P2202 Series

12th Gen. Intel® Core™ i5-1245UE / i3-1215UE Embedded Computer with CDS Technology

UNLEASH LEADING-EDGE PERFORMANCE PANEL PC

P2202 Series │ Powered by the Latest Intel Alder Lake-P Platform

intel CORE

Overview

CONTACT

The P2202 series are ultra-slim high-performance embedded computers designed for industrial IoT edge computing. High-performance and flexible expansion are the standout features, with rich native I/O interfaces, Mini PCIe and M.2 Key E Type 2230 expansion slots, and PCIe expansion (Model: P2202E). The thinnest model is only 41.5 mm, a perfect fit for installation in small spaces.

The main highlight of the P2202 series is the 12th Gen Intel® (Alder Lake-P) processors. The P2202 series can be used as a standalone embedded computer or, by using the exclusive CDS patented technology to connect a display module, used as an industrial panel PC, sunlight readable panel PC, or open frame panel PC to meet any display computing needs.

Key Features

- Onboard Intel® Alder Lake-P U-Series Core™ Processor
- 2 x DDR5 SO-DIMM Socket, Supports up to 4800MHz 64GB Memory
- Quad Independent Display (CDS / HDMI / DP / VGA)
- 1x M.2 Key E Type 2230 Socket for Storage/Wireless/Bluetooth/Intel CNVi Module Expansion
- Supports Cincoze Patent CDS Technology (Patent No. M482908)
- CFM Technology for Power Ignition Sensing & PoE Function
- Wide Operating Temperature -40℃ to 70℃ (-40°F to 158°F)

Certifications

EN 61000-6-2   EN 61000-6-4   EN 62368-1   c UL us LISTED   CB

AI & Multi-tasking Performance

The P2202 series is equipped with the 12th Gen Intel® Core™ i5/i3 U-series (Alder Lake-P) processor based on the Intel® 7 process. The U-series has a low power consumption of only 15W, boasts excellent performance with up to 10 cores (2P+8E), and includes the built-in Intel® Iris Xe graphics to easily handle image classification inference performance in AI deep learning.

i5 Processor

12th Gen Alder Lake i5-1245UE	**+2.23X**
8th Gen. Whiskey i5-8365UE	

i3 Processor

12th Gen Alder Lake i3-1215UE	**+1.62X**
8th Gen. Whiskey i3-8145UE	

Slim Design
## For Space-constrained Environments

The P2202 series has a compact, ultra-thin design with dimensions of only 254.5 x 190 x 41.5 mm (Model: P2202), allowing flexible installation in various narrow application environments such as equipment machines, control cabinets, or AMRs. They are suitable for production data collection and processing in smart factories and mobile equipment.

41.5 mm
190 mm
254.5 mm

One Computer / Two Purposes

The P2202 series is not only an embedded computer. Using the Cincoze patented Convertible Display System technology an industrial display module (CV-100 series), sunlight readable display module (CS-100), or open frame display module (CO-100) can be added to form panel PCs with different characteristics.

Patent No. M482908

CDS
Convertible Display System
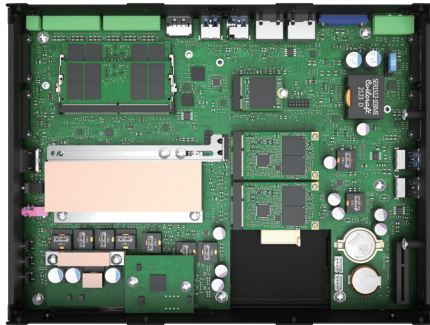
Flexible Expansion For Any Application

Mini PCIe and M.2 Key E slots can support a variety of wireless connections (WiFi, 4G, GNSS, and Bluetooth), providing a full range of data transmission options for mobile devices. The PCIe x4 slot (P2202E model only) can accommodate 75W add-on cards (I/O expansion cards, frame grabber cards, and others). The P2202 series meets different application needs with its diverse expandability.

