style="list-style-type: none"><li>• EN 45545-2</li></ul>

P2102 External Layout

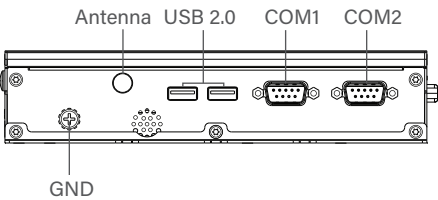
Front I/O



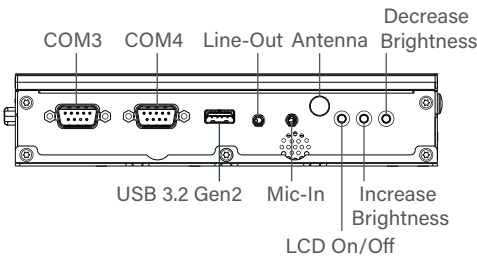
Rear I/O



Left I/O

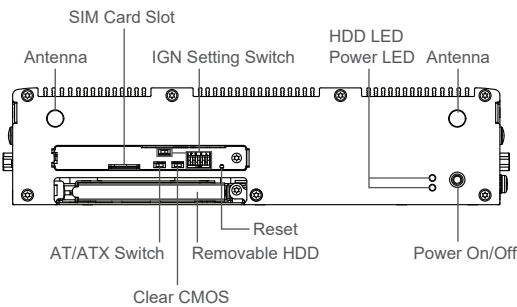


Right I/O

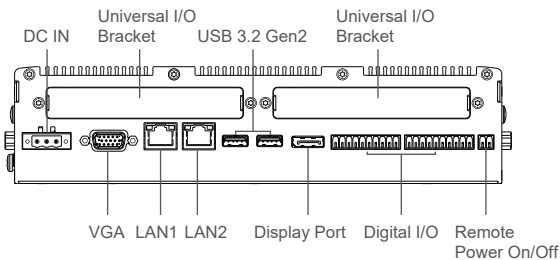


P2102E External Layout

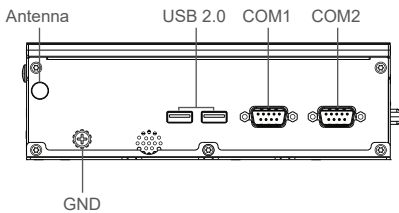
Front I/O



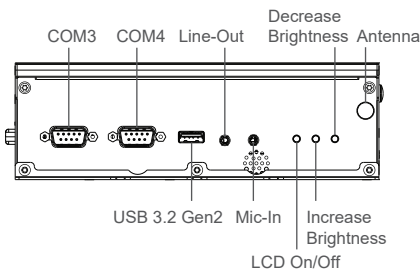
Rear I/O



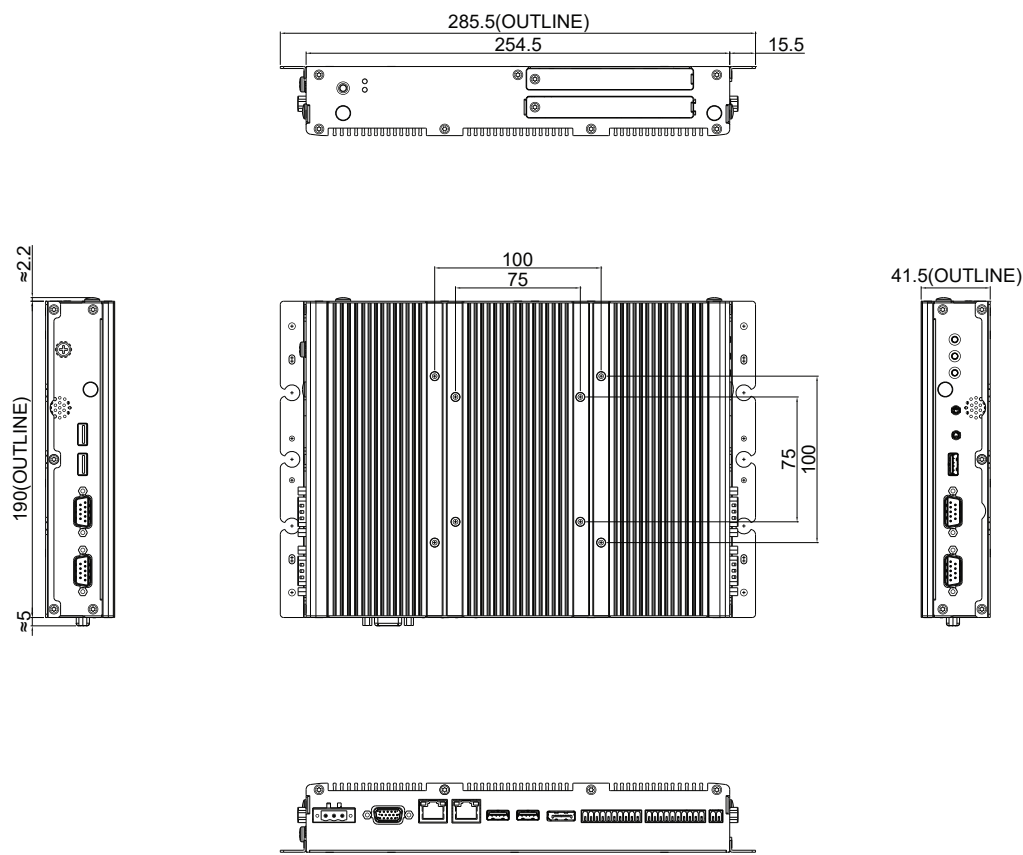
Left I/O



Right I/O

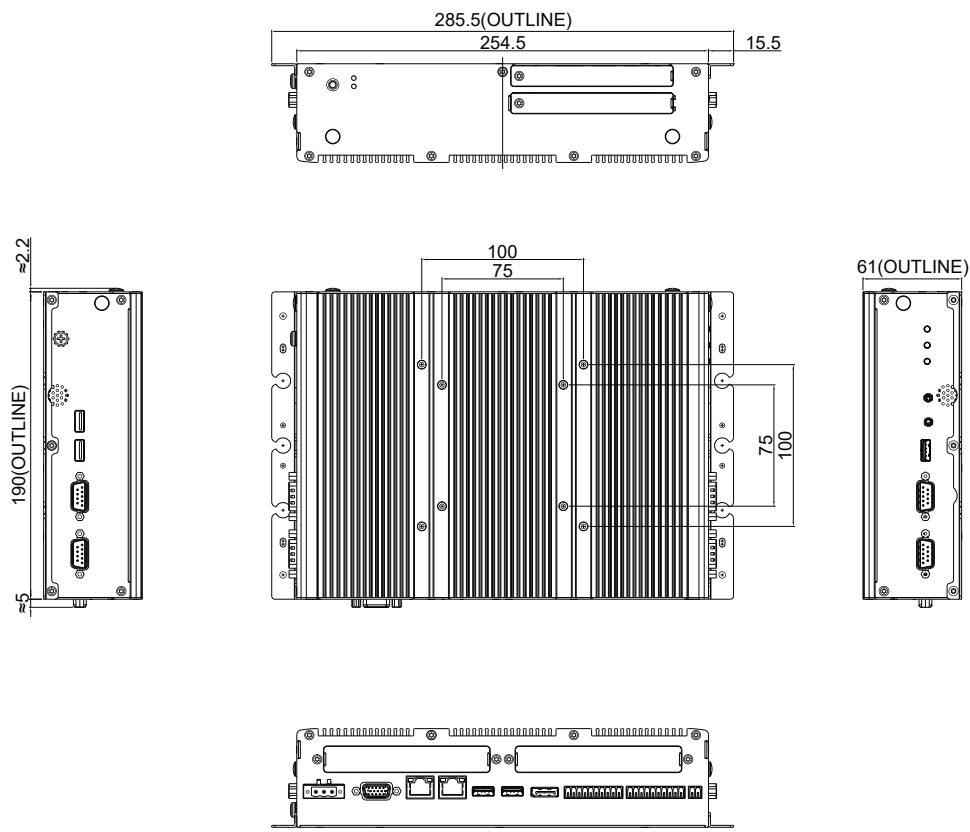


P2102 Dimensions



Unit: mm

P2102E Dimensions



Unit: mm

## Ordering Information

### Available Models

Model No.	Description
P2102-i5-R10	8th Generation Intel® Core™ i5-8365UE Quad Core Slim Embedded Computer with CDS Technology
P2102-i3-R10	8th Generation Intel® Core™ i3-8145UE Dual Core Slim Embedded Computer with CDS Technology
P2102E-i5-R10	8th Generation Intel® Core™ i5-8365UE Quad Core Expandable Embedded Computer with CDS Technology
P2102E-i3-R10	8th Generation Intel® Core™ i3-8145UE Dual Core Expandable Embedded Computer with CDS Technology

