CV-212C/P2302 Series

12.1" TFT WXGA 16:10 Slim Bezel Panel PC with Intel Meteor Lake-PS Core Series (LGA Socket) Expandable Embedded Computer, Projected Capacitive Touch, and AG Coating



Slim · Modular · Durable

CV-200/P2000 Series — Modernized Industrial Panel PCs

Overview

CONTACT

The CV-200 / P2302 series is a high-performance slim-bezel modular industrial panel PC, powered by the latest Intel® Core™ Ultra (Meteor Lake-PS) processors for excellent computing performance, flexible integration, and modern design. Featuring ultra-slim bezels, rich built-in I/O, and versatile expansion options, including M.2, PCI/PCIe slots, and CFM/MEC modular support (P2302E), it allows upgrades for wireless connectivity, NVMe SSD, and I/O functions. Available in 10"–21.5" Full HD sizes with rugged industrial design, it's ideal for HMIs and production process visualization.

Key Features

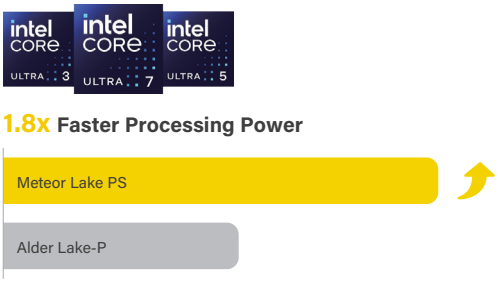
- 12.1" WXGA LCD (1280 x 800) with 16:10 Aspect Ratio
- Projected Capacitive Touch with Anti-Glare Coating.
- Wide Viewing Angle of 178°/178°
- Intel® Meteor Lake-PS Core™ Ultra 7/5/3 Processor
- Quad Independent Display (CDS / HDMI® / DP / VGA)
- 1x M.2 Key E Type 2230 Socket for Wireless / Bluetooth Module Expansion
- 1x 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
- Front Panel IP66 Compliant

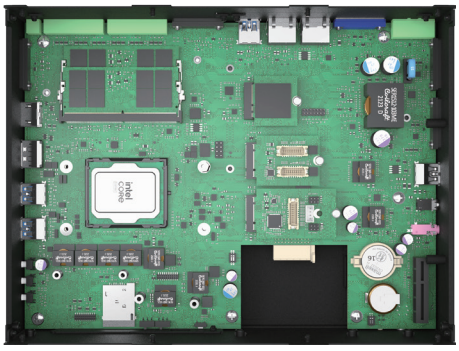
Certifications

IP66

Improved Performance x Power-Saving x AI Boost

The CV-200/P2302 series supports Intel® 4 Core Ultra 7/5/3 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.





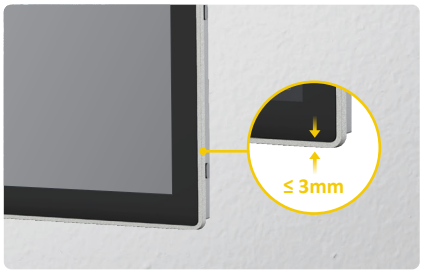
High Flexibility, Unlimited Applications

The CV-200/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-200/P2302E further supports PCI/PCIe slots for expansion cards (up to 75W, 111 × 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.



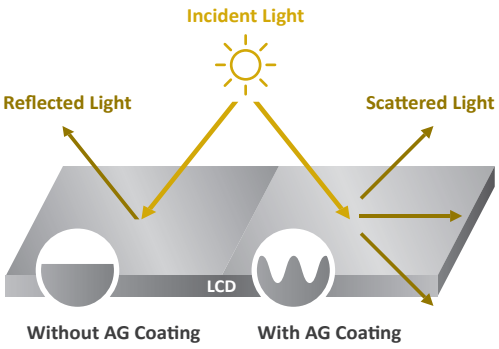


Ultra-Slim Bezel

With an ultra-slim bezel of ≤ 3 mm (varies by display size), the CV-200 minimizes physical constraints for compact installations. It's ideal for space-limited enclosures and applications requiring efficient integration with a streamlined appearance.

Reliable Touch Performance

All models support P-Cap touch, anti-glare (AG) coating, and wet tracking technology, ensuring stable operation and clear visibility even in humid environments or under bright indoor lighting.



9 - 48VDC

IP66

Rugged, Safe, and More Reliable

The CV-200/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 IP66 front panel.