Industrial EMC Protection

To enhance stability when installed in high-vibration equipment control cabinets and mobile robots, the P2202 series has passed different vibration and shock reliability tests, such as random vibration (5G), sinusoidal vibration (1G), and shock resistance (50G). It also complies with the industrial-grade EMC standards for industrial environments (EN 61000-6-4 and EN 61000-6-2).

IEC 60068
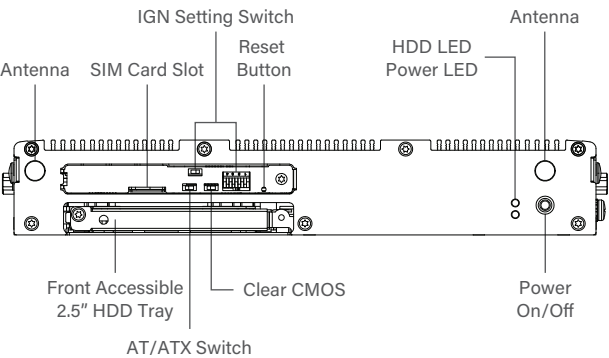
EN 61000-6

Specifications

Model Name	P2202	P2202E
System		
Processor	▪ Onboard 12th Generation Intel® Alder Lake-P U-Series CPU: - Intel® Core™ i5-1245UE 10 Cores Up to 4.40 GHz, TDP 15W - Intel® Core™ i3-1215UE 6 Cores Up to 4.40 GHz, TDP 15W	
Memory	▪ 2x DDR5 4800MHz SO-DIMM Socket Supports Un-buffered and non-ECC Type, Up to 64GB	
BIOS	▪ AMI BIOS	
Graphics		
Graphics Engine	▪ Integrated Intel® Iris® Xe Graphics: Core™ i5-1245UE ▪ Integrated Intel® UHD Graphics: Core™ i3-1215UE	
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 1200 @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 1GbE LAN, RJ45 - GbE1: Intel® I219 - GbE2: Intel® I210	
COM	▪ 4x RS-232/422/485 with Auto Flow Control (Supports 5V/12V), DB9	
USB	▪ 3 x USB 3.2 Gen2x1 (10Gbps), Type A ▪ 1 x USB 2.0 (480Mbps), Type A	
DIO	▪ 16x Isolated Digital I/O (8in/8out), 20-Pin Terminal Block	
Storage		
SSD/HDD	▪ 2x 2.5" SATA HDD/SSD Bay (SATA3.0)	
RAID	▪ Support RAID 0/1	
Expansion		
Mini PCI Express	▪ 2x Full-size Mini-PCIe Socket	
PCI Express		▪ 1x PCI or 1x PCIe x4 Expansion slot (with Optional Riser Card) * Supports maximum dimensions of add-on card (H x L) : 111 x 169mm
SIM Socket	▪ 1x SIM Socket	
M.2	▪ 1x M.2 Key E Type 2230 Socket (PCIe Gen 3x2 / USB2.0), Support Storage/Wireless/Bluetooth/Intel CNVi Module Expansion	
CFM (Control Function Module) Interface	▪ 1x CFM Interface for optional IGN Module Expansion ▪ 1x CFM Interface for optional PoE Module Expansion	

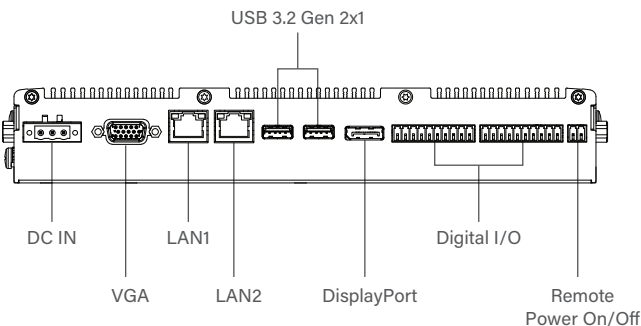| CDS (Convertible Display System) Interface	▪ 1x CDS Interface for Convertible Display Module	
Other Function		
Clear CMOS Switch	▪ 1x Clear CMOS Switch	
Reset Button	▪ 1x Reset Button	
Watchdog Timer	▪ Software Programmable Supports 256 Levels System Reset	
OSD Button	▪ LCD On/Off, Brightness Up, Brightness Down	
Internal Speaker	▪ AMP 2W + 2W	
Status LED Indicator	▪ Power LED, HDD LED	
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	▪ i5-1245UE CPU: 95.06W
	  - Test conducted with CPU, 1x RAM, and 1x storage
	  - 100% load during burn-in testing	

