

## CS-W121/P1301 Series

21.5" TFT-LCD 1000nits Sunlight Readable Touch Panel PC with Intel® Alder Lake-N Platform, Slim Embedded Computer & P-Cap. Touch



## POWER EFFICIENT SUNLIGHT READABLE PANEL PC | CS-100/P1000 Series |

### Overview

[CONTACT](#)

The CS-100/P1301 series is a sunlight-readable panel PC that provides ultra-high brightness of up to 1,800 nits. It is equipped with an Intel® Alder Lake-N processor that provides a complete selection of screen sizes, ratios, and brightnesses. Rich I/O, flexible expansion, rugged, easy on-site maintenance, and other features make the CS-100/P1301 series the best choice for outdoor kiosk or HMI applications.

### Key Features

- 21.5" TFT-LCD Full HD with Ultra High Brightness up to 1,000 nits
- Onboard Intel® Alder Lake-N Core™ i3-N305, Processor N97 and Atom® x7425E Processor
- 1x DDR5 SO-DIMM Socket, Supports up to 4800MHz & 16GB Memory
- 1x M.2 Key E Type 2230 Socket for Wireless/Bluetooth/Intel CNVi Module Expansion
- 1x M.2 Key B Type 3042/3052 Socket for 5G/GNSS/Storage/Add-on Card Expansion
- Front Panel IP65 Compliant
- Designed with Rugged Aluminum Die-casting Front Bezel
- Supports Panel / VESA / Rack Mount
- Supports Cincoze Patent CDS Technology (Patent No. M482908)

## AI & Multitasking Performance

The CS-100/P1301 is equipped with an Intel Alder Lake-N quad-core processor based on the Intel® 7 process. Compared with the previous generation Elkhart Lake platform, the CPU single-thread performance is improved by up to 130%, and the multi-thread performance is improved by 109%. The built-in UHD graphics chip improves AI inference, with 6.85 times the object recognition performance.

### CPU Single-Thread Performance Up to **1.30X** Improvement

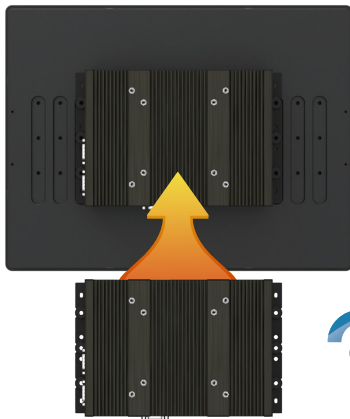
Alder Lake-N

Elkhart Lake

### CPU Multi-Thread Performance Up to **1.09X** Improvement

Alder Lake-N

Elkhart Lake



## Convenient Upgrades & Repairs

Cincoze Convertible Display System (CDS) patented technology makes field-side maintenance and future upgrades easier. Replacing a display or improving system performance only requires replacing a single component, which significantly cuts upgrade costs.

Patent No. M482908

## Complete Product Portfolio

The CS-100/P1301 series offers a variety of display options, with screen sizes from 8.4 to 24 inches, support for up to full HD resolution, high brightness up to 1,800 nits, and multi-point P-Cap touchscreen, which can be selected according to application needs.



## Wide Temps, Safe, & Reliable

In order to overcome the harsh outdoor environment and unpredictable climate, the CS-100/P1301 series has a series of industrial-grade protections, including a wide operating temperature range that beats the industry standard and an IP65 dustproof/water resistant front panel to ensure a high degree of product safety.