CV-212C Specifications

Model Name	CV-212C
Display	
LCD Size	▪ 12.1" (16:10)
Max. Resolution	▪ 1280x800
Brightness (cd/m2)	▪ 400
Contrast Ratio	▪ 1000 : 1
LCD Color	▪ 16.2M
Pixel Pitch (mm)	▪ 0.204 (H) x 0.204 (V)
Viewing Angle (H-V)	▪ 178 / 178
Backlight LED Life Time	▪ 50,000 hrs (LED Backlight)
Touch Screen	
Touch Type	▪ Projected Capacitive
Anti-Glare	▪ V
Wet Touch Tracking	▪ V
Physical	
Dimension (W x D x H)	▪ 309.3 x 213.7 x 63.4 mm
Weight Information	▪ 2.13 kg
Mechanical Construction	▪ Die-Casting Flat Surface
Power	
Power Consumption	▪ 7.45 W (Typ.)
Environment	
Front Panel Protection	▪ IP 66 Compliant
Operating Temperature	▪ -20°C - 70°C (-4°F to 158°F) - With Industrial Grade peripherals; Ambient with air flow
Storage Temperature	▪ -30°C - 85°C (-22°F to 185°F)
Relative Humidity	▪ 90% RH @ 40°C (non-condensing)
EMC	▪ CE, UKCA, FCC, ICES-003 Class A
EMI	▪ CISPR 32 Conducted & Radiated: Class A ▪ EN/BS EN 55032 Conducted & Radiated: Class A ▪ EN/BS EN IEC 61000-3-2 Harmonic current emissions: Class A ▪ EN/BS EN61000-3-3 Voltage fluctuations & flicker ▪ FCC 47 CFR Part 15B, ICES-003 Conducted & Radiated: Class A
EMS	▪ EN/IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV ▪ EN/IEC 61000-4-3 RS: 80 MHz to 1000 MHz: 3 V/m ▪ EN/IEC 61000-4-4 EFT: AC Power: 1 kV; DC Power: 0.5 kV; Signal: 0.5 kV ▪ EN/IEC 61000-4-5 Surges: AC Power: 2 kV; Signal: 1 kV ▪ EN/IEC 61000-4-6 CS: 3V ▪ EN/IEC 61000-4-8 PFMF: 50 Hz, 1A/m ▪ EN/IEC 61000-4-11 Voltage Dips & Voltage Interruptions: 0.5 cycles at 50 Hz
Industrial Environment	▪ EMC: - EN/BS/IEC 61000-6-4: 2019 Class A - EN/BS/IEC 61000-6-2: 2019

Railway	▪ EMC: EN 50155: 2021 Clause 4.4.6, 13.4.9 (w/ M1101 only) - EN 50121-1 : 2017 - EN 50121-3-2: 2016 + A1: 2019

P2302 Specifications

Model Name	P2302	P2302E
System		
Processor	▪ Intel® Meteor Lake-PS Core™ Ultra 7/5/3 Processor - Intel® Core™ Ultra 7 Processor 165UL 12 Cores Up to 4.9 GHz, TDP 15W - Intel® Core™ Ultra 7 Processor 155UL 12 Cores Up to 4.8 GHz, TDP 15W - Intel® Core™ Ultra 5 Processor 135UL 12 Cores Up to 4.4 GHz, TDP 15W - Intel® Core™ Ultra 5 Processor 125UL 12 Cores Up to 4.3 GHz, TDP 15W - Intel® Core™ Ultra 3 Processor 105UL 8 Cores Up to 4.2 GHz, TDP 15W	
Memory	▪ 2x DDR5 5600 MHz SO-DIMM Socket, Supports Un-buffered and non-ECC Type, Up to 96 GB	
BIOS	▪ AMI BIOS	
Graphics		
Graphics Engine	▪ Intel® Graphics	
Maximum Display Output	▪ Supports Quad Independent Display	
CDS	▪ 1x CDS Connector (1920 x 1080 @60Hz)	
DP	▪ 1x DisplayPort Connector (4096 x 2304 @60Hz) * Verified maximum resolution: 3840 x 2160 @ 60Hz	
HDMI®	▪ 1x HDMI® Connector (3840 x 2160 @30Hz)	
VGA	▪ 1x VGA Connector (1920 x 1080 @60Hz)	
Audio		
Audio Codec	Realtek® ALC888, High Definition Audio	
Line-out	▪ 1x Line-out, Phone Jack 3.5mm	
Mic-in	▪ 1x Mic-in, Phone Jack 3.5mm	
I/O		
LAN	▪ 2x 2.5GbE LAN, RJ45 - GbE1: Intel® I226 - GbE2: Intel® I226	
COM	▪ 4x RS-232/422/485 with Auto Flow Control (Supports 5V/12V), DB9	
USB	▪ 2 x USB 3.2 Gen2x1 (10Gbps), Type A ▪ 1 x USB 3.2 Gen1x1 (5Gbps), Type A ▪ 1 x USB 2.0 (480Mbps), Type A	
DIO	▪ 16x Isolated Digital I/O (8in/8out), 20-Pin Terminal Block	
Storage / Expansion		
2.5" SSD/HDD	▪ 2x 2.5" SATA HDD/SSD Bay (SATA 3.0)	
M.2 Key E Socket	▪ 1x M.2 Key E Type 2230 Socket (PCIe Gen 3x1 / USB2.0), Support Wireless/Bluetooth Module Expansion	
M.2 Key B Socket	▪ 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 ▪ 1x M.2 Key B Type 3042 (PCIe Gen 3x2 / USB2.0), Support Storage/Add-on Card Expansion	
PCI Express		▪ 1x PCI or 1x PCIe Gen3 x4 Expansion slot (with Optional Riser Card) ▪ Supports maximum dimensions of add-on card (H x L) : 111 x 169mm
SIM Socket	▪ 1 x Front Accessible SIM Socket	
CFM (Control Function Module) Interface	▪ 1x CFM Interface for optional IGN Module Expansion ▪ 1x CFM Interface for optional PoE Module Expansion	