Inrush Current (Peak)	▪ i5-1245UE CPU: 5.381 A@24V	
Operating System		
Windows	▪ Windows®11, Windows®10	
Linux	▪ Ubuntu Desktop 22.04 LTS	
Physical		
Dimension(W x D x H)	▪ 254.5 x 190 x 41.5 mm	
Weight Information	▪ 2.22 kg	▪ 254.5 x 190 x 61 mm
Mechanical Construction	▪ Extruded Aluminum with Heavy Duty Metal	▪ 2.74 kg
Mounting	▪ Wall / VESA / CDS / DIN Rail	
Physical Design	▪ Fanless Design ▪ Jumper-less Design	
Reliability & Protection		
Reliability & Protection	▪ Yes	
Reverse Power Input 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	▪ 216,747 Hours - Database: Telcordia SR-332 Issue3, Method 1, Case 3	
Environment		

Operating Temperature	▪ -40°C to 70°C (-40°F to 158°F)
	  * 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 @ 70°C (non-Condensing)	
Shock	▪ Operating, 50 Grms (w/ SSD, according to IEC60068-2-27)	

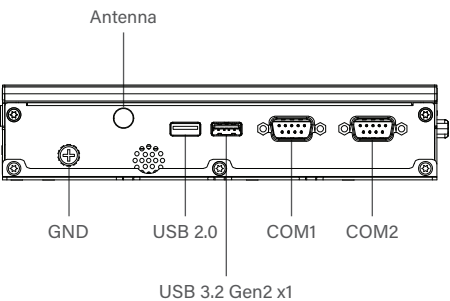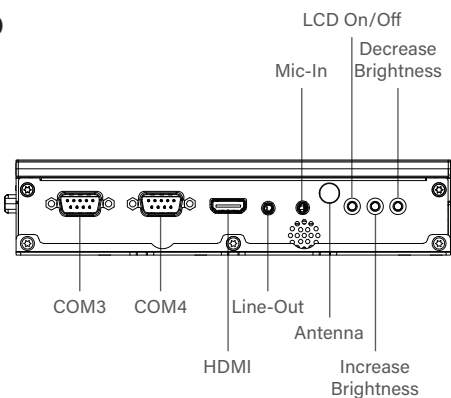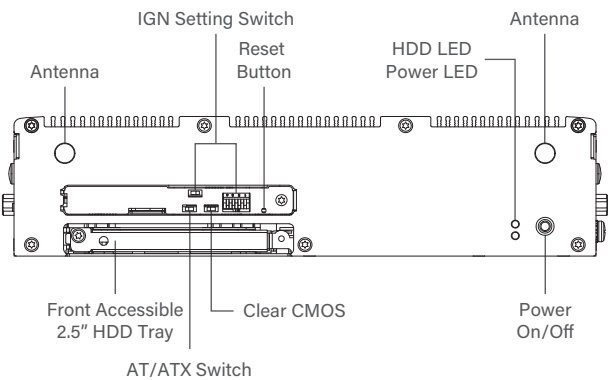|	
Vibration	▪ Operating, 1 Grms, 10-500 Hz, 3 Axes (w/ SSD, according to IEC60068-2-6) ▪ Operating, 5 Grms, 5-500 Hz, 3 Axes (w/ SSD, according to IEC60068-2-64)
EMC	▪ CE, UKCA, FCC, ICES-003 Class A ▪ EN IEC 61000-6-4, EN IEC 61000-6-2(24VDC Input Only)
EMI	▪ CISPR 32 Conducted & Radiated: Class A ▪ 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
Safety	▪ UL, cUL, CB, IEC/EN 62368-1

P2202 External Layout

Front I/O

IGN Setting Switch
Antenna
Reset Button
HDD LED Power LED
Antenna
SIM Card Slot
Front Accessible 2.5" HDD Tray
Clear CMOS
Power On/Off
AT/ATX Switch