CS-W121 Specifications

| Model Name              | CS-W121                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display                 |                                                                                                                                                                                                                                                                                                                                                                                                   |
| LCD Size                | • 21.5" (16:9)                                                                                                                                                                                                                                                                                                                                                                                    |
| Max. Resolution         | • 1920 x 1080 (Full HD)                                                                                                                                                                                                                                                                                                                                                                           |
| Brightness (cd/m2)      | • 1000                                                                                                                                                                                                                                                                                                                                                                                            |
| Contrast Ratio          | • 5000 : 1                                                                                                                                                                                                                                                                                                                                                                                        |
| LCD Color               | • 16.7M                                                                                                                                                                                                                                                                                                                                                                                           |
| Pixel Pitch (mm)        | • 0.24825 (H) x 0.24825 (V)                                                                                                                                                                                                                                                                                                                                                                       |
| Viewing Angle (H-V)     | • 178 / 178                                                                                                                                                                                                                                                                                                                                                                                       |
| Backlight LED Life Time | • 50,000 hrs (LED Backlight)                                                                                                                                                                                                                                                                                                                                                                      |
| Touch Screen            |                                                                                                                                                                                                                                                                                                                                                                                                   |
| Touch Type              | • Projected Capacitive                                                                                                                                                                                                                                                                                                                                                                            |
| Wet Touch Tracking      | v                                                                                                                                                                                                                                                                                                                                                                                                 |
| Physical                |                                                                                                                                                                                                                                                                                                                                                                                                   |
| Dimension ( W x D x H ) | • 550 x 330.5 x 63.2mm                                                                                                                                                                                                                                                                                                                                                                            |
| Weight Information      | • 5.56 kg                                                                                                                                                                                                                                                                                                                                                                                         |
| Mechanical Construction | • Flat Rugged Aluminum Die-casting Bezel                                                                                                                                                                                                                                                                                                                                                          |
| Power                   |                                                                                                                                                                                                                                                                                                                                                                                                   |
| Power Consumption       | • 31.25W (Max.)                                                                                                                                                                                                                                                                                                                                                                                   |
| Environment             |                                                                                                                                                                                                                                                                                                                                                                                                   |
| Front Panel Protection  | • IP 65 Compliant                                                                                                                                                                                                                                                                                                                                                                                 |
| Operating Temperature   | • -20°C to 70°C (-4°F to 158°F)<br>(With Industrial Grade Peripherals; Ambient with air flow)                                                                                                                                                                                                                                                                                                     |
| Storage Temperature     | • -20°C to 80°C (-4°F to 176°F)                                                                                                                                                                                                                                                                                                                                                                   |
| Relative Humidity       | • 90% RH @ 40°C (Non-condensing)                                                                                                                                                                                                                                                                                                                                                                  |
| EMC                     | • CE, UKCA, FCC, ICES-003 Class A                                                                                                                                                                                                                                                                                                                                                                 |
| EMI                     | • CISPR 32 Conducted & Radiated: Class A<br>• EN/BS EN 55032 Conducted & Radiated: Class A<br>• EN/BS EN IEC 61000-3-2 Harmonic current emissions: Class A<br>• EN/BS EN61000-3-3 Voltage fluctuations & flicker<br>• FCC 47 CFR Part 15B, ICES-003 Conducted & Radiated: Class A                                                                                                                 |
| EMS                     | • EN/IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>• EN/IEC 61000-4-3 RS: 80 MHz to 1000 MHz: 3 V/m<br>• EN/IEC 61000-4-4 EFT: AC Power: 1 kV; DC Power: 0.5 kV; Signal: 0.5 kV<br>• EN/IEC 61000-4-5 Surges: AC Power: 2 kV; Signal: 1 kV<br>• EN/IEC 61000-4-6 CS: 3V<br>• EN/IEC 61000-4-8 PFMF: 50 Hz, 1A/m<br>• EN/IEC 61000-4-11 Voltage Dips & Voltage Interruptions: 0.5 cycles at 50 Hz |
| Safety                  | • UL, cUL, CB, IEC, EN 62368-1                                                                                                                                                                                                                                                                                                                                                                    |