### Package Checklist

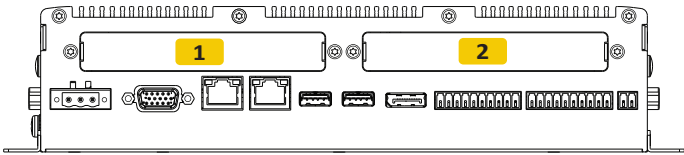
▪ P2102 Series Embedded Computer x 1	▪ Screw Pack x 1
▪ DIO Terminal Block Connector (Female) x 2	▪ Remote Power On/Off Terminal Block Connector x 1
▪ Wall / CDS Mounting Kit x 1	▪ Thermal Pad x 1
▪ DIN Rail Mounting Kit x 1	▪ PCI / PCIe Card Installation Kit x 1 (For P2102E only)
▪ Power Terminal Block Connector (Female) x 1	





### Optional Modules and Accessories

Model No.	Description
CFM-IGN101	CFM Module with Power Ignition Sensing Control Function, 12V/24V Selectable (43 x 36 mm)
CFM-PoE04	CFM Module with PoE Control Function, Individual Port 25.5W (For P2102 only)
CFM-PoE05	CFM Module with PoE Control Function, Individual Port 25.5W (For P2102E only)
RC-E4-02	Riser Card with 1x PCIe x4 Slot (For P2102E only)
RC-PI-02	Riser Card with 1x PCI Slot (For P2102E only)
MEC-COM-M212-TDB9	Mini-PCIe Module with 2x COM Ports, 1x Standard DB9 Cable (For P2102E only)
MEC-COM-M334-TDB9	Mini-PCIe Module with 4x RS-232/422/485 Serial Ports (For P2102E only)
MEC-LAN-M102-30	Mini-PCIe Module with 2x LAN Ports, 2x 30cm cable (For P2102E only)
MEC-USB-M102-30	Mini-PCIe Module with 2x USB 3.2 Gen1 Ports, 1x 30cm cable (For P2102E only)
UB1203	Universal Bracket with 2x DB9 Cutout (For P2102E only)
UB1211	Universal Bracket with 2x RJ45 Cutout (For P2102E only)
UB1214	Universal Bracket with 2x USB Cutout (For P2102E only)
URM01	Universal 19" Rack Mount Kit for Industrial Panel PC & Industrial Monitor
GST60A12-CIN1	Adapter AC/DC 12V 5A 60W with 3pin Terminal Block Plug and Tubes, Level VI
GST120A24-CIN	Adapter AC/DC 24V 5A 120W with 3pin Terminal Block Plug and Tubes, Level VI
GST220A24-CIN	Adapter AC/DC 24V 9.2A 220W with 3pin Terminal Block Plug and Tubes, Level VI (For P2102E only))
SL2-SL3	US 2 heads power cord, US B type to IEC C13, SVT 18AWG/3C Black 1.8M SL-2+SL-3
SL6-SL3	EU 2 heads power cord, EU G type to IEC C13, H05VV-F 0.75mm2/3G Black 1.8M SL-6+SL-3
QP026-SL3	UK 2 heads power cord, UK I type to IEC C13, H05VV-F 0.75mm2/3G Black 1.8M QP026+SL-3



Optional Module Configuration (For P2102E only)



Model No.	Description	1	2
<div>MEC-COM-M212-TDB9/UB1203</div> 	Mini-PCle Module with 2x RS-232 Ports, 1x Thin DB9 Cable / 1x Universal Bracket with 2x DB9 Cutout	V	V
<div>MEC-COM-M334-TDB9/UB1203</div> 	Mini-PCle Module with 4x RS-232/422/485 Serial Ports/ 2x Universal Bracket each with 2x DB9 Cutout	V	V
<div>MEC-LAN-M102-30/UB1211</div> 	Mini-PCle Module with 2x LAN Ports, 2x 30cm cable / 1x Universal Bracket with 2x RJ45 Cutout	V	V
<div>MEC-USB-M102-30/UB1214</div> 	Mini-PCle Module with 2x USB 3.2 Gen1 Ports, 1x 30cm cable / 1x Universal Bracket with 2x USB Cutout	V	V

V : Compatible