Rear I/O

USB 3.2 Gen 2x1
DC IN
LAN1
Digital I/O
VGA
LAN2
DisplayPort
Remote Power On/Off

Left I/O

Antenna
GND
USB 2.0
COM1
COM2
USB 3.2 Gen2 x1

Right I/O

LCD On/Off
Decrease Brightness
Mic-In
COM3
COM4
Line-Out
Antenna
HDMI
Increase Brightness

P2202E External Layout

Front I/O

IGN Setting Switch
Antenna
Reset Button
HDD LED Power LED
Antenna
Front Accessible 2.5" HDD Tray
Clear CMOS
Power On/Off
AT/ATX Switch

Rear I/O

Universal I/O Bracket
DC IN
LAN1
USB 3.2 Gen 2x1
Digital I/O
VGA
LAN2
DisplayPort
Remote Power On/Off

Left I/O

Antenna
GND
USB 2.0
COM1
COM2
USB 3.2 Gen2 x1

Right I/O

LCD On/Off
Decrease Brightness
Mic-In
COM3
COM4
Line-Out
Antenna
HDMI
Increase Brightness

P2202 Dimensions

CV Grommet Rubber

P2202E Dimensions

CV Grommet Rubber

Unit: mm
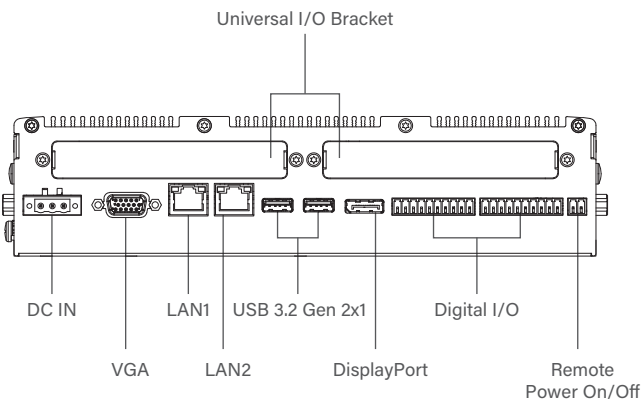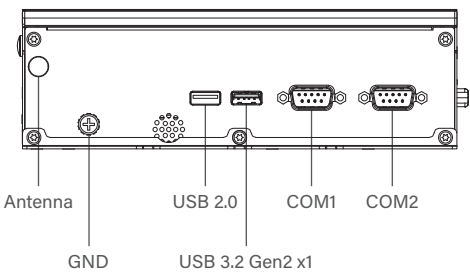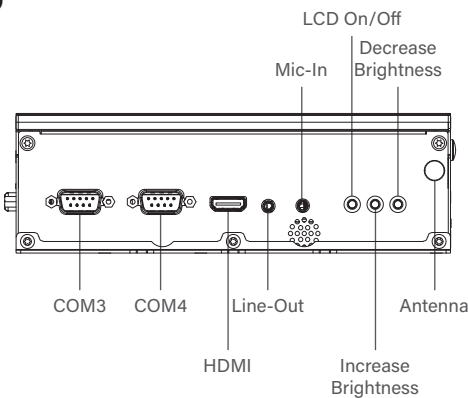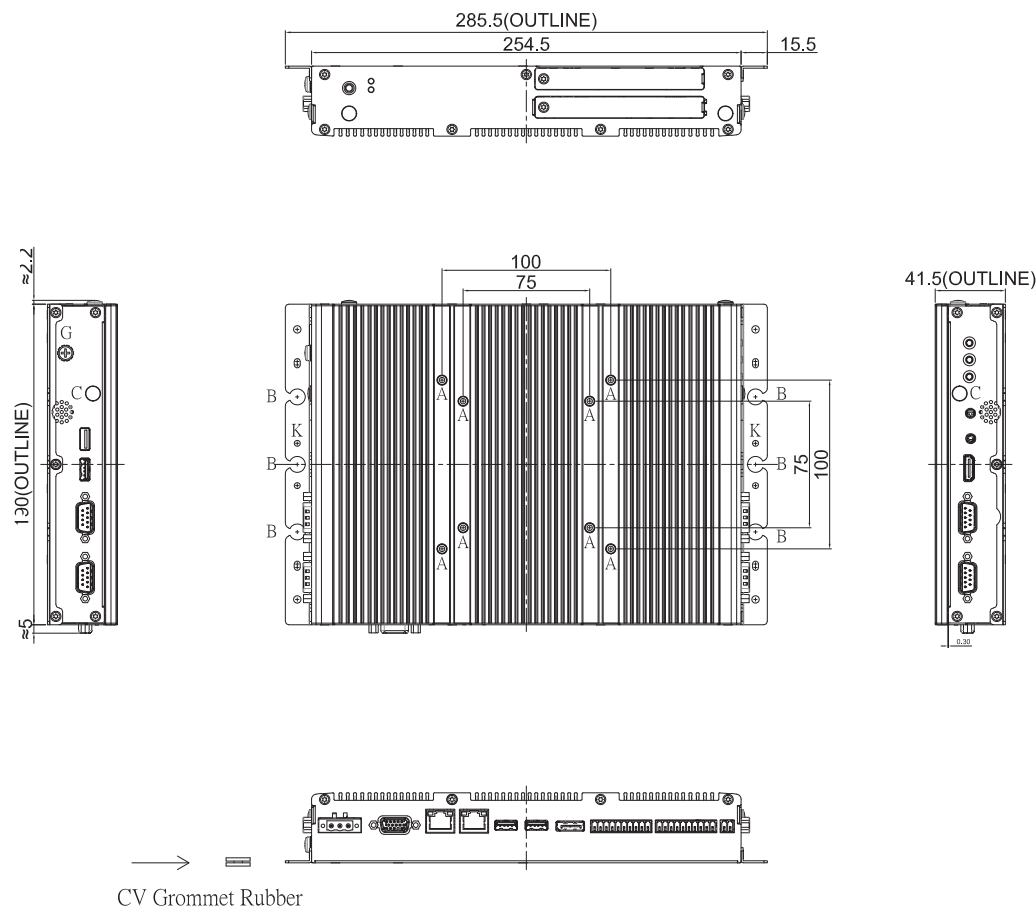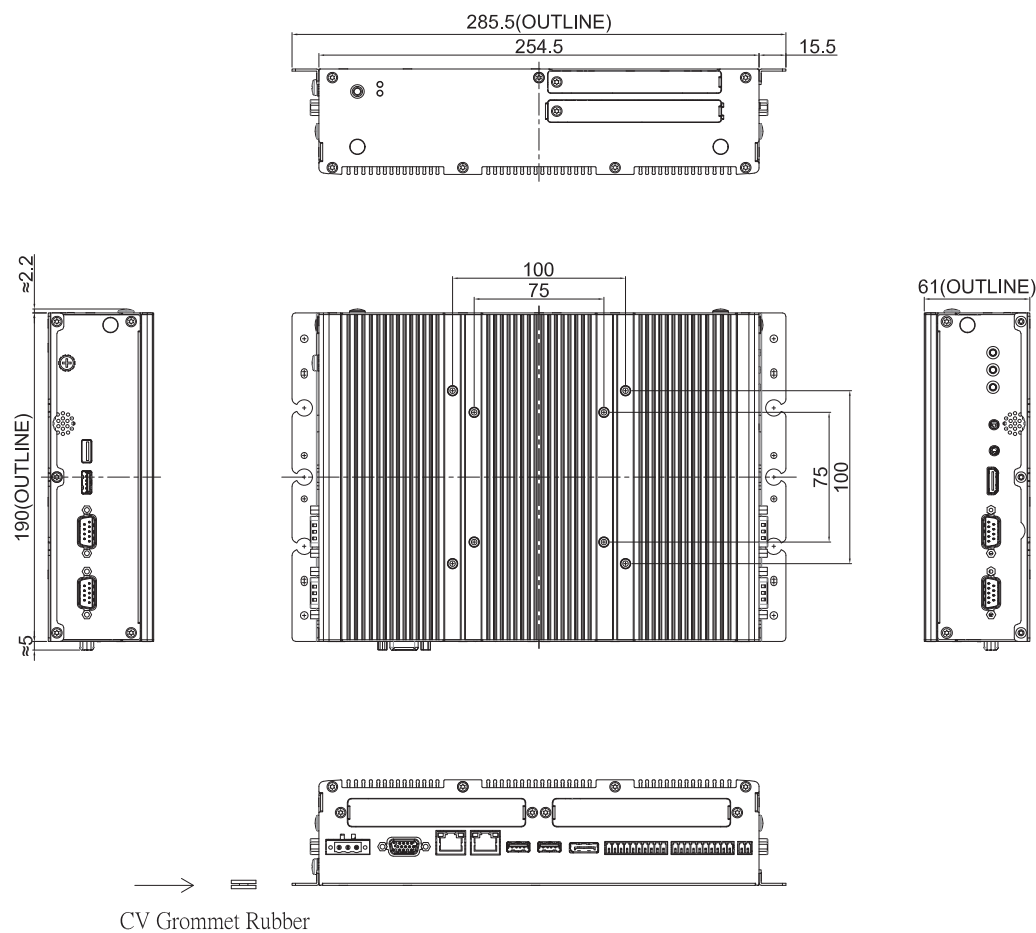
Ordering Information