P1301 Specifications

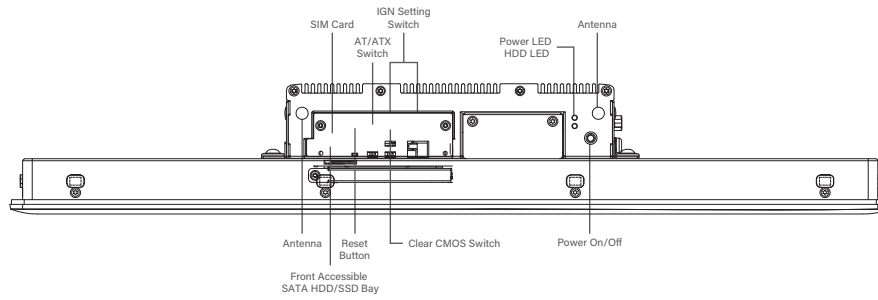
| Model Name                              | P1301                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| System                                  |                                                                                                                                                                                                                                                                                                                           |
| Processor                               | <ul style="list-style-type: none"><li>Onboard Intel® Alder Lake-N Series Processor:<ul style="list-style-type: none"><li>Intel® Core™ i3-N305 8 Cores Up to 3.80 GHz, TDP 15W</li><li>Intel® Processor N97 4 Cores Up to 3.60 GHz, TDP 12W</li><li>Intel Atom® x7425E 4 Cores Up to 3.40 GHz, TDP 12W</li></ul></li></ul> |
| Memory                                  | <ul style="list-style-type: none"><li>1x DDR5 4800MHz SO-DIMM Socket</li></ul> Supports Un-buffered and Non-ECC Type, Up to 16GB                                                                                                                                                                                          |
| BIOS                                    | <ul style="list-style-type: none"><li>AMI BIOS</li></ul>                                                                                                                                                                                                                                                                  |
| Graphics                                |                                                                                                                                                                                                                                                                                                                           |
| Graphics Engine                         | <ul style="list-style-type: none"><li>Integrated Intel® UHD Graphics</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 (1920 x 1080 @60Hz)</li></ul>                                                                                                                                                                                                                                      |
| DP                                      | <ul style="list-style-type: none"><li>1x DisplayPort Connector (4096 x 2304 @60Hz)</li></ul> * Verified maximum resolution: 3840 x 2160 @ 60Hz                                                                                                                                                                            |
| VGA                                     | <ul style="list-style-type: none"><li>1x VGA Connector (1920 x 1200 @60Hz)</li></ul>                                                                                                                                                                                                                                      |
| Audio                                   |                                                                                                                                                                                                                                                                                                                           |
| Audio Codec                             | Realtek® ALC888, High Definition Audio                                                                                                                                                                                                                                                                                    |
| 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 2.5GbE LAN, RJ45</li></ul> - GbE1 / GbE2: Intel® I225                                                                                                                                                                                                                            |
| COM                                     | <ul style="list-style-type: none"><li>2x RS-232/422/485 with Auto Flow Control Support 5V/12V, DB9</li></ul>                                                                                                                                                                                                              |
| USB                                     | <ul style="list-style-type: none"><li>3 x USB 3.2 Gen2x1 (10Gbps), Type A</li><li>1 x USB 2.0 (480Mbps), Type A</li></ul>                                                                                                                                                                                                 |
| DIO                                     | <ul style="list-style-type: none"><li>8x Isolated Digital I/O (4in/4out), 10-Pin Terminal Block</li></ul>                                                                                                                                                                                                                 |
| Storage / Expansion                     |                                                                                                                                                                                                                                                                                                                           |
| 2.5" SSD/HDD                            | <ul style="list-style-type: none"><li>1x 2.5" Front Accessible SATA HDD/SSD Bay</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/Intel CNVi 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 3x1 / USB3.2 Gen2 x1 / SATA ), Support 5G/GNSS/Storage/Add-on Card Expansion</li></ul>                                                                                                                                                 |
| SIM Socket                              | <ul style="list-style-type: none"><li>1x 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>                                                                                                                                                             |
| Other Function                          |                                                                                                                                                                                                                                                                                                                           |
| Clear CMOS Switch                       | <ul style="list-style-type: none"><li>1x Clear CMOS Switch</li></ul>                                                                                                                                                                                                                                                      |
| Reset Button                            | <ul style="list-style-type: none"><li>1x Reset Button</li></ul>                                                                                                                                                                                                                                                           |
| Watchdog Timer                          | <ul style="list-style-type: none"><li>Software Programmable Supports 256 Levels System Reset</li></ul>                                                                                                                                                                                                                    |
| OSD Button                              | <ul style="list-style-type: none"><li>LCD On/Off, Brightness Up, Brightness Down</li></ul>                                                                                                                                                                                                                                |
| Internal Speaker                        | <ul style="list-style-type: none"><li>AMP 2W + 2W</li></ul>                                                                                                                                                                                                                                                               |