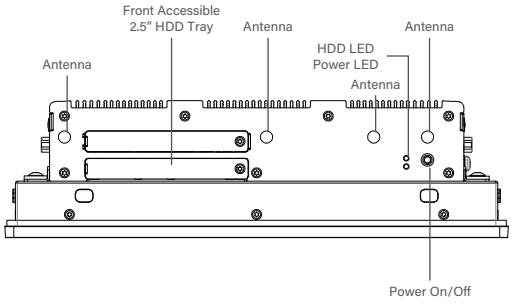
Other Function		
RAID	▪ RAID 0/1	
Clear CMOS Switch	▪ 1x Clear CMOS Switch	
Reset Button	▪ 1x Reset Button	
Watchdog Timer	▪ Software Programmable Supports 256 Levels System Reset	
OSD Button	▪ LCD On/Off, Brightness Up, Brightness Down	
Internal Speaker	▪ AMP 2W + 2W	
Status LED Indicator	▪ Power LED, Storage LED	
Antenna Holes	▪ 6x Antenna Holes	
Power		
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	
Operating System		
Windows	▪ Windows®11, Windows®10	
Linux	▪ Ubuntu Desktop 24.04 LTS	
Physical		
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	
Reliability & Protection		
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	
Environment		
Operating Temperature	▪ P2302:-40°C to 65°C (-40°F to 149°F) ▪ P2302E:-20°C to 65°C (-4°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	▪ 95%RH @ 65°C (non-Condensing)
Shock	▪ Operating, 50 Grms (w/SSD, according to IEC60068-2-27) ▪ MIL-STD-810H
Vibration	▪ Operating, 1 Grms, 10-500 Hz, 3 Axes (w/SSD, according to IEC60068-2-6) ▪ MIL-STD-810H
EMC	▪ CE, UKCA, FCC, ICES-003 Class A
EMI	▪ CISPR 32 Conducted & Radiated: Class A ▪ EN/BS EN 55032 Conducted & Radiated: Class A ▪ EN/BS EN IEC 61000-3-2 Harmonic current emissions: Class A ▪ EN/BS EN61000-3-3 Voltage fluctuations & flicker ▪ FCC 47 CFR Part 15B, ICES-003 Conducted & Radiated: Class A
EMS	▪ EN/IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV ▪ EN/IEC 61000-4-3 RS: 80 MHz to 1000 MHz: 10 V/m ▪ EN/IEC 61000-4-4 EFT: AC Power: 2 kV; DC Power: 1 kV; Signal: 1 kV ▪ EN/IEC 61000-4-5 Surges: AC Power: 2 kV; Signal: 1 kV ▪ EN/IEC 61000-4-6 CS: 10V ▪ EN/IEC 61000-4-8 PFMF: 50 Hz, 30A/m ▪ EN/IEC 61000-4-11 Voltage Dips & Voltage Interruptions: 1 cycles at 60 Hz
Industrial Environment	▪ EMC - EN/BS/IEC 61000-6-4: 2019 Class A - EN/BS/IEC 61000-6-2: 2019
Safety	▪ UL, cUL, CB, IEC, EN 62368-1

