

# CV-112H/P2302 Series

12.1" TFT XGA 4:3 Display Modular Panel PC with Intel Meteor Lake-PS Core Series (LGA Socket) Slim / Expandable Embedded Computer



## HIGH PERFORMANCE INDUSTRIAL PANEL PC | CV-100/P2000 Series |

### Overview

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The CV-100/P2302 series are high-performance modular industrial panel PCs supporting the latest Intel® Core Ultra processors (Meteor Lake-PS) across 20 model variations with flexible expansion capabilities. The series features rich built-in I/O interfaces and supports a variety of expansion slots, including M.2 Key B and Key E, PCI/PCIe (P2302E only), and CFM and MEC modular expansion (P2302E only) for adding wireless communication, NVMe storage, and I/O functions as needed. The rugged design makes the CV-100/P2302 series suitable for diverse application fields such as equipment HMI and production process visualization.

### Key Features

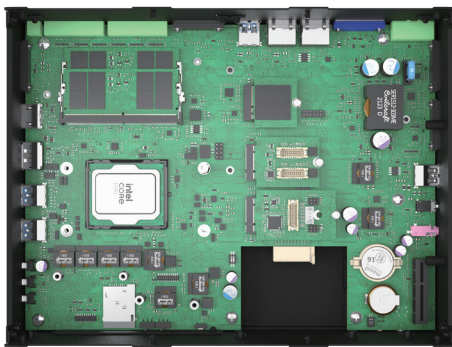
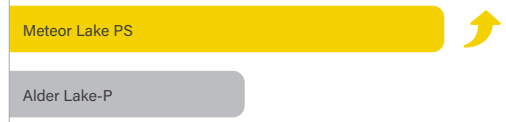
- 12.1" XGA TFT 4:3 LCD with Resistive 5-wire Touch / Projected Capacitive Touch
- Intel® Meteor Lake-PS Core™ Ultra 7/5/3 Processor
- 2 x DDR5 SO-DIMM Socket, Supports up to 5600MHz 96GB Memory
- Quad Independent Display (CDS / HDMI / DP / VGA)
- 1x M.2 Key E Type 2230 Socket for Wireless / Bluetooth Module Expansion
- 1 x M.2 Key B Type 3052/3042 Socket for 5G/GNSS/Storage/Add-on Card Expansion
- 1x M.2 Key B Type 3042 Socket for Storage/Add-on Card Expansion
- Designed with Aluminum Die-cast Front Bezel
- Front Panel IP65 Compliant

**Improved Performance x  
Power-Saving x AI Boost**

The CV-100/P2302 series supports Intel® 4 Core Ultra i7/i5/i3 U Series (Meteor Lake-PS) processors with up to 12 cores and 15W low power consumption, providing 1.8 times the performance of the previous model. The new built-in Intel NPU delivers faster and more efficient AI acceleration capabilities for high-volume image processing and AI recognition.



**1.8x Faster Processing Power**



**High Flexibility, Unlimited Applications**

The CV-100/P2302 series offers outstanding flexibility, supporting Core Ultra U-series LGA CPUs for customizable performance. It features M.2 Key B/E slots for 5G, Wi-Fi, Bluetooth, NVMe SSDs, and I/O expansion. The CV-100/P2302E further supports PCI/PCIe slots for expansion cards (up to 75W, 111 x 169 mm), enabling diverse applications.

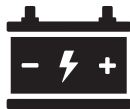
**CDS Technology**

Our exclusive CDS (Convertible Display System) technology enables easy maintenance in the field and simplifies future upgrades. Replacing the display or improving system performance only requires replacing a single component, significantly saving upgrade costs.



### Complete Range of Sizes

The CV-100/P2302 series has a diverse product portfolio, ranging from screen size (12" - 24"), display ratio (4:3 / 5:4 / 16:9) to touch methods (projected capacitive and single-point resistive), selectable according to application needs.



**9 - 48VDC**



**IP65**

### Rugged, Safe, and More Reliable

The CV-100/P2302 series has multiple industrial-grade protections for applications in harsh industrial environments such as field-side HMI or production process visualization. Industrial-grade protections include wide temperature design, wide voltage design, and waterproof and dustproof IP65 front panel.