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Status LED Indicator                | <ul style="list-style-type: none"> <li>Power LED, HDD LED</li> </ul>                                                                                                                                                                                                                                                                                                                                                  |
| <b>Power</b>                        |                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Power Button                        | <ul style="list-style-type: none"> <li>1x ATX Power On/Off Button</li> </ul>                                                                                                                                                                                                                                                                                                                                          |
| Power Mode Switch                   | <ul style="list-style-type: none"> <li>1x AT/ATX Mode Switch</li> </ul>                                                                                                                                                                                                                                                                                                                                               |
| Power Input                         | <ul style="list-style-type: none"> <li>9 - 48VDC, 3-pin Terminal Block</li> </ul>                                                                                                                                                                                                                                                                                                                                     |
| Remote Power On/Off                 | <ul style="list-style-type: none"> <li>1x Remote Power On/Off, 2-pin Terminal Block</li> </ul>                                                                                                                                                                                                                                                                                                                        |
| Remote Power LED                    | <ul style="list-style-type: none"> <li>1x Remote Power LED, 2-pin Terminal Block</li> </ul>                                                                                                                                                                                                                                                                                                                           |
| Max. Power Consumption              | <ul style="list-style-type: none"> <li>i3-N305 CPU: 48.59W</li> <li>N97 CPU: 34.04W</li> <li>- Test conducted with CPU, 1x RAM, and 1x storage</li> <li>- 100% load during burn-in testing</li> </ul>                                                                                                                                                                                                                 |
| Inrush Current (Peak)               | <ul style="list-style-type: none"> <li>i3-N305 CPU: 5.538 A@12V</li> <li>N97 CPU: 5.242 A@12V</li> </ul>                                                                                                                                                                                                                                                                                                              |
| <b>Operating System</b>             |                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Microsoft® Windows®                 | <ul style="list-style-type: none"> <li>Windows®11, Windows®10</li> </ul>                                                                                                                                                                                                                                                                                                                                              |
| Linux                               | <ul style="list-style-type: none"> <li>Ubuntu Desktop 22.04 LTS</li> </ul>                                                                                                                                                                                                                                                                                                                                            |
| <b>Physical</b>                     |                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Dimension ( W x D x H )             | <ul style="list-style-type: none"> <li>204.5 x 149 x 46.5mm</li> </ul>                                                                                                                                                                                                                                                                                                                                                |
| Weight                              | <ul style="list-style-type: none"> <li>1.57 kg</li> </ul>                                                                                                                                                                                                                                                                                                                                                             |
| Mechanical Construction             | <ul style="list-style-type: none"> <li>Extruded Aluminum with Heavy Duty Metal</li> </ul>                                                                                                                                                                                                                                                                                                                             |
| Mounting                            | <ul style="list-style-type: none"> <li>Wall / VESA / CDS / DIN Rail</li> </ul>                                                                                                                                                                                                                                                                                                                                        |
| Physical Design                     | <ul style="list-style-type: none"> <li>Fanless Design</li> <li>Jumper-less Design</li> </ul>                                                                                                                                                                                                                                                                                                                          |
| <b>Reliability &amp; Protection</b> |                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Reverse Power Input                 | <ul style="list-style-type: none"> <li>Yes</li> </ul>                                                                                                                                                                                                                                                                                                                                                                 |
| Over Voltage Protection             | <ul style="list-style-type: none"> <li>Protection Range: 51~58V</li> <li>Protection Type: shut down operating voltage, re-power on at the preset level to recover</li> </ul>                                                                                                                                                                                                                                          |
| Over Current Protection             | <ul style="list-style-type: none"> <li>15A</li> </ul>                                                                                                                                                                                                                                                                                                                                                                 |
| CMOS Battery Backup                 | <ul style="list-style-type: none"> <li>SuperCap Integrated for CMOS Battery Maintenance-free Operation</li> </ul>                                                                                                                                                                                                                                                                                                     |
| MTBF                                | <ul style="list-style-type: none"> <li>306,338 Hours - Database: Telcordia SR-332 Issue3, Method 1, Case 3</li> </ul>                                                                                                                                                                                                                                                                                                 |
| <b>Environment</b>                  |                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Operating Temperature               | <ul style="list-style-type: none"> <li>Intel® Processor N97 / Atom® x7425E: -40°C to 70°C (-40°F to 158°F)</li> <li>Intel® Core™ i3-N305: -40°C to 60°C (-40°F to 140°F)</li> <li>* PassMark Burn-In Test: 100% CPU, 2D/3D Graphics (without thermal throttling)</li> <li>* With extended temperature peripherals; Ambient with air flow</li> <li>* According to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14</li> </ul> |
| Storage Temperature                 | <ul style="list-style-type: none"> <li>-40°C to 85°C (-40°F to 185°F)</li> </ul>                                                                                                                                                                                                                                                                                                                                      |
| Relative Humidity                   | <ul style="list-style-type: none"> <li>Intel® Processor N97 / Atom® x7425E: 95%RH @ 70°C (non-Condensing)</li> <li>Intel® Core™ i3-N305: 95%RH @ 60°C (non-Condensing)</li> </ul>                                                                                                                                                                                                                                     |
| Shock                               | <ul style="list-style-type: none"> <li>Operating, 50 Grms, Half-sine 11 ms Duration (w/ SSD, according to IEC60068-2-27)</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>Operating, 5 Grms, 5-500 Hz, 3 Axes (w/ SSD, according to IEC60068-2-64)</li> </ul>                                                                                                                                                                                                          |
| EMC                                 | <ul style="list-style-type: none"> <li>CE, UKCA, FCC, ICES-003 Class A</li> <li>EN61000-6-4, EN61000-6-2 @ DC-input 24V</li> </ul>                                                                                                                                                                                                                                                                                    |