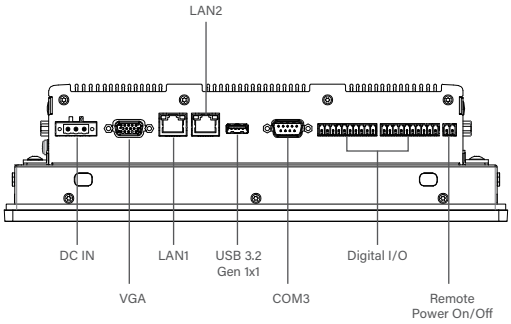
The terms HDMI, HDMI High-Definition Multimedia Interface, HDMI Trade dress and the HDMI Logos are trademarks or registered trademarks of HDMI Licensing Administrator, Inc.

CV-212C/P2302 External Layout

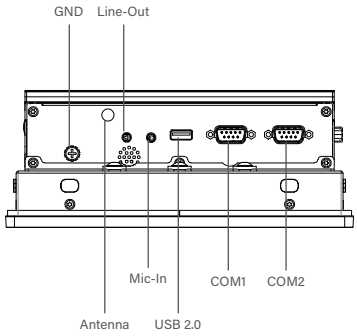
Front I/O



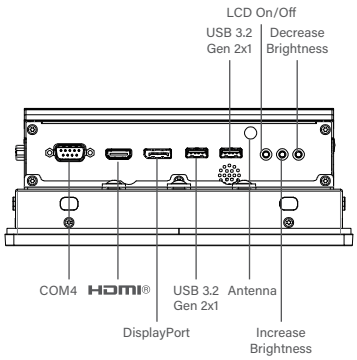
Rear I/O



Left I/O

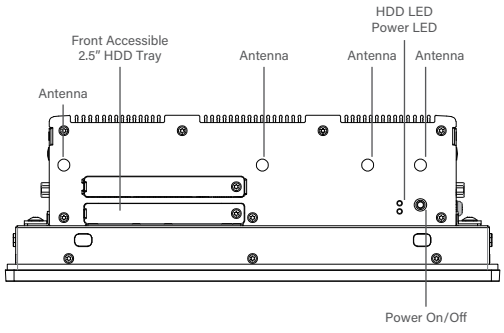


Right I/O

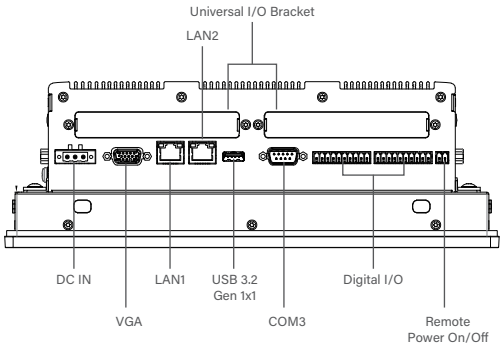