**CV-112H Series Specifications**

Model Name	CV-112HR	CV-112HC
<b>Display</b>		
LCD Size	• 12.1" (4:3)	
Max. Resolution	• 1024 x 768	
Brightness (cd/m2)	• 500	
Contrast Ratio	• 700 : 1	
LCD Color	• 16.7M	
Pixel Pitch (mm)	• 0.24 (H) x 0.24 (V)	
Viewing Angle (H-V)	• 160 / 140	
Backlight LED Life Time	• 50,000 hrs (LED Backlight)	
<b>Touch Screen</b>		
Touch Type	• Resistive 5-wire	• Projected Capacitive
Wet Touch Tracking		v
<b>Physical</b>		
Dimension ( W x D x H )	• 345 x 265.3 x 57 mm	
Weight Information	• 3.16 kg	
Mechanical Construction	• Die-Casting Flat Surface	
<b>Power</b>		
Power Consumption	• 9.11W (Max.)	• 9.06W (Max.)
<b>Environment</b>		
Front Panel Protection	• IP 65 Compliant	
Operating Temperature	• -30°C to 70°C (-22°F to 158°F) (With Industrial Grade peripherals; Ambient with air flow)	• -20°C to 70°C (-4°F to 158°F) (With Industrial Grade peripherals; Ambient with air flow)
Storage Temperature	• -30°C to 80°C (-22°F to 176°F)	
Relative Humidity	• 90% RH @ 40°C (Non-condensing)	
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, cUL, CB, IEC, EN 62368-1	

**P2302 Specifications**

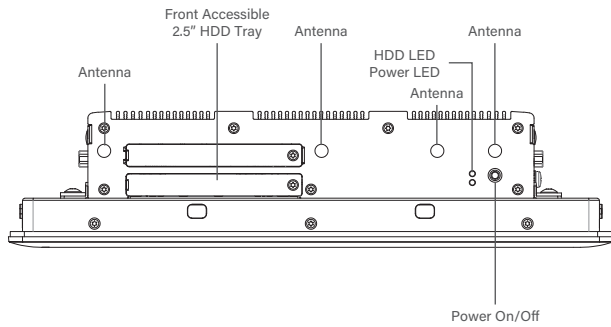
Model Name	P2302	P2302E
<b>System</b>		
Processor	<ul style="list-style-type: none"> <li>Intel® Meteor Lake-PS Core™ Ultra 7/5/3 Processor                             <ul style="list-style-type: none"> <li>- Intel® Core™ Ultra 7 Processor 165UL 12 Cores Up to 4.9 GHz, TDP 15W</li> <li>- Intel® Core™ Ultra 7 Processor 155UL 12 Cores Up to 4.8 GHz, TDP 15W</li> <li>- Intel® Core™ Ultra 5 Processor 135UL 12 Cores Up to 4.4 GHz, TDP 15W</li> <li>- Intel® Core™ Ultra 5 Processor 125UL 12 Cores Up to 4.3 GHz, TDP 15W</li> <li>- Intel® Core™ Ultra 3 Processor 105UL 8 Cores Up to 4.2 GHz, TDP 15W</li> </ul> </li> </ul>	
Memory	<ul style="list-style-type: none"> <li>2x DDR5 5600 MHz SO-DIMM Socket, Supports Un-buffered and non-ECC Type, Up to 96 GB</li> </ul>	
BIOS	<ul style="list-style-type: none"> <li>AMI BIOS</li> </ul>	
<b>Graphics</b>		
Graphics Engine	<ul style="list-style-type: none"> <li>Intel® Graphics</li> </ul>	
Maximum Display Output	<ul style="list-style-type: none"> <li>Supports Quad Independent Display</li> </ul>	
CDS	<ul style="list-style-type: none"> <li>1x CDS Connector (1920 x 1080 @60Hz)</li> </ul>	
DP	<ul style="list-style-type: none"> <li>1x DisplayPort Connector (4096 x 2304 @60Hz)</li> <li>* Verified maximum resolution: 3840 x 2160 @ 60Hz</li> </ul>	
HDMI	<ul style="list-style-type: none"> <li>1x HDMI Connector (3840 x 2160 @30Hz)</li> </ul>	
VGA	<ul style="list-style-type: none"> <li>1x VGA Connector (1920 x 1080 @60Hz)</li> </ul>	
<b>Audio</b>		
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>	
<b>I/O</b>		
LAN	<ul style="list-style-type: none"> <li>2x 2.5GbE LAN, RJ45                             <ul style="list-style-type: none"> <li>- GbE1: Intel® I226</li> <li>- GbE2: Intel® I226</li> </ul> </li> </ul>	
COM	<ul style="list-style-type: none"> <li>4x RS-232/422/485 with Auto Flow Control (Supports 5V/12V), DB9</li> </ul>	
USB	<ul style="list-style-type: none"> <li>2 x USB 3.2 Gen2x1 (10Gbps), Type A</li> <li>1 x USB 3.2 Gen1x1 (5Gbps), Type A</li> <li>1 x USB 2.0 (480Mbps), Type A</li> </ul>	
DIO	<ul style="list-style-type: none"> <li>16x Isolated Digital I/O (8in/8out), 20-Pin Terminal Block</li> </ul>	
<b>Storage / Expansion</b>		
2.5" SSD/HDD	<ul style="list-style-type: none"> <li>2x 2.5" SATA HDD/SSD Bay (SATA 3.0)</li> </ul>	
M.2 Key E Socket	<ul style="list-style-type: none"> <li>1x M.2 Key E Type 2230 Socket (PCIe Gen 3x1 / USB2.0), Support Wireless/Bluetooth Module Expansion</li> </ul>	
M.2 Key B Socket	<ul style="list-style-type: none"> <li>1x M.2 Key B Type 3042/3052 Socket (PCIe Gen 4x2 / USB3.2 Gen2 x1 / USB2.0), Support 5G/GNSS/Storage/Add-on Card Expansion</li> <li>1x M.2 Key B Type 3042 (PCIe Gen 3x2 / USB2.0), Support Storage/Add-on Card Expansion</li> </ul>	
PCI Express		<ul style="list-style-type: none"> <li>1x PCI or 1x PCIe Gen3 x4 Expansion slot (with Optional Riser Card)</li> <li>Supports maximum dimensions of add-on card (H x L) : 111 x 169mm</li> </ul>
SIM Socket	<ul style="list-style-type: none"> <li>1 x Front Accessible SIM Socket</li> </ul>	
CFM (Control Function Module) Interface	<ul style="list-style-type: none"> <li>1x CFM Interface for optional IGN Module Expansion</li> <li>1x CFM Interface for optional PoE Module Expansion</li> </ul>	