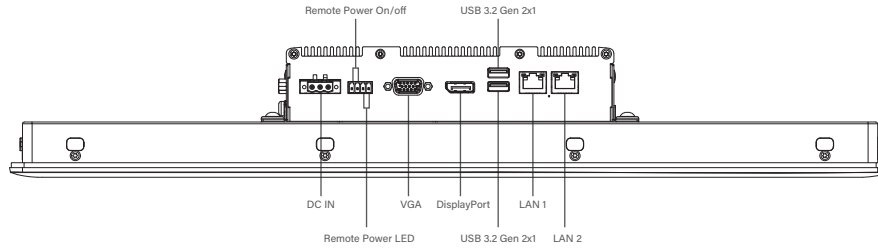
|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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>                                                                                                                                                                                              |
| 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: 10 V/m</li><li>• EN/IEC 61000-4-4 EFT: AC Power: 2 kV; DC Power: 1 kV; Signal: 1 kV</li><li>• EN/IEC 61000-4-5 Surges: AC Power: 2 kV; Signal: 1 kV</li><li>• EN/IEC 61000-4-6 CS: 10V</li><li>• (**Compliant with the standard when utilizing shielded ethernet cable.)</li><li>• EN/IEC 61000-4-8 PFMF: 50 Hz, 30A/m</li><li>• EN/IEC 61000-4-11 Voltage Dips &amp; Voltage Interruptions: 1 cycles at 60 Hz</li></ul> |
| Safety | <ul style="list-style-type: none"><li>• UL, cUL, CB, IEC, EN 62368-1</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## CS-W121/P1301 External Layout