CV-212C/P2302E External Layout

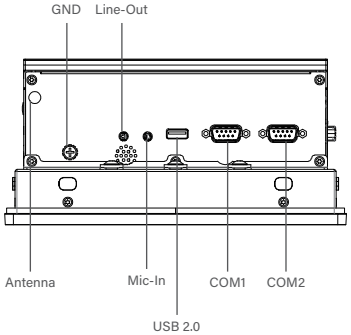
Front I/O



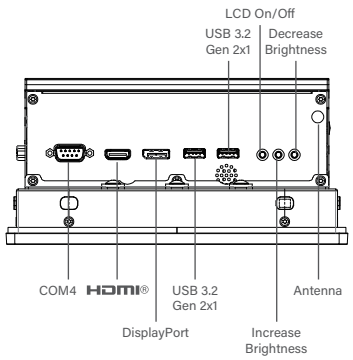
Rear I/O



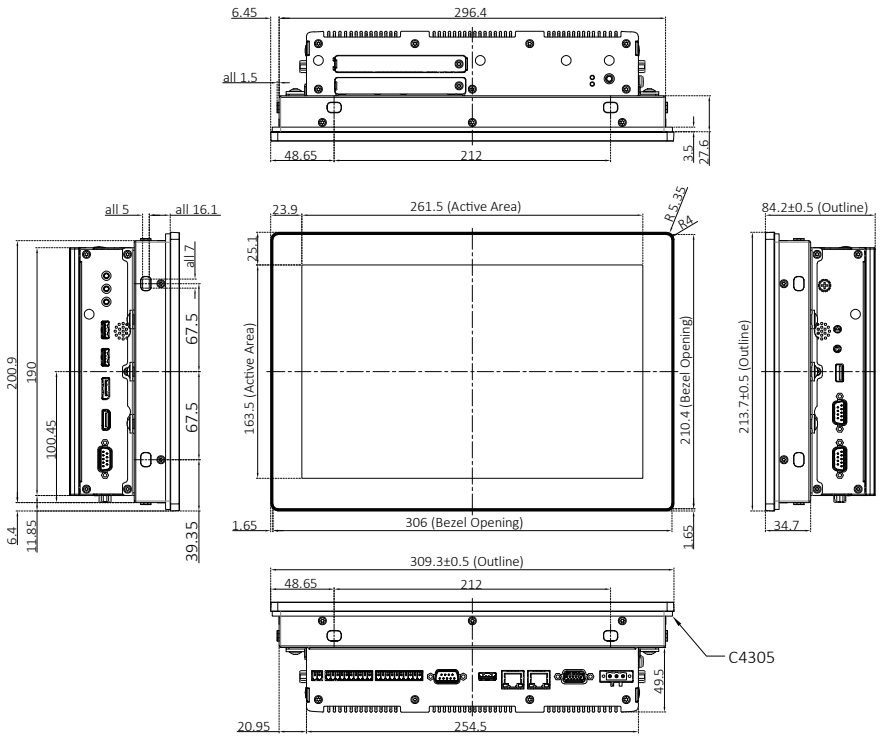
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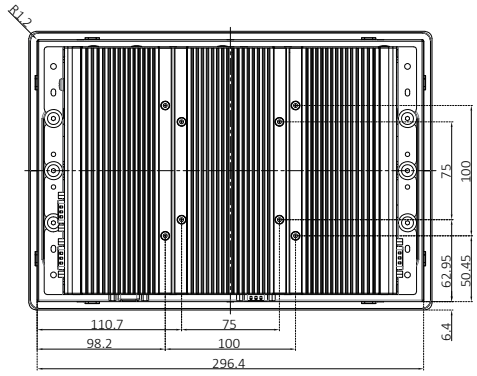


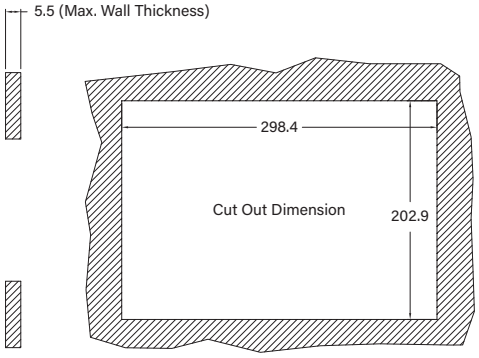
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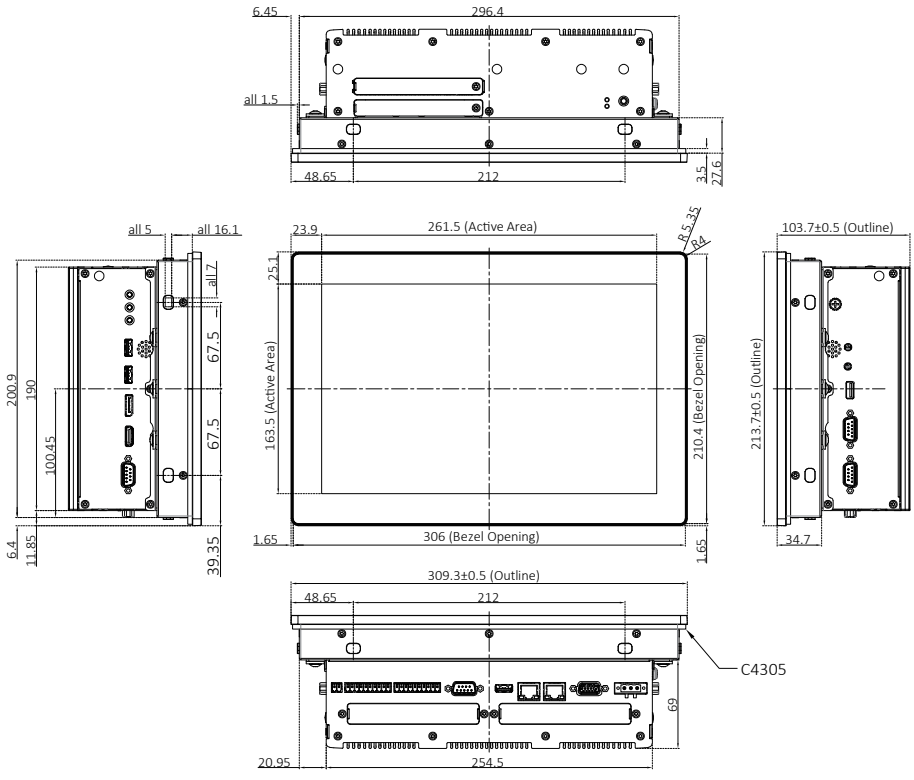
CV-212C/P2302 Dimensions