<b>Other Function</b>	
RAID	• RAID 0/1
Clear CMOS Switch	• 1x Clear CMOS Switch
Reset Button	• 1x Reset Button
Watchdog Timer	• Software Programmable Supports 256 Levels System Reset
OSD Button	• LCD On/Off, Brightness Up, Brightness Down
Internal Speaker	• AMP 2W + 2W
Status LED Indicator	• Power LED, Storage LED
Antenna Holes	• 6x Antenna Holes
<b>Power</b>	
Power Button	• 1x ATX Power On/Off Button
Power Mode Switch	• 1x AT/ATX Mode Switch
Power Input	• 9 - 48VDC, 3-pin Terminal Block
Remote Power On/Off	• 1x Remote Power On/Off, 2-pin Terminal Block
Max. Power Consumption	• Intel Core™ Ultra 7 Processor 165UL: 79.7W - Test conducted with CPU, 1x RAM, and 1x storage - 100% load during burn-in testing
Inrush Current (Peak)	• Intel Core™ Ultra 7 Processor 165UL: 5.010 A@24V
<b>Operating System</b>	
Windows	• Windows®11, Windows®10
Linux	• Ubuntu Desktop 24.04 LTS
<b>Physical</b>	
Dimension( W x D x H )	• 254.5 x 190 x 49.5 mm      • 254.5 x 190 x 69 mm
Weight Information	• 2.16 kg      • 2.26 kg
Mechanical Construction	• Extruded Aluminum with Heavy Duty Metal
Mounting	• Wall / VESA / CDS / DIN Rail
Physical Design	• Fanless Design • Jumper-less Design
<b>Reliability &amp; Protection</b>	
Reverse Power Input Protection	• Yes
Over Voltage Protection	• Protection Range: 51~58V • Protection Type: shut down operating voltage, re-power on at the preset level to recover
Over Current Protection	• 15A
CMOS Battery Backup	• SuperCap Integrated for CMOS Battery Maintenance-free Operation
MTBF	• 206,043 Hours - Database: Telcordia SR-332 Issue3, Method 1, Case 3
<b>Environment</b>	
Operating Temperature	• -40°C to 65°C (-40°F to 149°F) * PassMark BurnIn Test: 100% CPU, 2D/3D Graphics (without thermal throttling) * With extended temperature peripherals; Ambient with air flow * According to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14
Storage Temperature	• -40°C to 85°C (-40°F to 185°F)