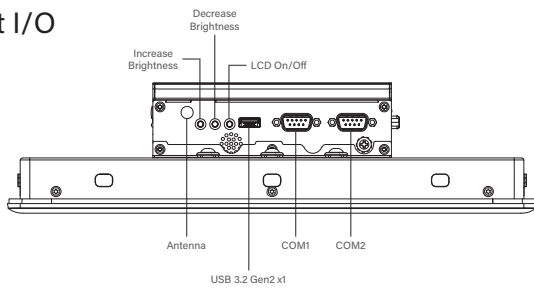
### Front I/O



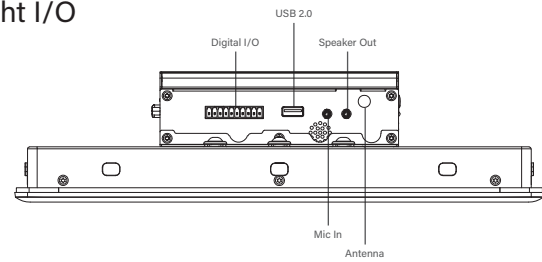
### Rear I/O



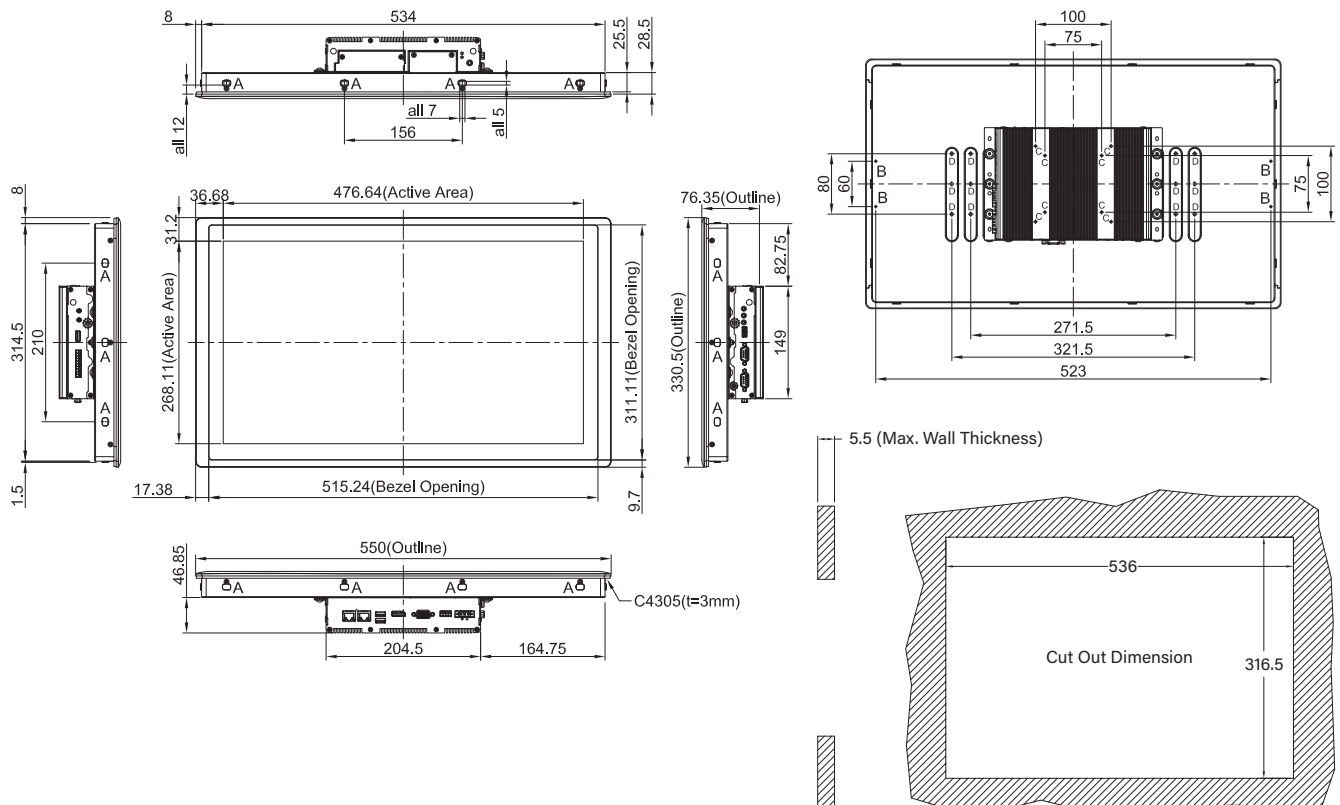
### Left I/O



### Right I/O



## CS-W121/P1301 Dimensions



Unit: mm

## Ordering Information

### Available Models

| Model No.                     | Description                                                                                                                         |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| CS-W121C-R10/P1301-N97-R10    | 21.5" TFT-LCD 1000nits Sunlight Readable Touch Panel PC with Intel® Processor N97 Quad Core Slim Embedded Computer and P-Cap. Touch |
| CS-W121C-R10/P1301-X7425E-R10 | 21.5" TFT-LCD 1000nits Sunlight Readable Touch Panel PC with Intel® Atom® x7425E Quad Core Slim Embedded Computer and P-Cap. Touch  |
| CS-W121C-R10/P1301-i3-R10     | 21.5" TFT-LCD 1000nits Sunlight Readable Touch Panel PC with Intel® Core i3-N305 Octa Core Slim Embedded Computer and P-Cap. Touch  |

### Model Configuration

|                       | CS-W121C | P1301-N97 | P1301-X7425E | P1301-i3 |
|-----------------------|----------|-----------|--------------|----------|
| CS-W121C/P1301-N97    | V        | V         | --           | --       |
| CS-W121C/P1301-X7425E | V        | --        | V            | --       |
| CS-W121C/P1301-i3-R10 | V        | --        | --           | V        |

V : Compatible

### Package Checklist

|                                           |                                                   |
|-------------------------------------------|---------------------------------------------------|
| • CS-W121/P1301 Series Panel PC x 1       | • Power Terminal Block Connector x 1              |
| • Thermal Pad (for CPU Thermal Block) x 1 | • Remote Function Terminal Block Connector x 1    |
| • Screw Pack x 2                          | • DIO Terminal Block Connector x 1                |
| • Panel Mounting Kit x 14                 | • M.2 Key B Type 3052 to 3042 Adapter Bracket 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-PoE02     | CFM Module with PoE Control Function, Individual Port 25.5W                                 |
| URM01         | Universal 19" Rack Mount Kit for Industrial Panel PC & Industrial Monitor                   |
| GST120A24-CIN | Adapter AC/DC 24V 5A 120W, GST120A24-CIN, wide temp (-30°C ~ +70°C), level VI               |
| GST220A24-CIN | Adapter AC/DC 24V 9.2A 220W with 3pin Terminal Block Plug 5.0mm Pitch, with TUBES, Level VI |