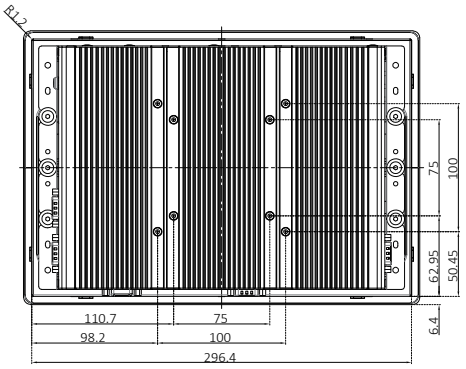


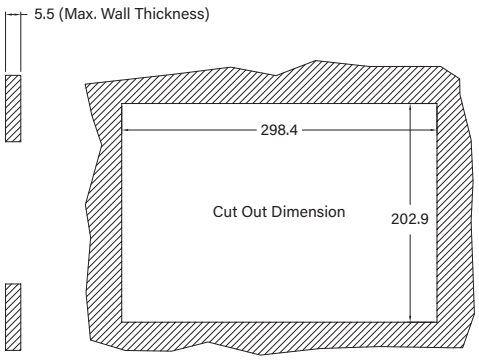




CV-212C/P2302E Dimensions







Unit: mm

Ordering Information

Available Models

Model No.	Description
CV-212C-R10/P2302-R10	12.1" TFT WXGA 16:10 Slim Bezel Panel PC with Intel Meteor Lake-PS Core Series (LGA Socket) Embedded Computer, Projected Capacitive Touch, and AG Coating
CV-212C-R10/P2302E-R11	12.1" TFT WXGA 16:10 Slim Bezel Panel PC with Intel Meteor Lake-PS Core Series (LGA Socket) Expandable Embedded Computer, Projected Capacitive Touch, and AG Coating

Model Configuration

	CV-212C	P2302	P2302E
CV-212C/P2302	V	V	--
CV-212C/P2302E	V	--	V

V : Compatible

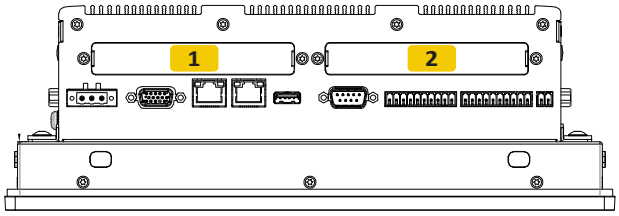
Package Checklist

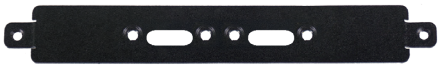
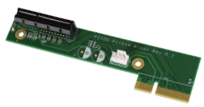
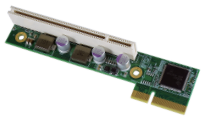
▪ CV-212C/P2302 Series Panel PC x1	▪ PCI / PCIe Card Installation Kit x 1 (For P2302E Only)
▪ Power Terminal Block x1	▪ Screws Pack x4
▪ Remote Power On/Off Terminal Block Connector x1	▪ Heatsink kit x1
▪ DIO Terminal Block Connector x2	▪ M.2 Key B Type 3052 to 3042 Adapter Bracket x1
▪ Panel Mounting Kit x10	

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
URM01	Universal 19" Rack Mount Kit for Industrial Panel PC & Industrial Monitor
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
MEC-LAN-2002i/UB1211 	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
MEC-LAN-2002i-S/UB1211 	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
MEC-USB-2002-SP/UB1234-R10 	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
MEC-USB-2002C/UB1233-R10 	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
MEC-COM-2012/UB1203 	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
MEC-COM-2032i/UB1203 	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
RC-E4-02 	Riser Card with 1x PCIe x4 Slot	V	-
RC-PI-02 	Riser Card with 1x PCI Slot	V	-

V : Compatible

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