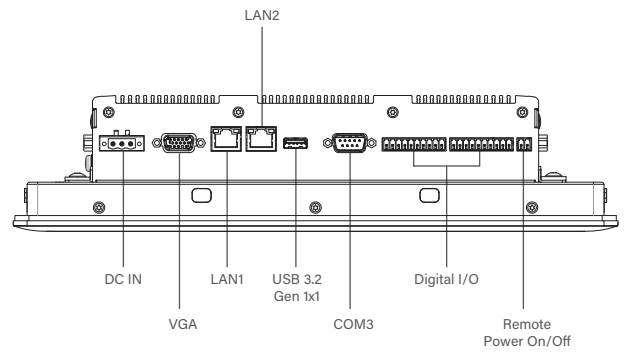
Relative Humidity	<ul style="list-style-type: none"> <li>• 95%RH @ 65°C (non-Condensing)</li> </ul>
Shock	<ul style="list-style-type: none"> <li>• Operating, 50 Grms (w/SSD, according to IEC60068-2-27)</li> <li>• MIL-STD-810H</li> </ul>
Vibration	<ul style="list-style-type: none"> <li>• Operating, 1 Grms, 10-500 Hz, 3 Axes (w/SSD, according to IEC60068-2-6)</li> <li>• MIL-STD-810H</li> </ul>
EMC	<ul style="list-style-type: none"> <li>• CE, UKCA, FCC, ICES-003 Class A</li> </ul>
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>
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Industrial Environment	<ul style="list-style-type: none"> <li>• EMC               <ul style="list-style-type: none"> <li>- EN/BS/IEC 61000-6-4: 2019 Class A</li> <li>- EN/BS/IEC 61000-6-2: 2019</li> </ul> </li> </ul>
Safety	<ul style="list-style-type: none"> <li>• UL, cUL, CB, IEC, EN 62368-1</li> </ul>