Available Models

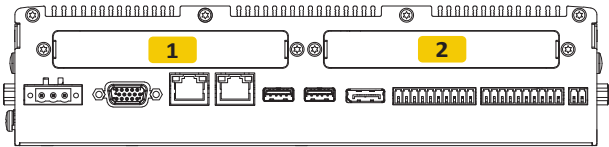| Model No.	Description
P2202-i5-R10	12th Gen. Intel® Core™ i5-1245UE Slim Embedded Computer with CDS Technology
P2202E-i5-R10	12th Gen. Intel® Core™ i5-1245UE Expandable Embedded Computer with CDS Technology
P2202-i3-R10	12th Gen. Intel® Core™ i3-1215UE Slim Embedded Computer with CDS Technology
P2202E-i3-R10	12th Gen. Intel® Core™ i3-1215UE Expandable Embedded Computer with CDS Technology

Package Checklist

▪ P2202 Series Embedded Computer x1	▪ Thermal Pad x1
▪ Power Terminal Block x1	▪ Screw Pack x5
▪ Remote Power On/Off Terminal Block Connector x1	▪ Wall Mounting Kit x1
▪ DIO Terminal Block Connector x2	▪ DIN Rail Mounting Kit x1
▪ PCI / PCIe Card Installation Kit x1 (For P2202E Only)	

Optional Modules and Accessories

Model No.	Description
CFM-IGN101	CFM Module with Power Ignition Sensing Control Function, 12V/24V Voltage Detection Selectable
CFM-PoE04	CFM Module with PoE Control Function, Individual Port 25.5W (For P2202 Only)
CFM-PoE05	CFM Module with PoE Control Function, Individual Port 25.5W (For P2202E Only)
RC-E4-02	Riser Card with 1x PCIe x4 Slot (For P2202E Only)
RC-PI-02	Riser Card with 1x PCI Slot (For P2202E Only)
MEC-COM-M212-TDB9	Mini-PCIe Module with 2x RS-232 Ports, 1x Thin DB9 Cable (For P2202E Only)
MEC-COM-M334-TDB9	Mini-PCIe Module with 4x RS-232/422/485 Ports, 2x Thin DB9 Cable (For P2202E Only)
MEC-USB-M102-30	Mini-PCIe Module with 2x USB 3.0 Ports, 1x 30cm cable (For P2202E Only)
MEC-LAN-M102-30	Mini-PCIe Module with 2x LAN Ports, 2x 30cm cable (For P2202E Only)
UB1203	1x Universal Bracket with 2x DB9 Cutout (For P2202E Only)
UB1211	1x Universal Bracket with 2x RJ45 Cutout (For P2202E Only)
UB1214	1x Universal Bracket with 2x USB Cutout (For P2202E Only)
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 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 P2202E only)

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

V : Compatible