**CV-112H/P2302 External Layout**

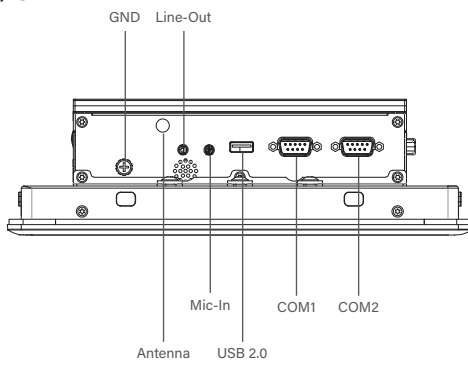
Front I/O



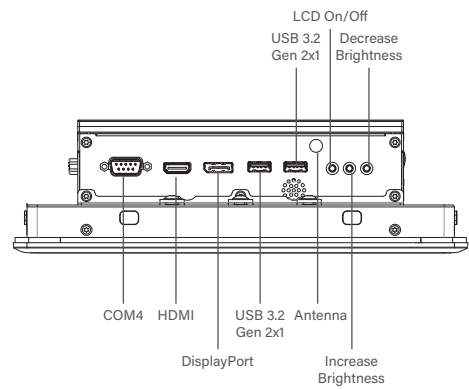
Rear I/O



Left I/O

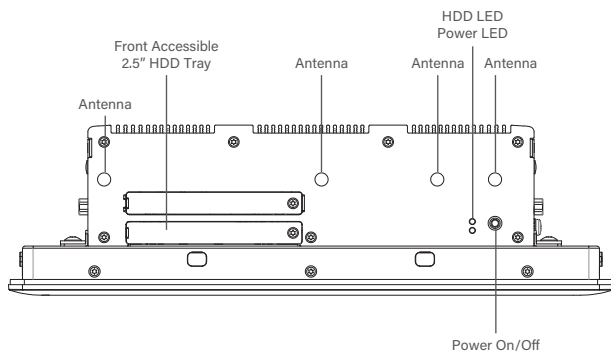


Right I/O

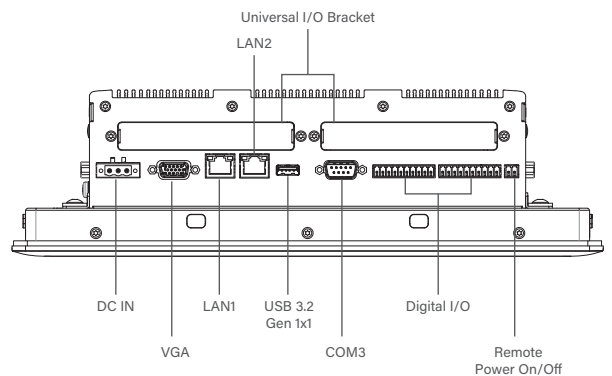


**CV-112H/P2302E External Layout**

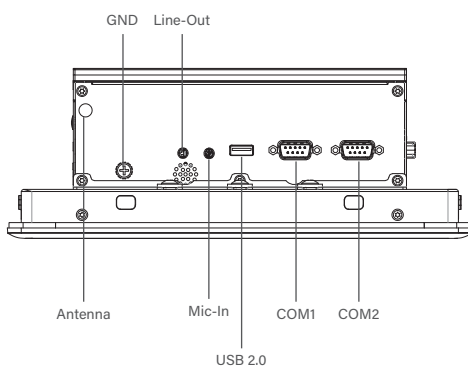
Front I/O



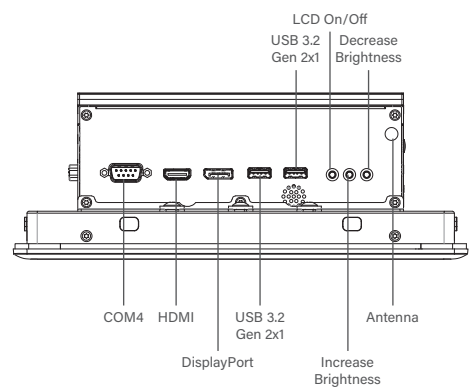
Rear I/O



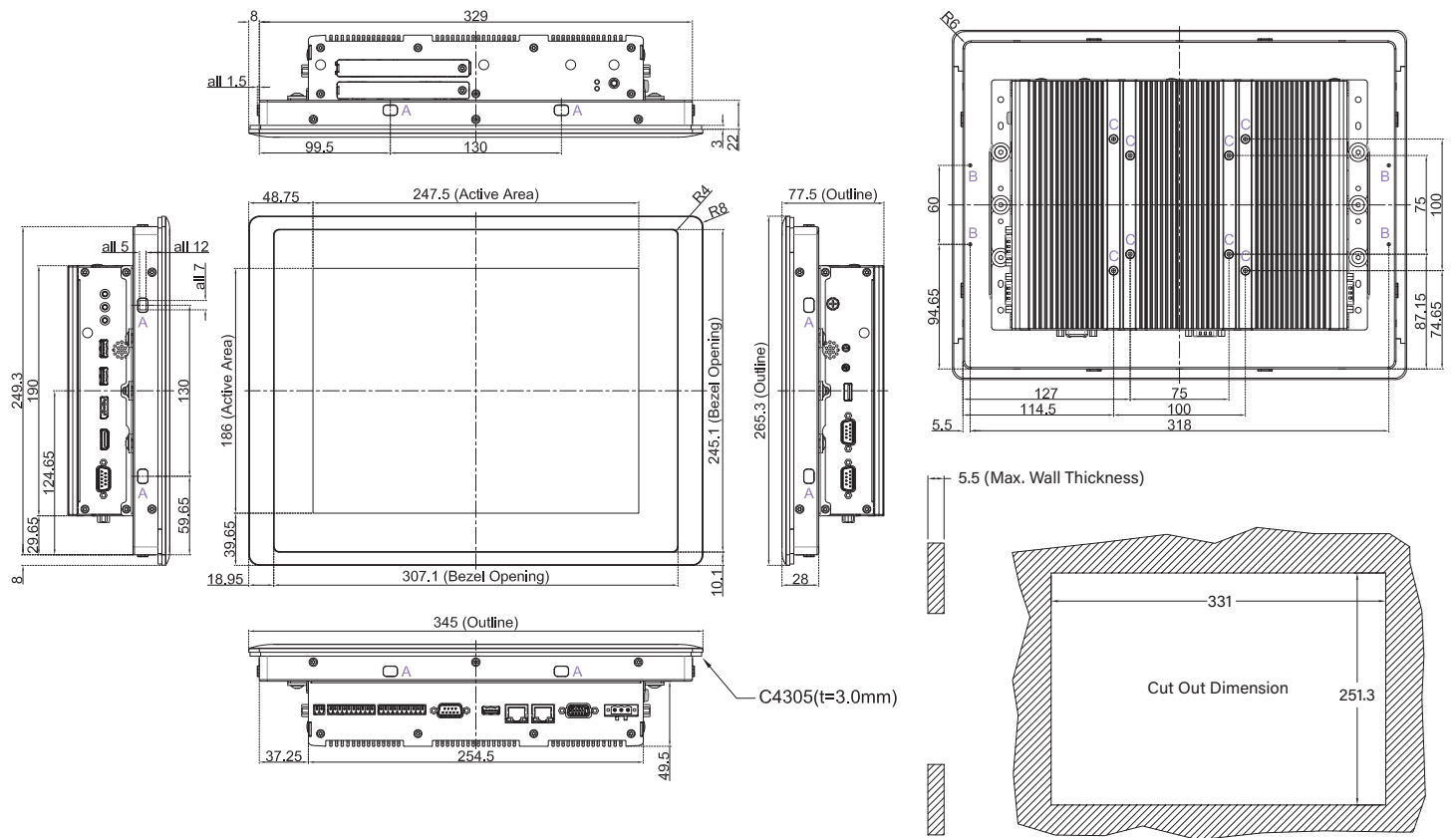
Left I/O



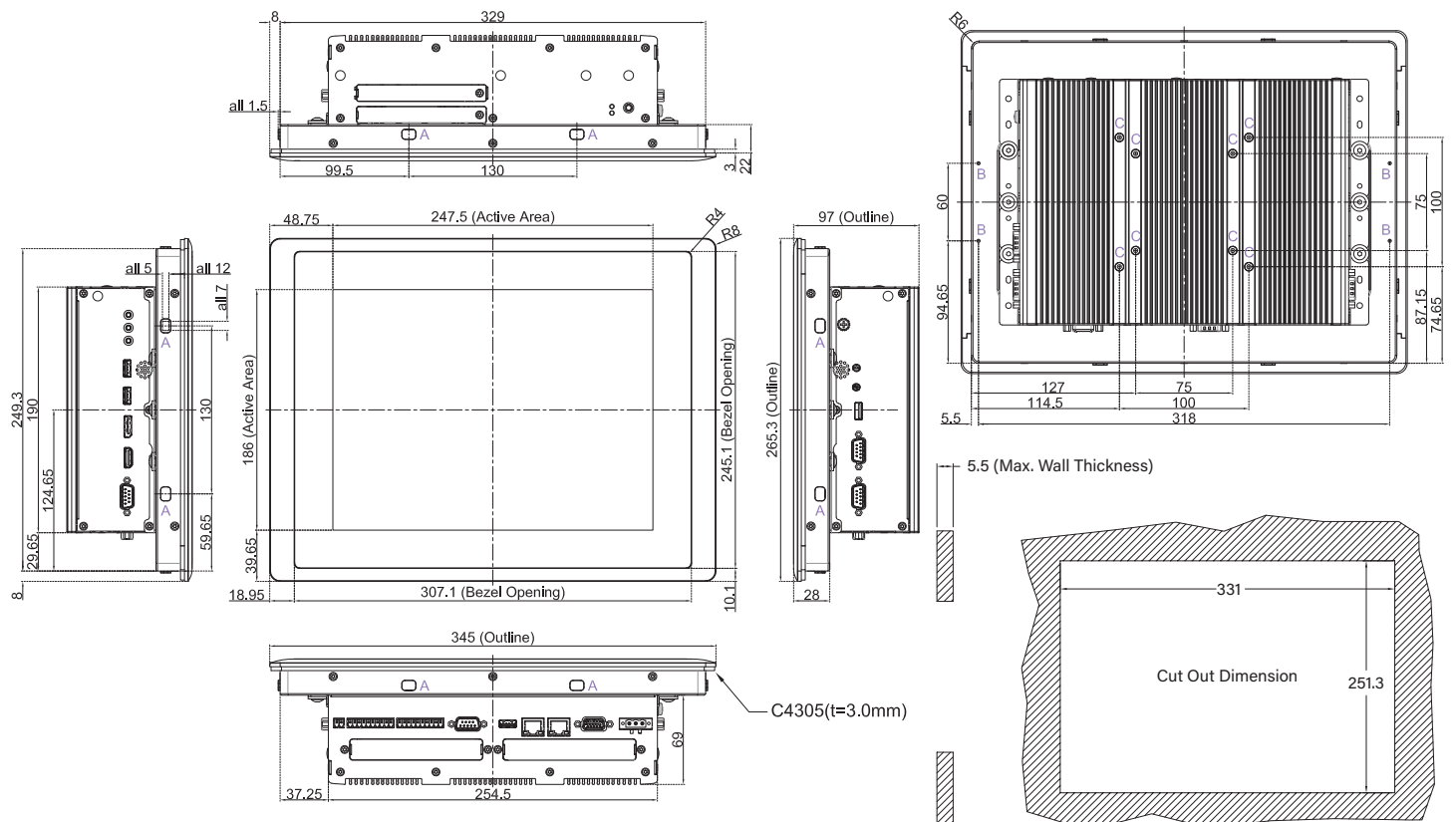
Right I/O



**CV-112H/P2302 Dimensions**



**CV-112H/P2302E Dimensions**



## Ordering Information

### Available Models

Model No.	Description
CV-112HR-R10/P2302-R10	12.1" TFT XGA 4:3 Display Modular Panel PC with Intel Meteor Lake-PS Core Series (LGA Socket) Slim Embedded Computer and Resistive 5-wire Touch
CV-112HR-R10/P2302E-R10	12.1" TFT XGA 4:3 Display Modular Panel PC with Intel Meteor Lake-PS Core Series (LGA Socket) Expandable Embedded Computer, Supporting 1x PCI/PCIe Expansion Card and Resistive 5-wire Touch
CV-112HC-R11/P2302-R10	12.1" TFT XGA 4:3 Display Modular Panel PC with Intel Meteor Lake-PS Core Series (LGA Socket) Slim Embedded Computer and Projected Capacitive Touch
CV-112HC-R11/P2302E-R10	12.1" TFT XGA 4:3 Display Modular Panel PC with Intel Meteor Lake-PS Core Series (LGA Socket) Expandable Embedded Computer, Supporting 1x PCI/PCIe Expansion Card and Projected Capacitive Touch

### Model Configuration

	CV-112HR	CV-112HC	P2302	P2302E
CV-112HR/P2302	V	--	V	--
CV-112HC/P2302	--	V	V	--
CV-112HR/P2302E	V	--	--	V
CV-112HC/P2302E	--	V	--	V

V : Compatible

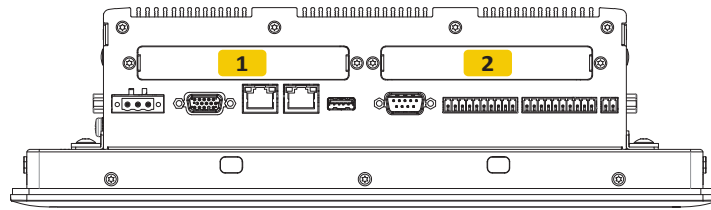
### Package Checklist

• CV-112H/P2302 Series Panel PC x1	• PCI / PCIe Card Installation Kit x 1 (For P2302E Only)
• Power Terminal Block x1	• Screw Pack x4
• Remote Power On/Off Terminal Block Connector x1	• Heatsink Kit x1
• DIO Terminal Block Connector x2	• M.2 Key B Type 3052 to 3042 Adapter Bracket x1
• Panel Mounting Kit x8	

**Optional Modules and Accessories**

Model No.	Description
CFM-IGN101	CFM Module with Power Ignition Sensing Control Function, 12V/24V Voltage Detection Selectable
CFM-PoE08-R10	CFM Module with PoE Control Function, Individual Port 25.5W (For P2302 Only)
CFM-PoE09-R10	CFM Module with PoE Control Function, Individual Port 25.5W (For P2302E Only)
MEC-LAN-2002i	M.2 2242/2260/2280 2-port 10/100/1000 Isolated Ethernet Board(-40°C~+85°C), 2x RJ45 Connector
MEC-LAN-2002i-S	M.2 2242/2260/2280 2-port 10/100/1000 Isolated Ethernet Board(-0°C~+70°C), 2x RJ45 Connector
MEC-USB-2002-SP	M.2 2242/2260/2280 2 port USB 3.2 board(-0°C~+70°C), w/ IDE 20P 90° Cable, 2x USB Type A Connector *Only one MEC-USB-2002-SP can be installed on the P2302E
MEC-USB-2002C	M.2 2242/2260/2280 2-port USB 3.2 Board(-0°C~+70°C), 2x USB Type C Connector
MEC-COM-2012	M.2 2242/2260/2280 (B+M Key) 2-port RS-232 Serial Board (-40°C~+85°C), 2x DB9 Connector
MEC-COM-2032i	M.2 2242/2260/2280 (B+M key) 2-port RS-232/422/485 isolated serial board (-40°C~+85°C), 2x DB9 Connector
RC-E4-02	Riser Card with 1x PCIe x4 Slot (For P2302E Only)
RC-PI-02	Riser Card with 1x PCI Slot (For P2302E Only)
UB1203	Universal Bracket with 2x DB9 Cutout for MEC-COM Expansion
UB1211	Universal Bracket with 2x RJ45 Cutout for MEC-LAN Expansion
UB1233-R10	Universal Bracket with 2x USB Type C Cutout for MEC-USB Expansion
UB1234-R10	Universal Bracket with 2x USB Type A Cutout for MEC-USB (M.2 interface) Expansion
DIN01	DIN-RAIL Mount Kit, KMRH-K175
GST120A24-CIN	Adapter AC/DC 24V 5A 120W with 3pin Terminal Block Plug 5.0mm Pitch, with TUBES, Level VI
GST220A24-CIN	Adapter AC/DC 24V 9.2A 220W with 3pin Terminal Block Plug 5.0mm Pitch, with TUBES, level VI
GST360A24-CIN	Adapter AC/DC 24V 15A 360W with 3pin Terminal Block Plug 5.0mm Pitch, with TUBES, Level VI

**Optional Module Configuration (For P2302E only)**



Model No.	Description	1	2
 <p>MEC-LAN-2002i/UB1211</p>	M.2 2242/2260/2280 2-port 10/100/1000 Isolated Ethernet Board (-40°C~+85°C), 2x RJ45 Connector / Universal Bracket with 2x RJ45 Cutout for MEC-LAN Expansion	V	V
 <p>MEC-LAN-2002i-S/UB1211</p>	M.2 2242/2260/2280 2-port 10/100/1000 Isolated Ethernet Board (-0°C~+70°C), 2x RJ45 Connector / Universal Bracket with 2x RJ45 Cutout for MEC-LAN Expansion	V	V
 <p>MEC-USB-2002-SP/UB1234-R10</p>	M.2 2242/2260/2280 2 port USB 3.2 board(-0°C~+70°C), w/ IDE 20P 90° Cable, 2x USB Type A Connector / Universal Bracket with 2x USB Type A Cutout for MEC-USB (M.2 interface) Expansion *Only one MEC-USB-2002-SP can be installed on the P2302E	V	V
 <p>MEC-USB-2002C/UB1233-R10</p>	M.2 2242/2260/2280 2-port USB 3.2 Board(-0°C~+70°C), 2x USB Type C Connector / Universal Bracket with 2x USB Type C Cutout for MEC-USB Expansion	V	V
 <p>MEC-COM-2012/UB1203</p>	M.2 2242/2260/2280 (B+M Key) 2-port RS-232 Serial Board (-40°C~+85°C), 2x DB9 Connector / Universal Bracket with 2x DB9 Cutout for MEC-COM & MEC-CAN Expansion	V	V
 <p>MEC-COM-2032i/UB1203</p>	M.2 2242/2260/2280 (B+M key) 2-port RS-232/422/485 isolated serial board (-40°C~+85°C), 2x DB9 Connector / Universal Bracket with 2x DB9 Cutout for MEC-COM & MEC-CAN Expansion	V	V
 <p>RC-E4-02</p>	Riser Card with 1x PCIe x4 Slot	V	-
 <p>RC-PI-02</p>	Riser Card with 1x PCI Slot	V	-

V : Compatible