

# Rugged IP65 Panel PCs

 WinSystems

- 12-, 15-, 17-, and 19-inch Displays
- Powered by Intel® Atom™ -based SBC
- Supports Touch Panel & Networking
- Vibration, EMI, ESD, & EMS Resistant
- CE and FCC Class B Compliant

IP65 Rated

*...from*  
**WinSystems®**

# About WinSystems

WinSystems builds strong business relationships with our customers by providing high-quality, cost-effective products along with extraordinary customer service.



Bob and Jerry  
ESOP members

WinSystems is a leading provider of embedded products for use in industrial environments. Founded in 1981 by Jerry Winfield, we have grown to become an employee-owned company. Our facilities are located in a 55,000 square foot office campus which houses our U.S. design, manufacturing and support teams as well as our corporate headquarters. We are located in Arlington, Texas between Dallas and Fort Worth.

We are a business where the employees have stock ownership, longevity, and a stake in the success of the business and our customers. When you talk to a WinSystems' employee, you are talking to an owner.

An ESOP benefits our customers by having a very talented and motivated workforce that is responsible for developing and supporting our products

When you buy from WinSystems, you are buying more than just a product. You are receiving our company's engineering and manufacturing expertise along with the support of our dedicated professionals. WinSystems sets itself apart from traditional corporations with our increased commitment and dedication to excellence found in every owner in the company. This provides a culture for a creative and responsive team where customers can have confidence that we are here today and here tomorrow.

# Industrial Panel PCs

WinSystems' PPC65 is a compact family of Panel PC products that meets IP65 certification for ingress against dust and water. The PPC65 is optimized for markets including industrial machinery, utilities, petrochemical, gas, transportation, pipeline, and food processing that need tight system integration and minimal space requirements.

The PPC65 supports operating systems (OS) such as Linux, Windows XPe, CE 6.0, WES7, and Windows 7. Although the PPC65's standard shipping configuration does not include the OS, one can be optionally preloaded for OEMs.

The enclosure is constructed from heavy-duty, brushed aluminum alloy. Aluminum was chosen because it provides excellent shielding from light, RFI/EMI, or infrared radiation. It has a high strength-to-weight ratio making it rugged and durable. Aluminum will not rust like steel and is corrosion resistant. Aluminum is non-combustible, non-magnetic, non-sparking, non-toxic, and recyclable. It is also thermally conductive to dissipate component heat.

The combination of the rugged enclosure with a fanless computer and touch screen allows the unit to meet and exceed industry standards for RF emissions, susceptibility, and shock/vibration. The PPC65 is tested and compliant with several technical standards, which are defined on pages 6-9. It is also operationally tested with 1G vibration (5-500Hz, three-axis, 30 min/axis) and 15G shock (peak acceleration, 11ms duration).

Furthermore, the PPC65 has been tested for electrical and electromagnetically induced or radiated interference which could possibly degrade its performance when electronic and electrical systems are in close proximity in confined spaces. This unit is in compliance with IEC 61000 Electrical Fast Transient Conducted Susceptibility, and Conducted Immunity tests.

The PPC65 is designed to fit inside a panel or on either a 75 x 75mm or 100 x 100mm VESA mount. The seal on the back of the unit prevents water and dust from getting in, as well as providing a cushion for vibration.

For the most current information on the PPC65, as well as our other products, please visit our website: [www.WinSystems.com](http://www.WinSystems.com). We look forward to working with you on your next project.

QUALITY BY DESIGN

TECHNOLOGY & INNOVATION

PRODUCT RELIABILITY

LONG TERM COMMITMENTS

OUTSTANDING TECHNICAL SUPPORT



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# PPC65 Family



| Model Name         | PPC65-1210S   | PPC65-1510S  | PPC65-1710S   | PPC65-1910S   |
|--------------------|---|--|---|---|
| Weight             | 4.8KG   | 5.8KG  | 7.3KG   | 8.3KG   |
| Dimension          | 343 x 278 x 61 mm   | 392 x 323 x 63 mm  | 421 x 358 x 67 mm   | 463 x 392 x 67 mm   |
| Dimension (Carton) | 470 x 385 x 190 mm  | 535 x 465 x 250 mm   | 545 x 480 x 255 mm  | 585 x 515 x 255 mm  |
| LCD Display        | Size: 12.1"<br>Resolution: 800x600<br>Brightness: 400 cd/m2<br>Contrast Ratio: 600:1<br>Colors: 262K/16.2M<br>RGB: 6-bit/8-bit<br>LVDS Channel: Single<br>Backlight MTBF: 50K hrs | Size: 15"<br>Resolution: 1024x768<br>Brightness: 350 cd/m2<br>Contrast Ratio: 700:1<br>Colors: 262K/16.2M<br>RGB: 6-bit/8-bit<br>LVDS Channel: Single<br>Backlight MTBF: 50K hrs | Size: 17"<br>Resolution: 1280x1024<br>Brightness: 350 cd/m2<br>Contrast Ratio: 1000:1<br>Colors: 16.7M<br>RGB: 6-bit+Hi-FRC data<br>LVDS Channel: Dual<br>Backlight MTBF: 50K hrs | Size: 19"<br>Resolution: 1280x1024<br>Brightness: 250 cd/m2<br>Contrast Ratio: 1000:1<br>Colors: 16.7M<br>RGB: 6-bit+Hi-FRC data<br>LVDS Channel: Dual<br>Backlight MTBF: 50K hrs |

**Touch Screen** 5-Wire Resistive type with durability up to 35,000,000 times

|                        | Electrical  |
|------------------------|---|
| CPU                    | Intel® ATOM N270 1.6GHz processor   |
| Chipset                | Intel® 945GSE + ICH7M   |
| BIOS                   | AWARD BIOS  |
| Memory                 | 2GB DDR2 SODIMM   |
| Storage Device         | 2.5" SATA HDD (Optional)  |
| Soild State Disk       | CompactFlash up to 32GB (Optional)  |
| VGA                    | Intel® GMA 950 Graphics   |
| Ethernet               | Realtek Gigabit Ethernet ( IEEE 802.3 )   |
| LVDS                   | Dual Channel 18-bit / 24-bit Output   |
| Audio                  | Realtek High Definition Audio   |
| I/O                    | 1x VGA port / 1x Gigabit Ethernet port / 4x USB 2.0 ports<br>1x Line-out, 1x MIC port / 2x RS-232 (COM) port / 1x CompactFlash  |
| OS                     | Windows XP / XPE / CE6 / WES7/ Windows 7 supported  |
|                        | Mechanical  |
| Front Bezel            | Anodized 10mm aluminum frame is corrosion resistant   |
| Mounting               | VESA Mount 75 x 75, 100 x 100, and Panel Mount  |
| Power Supply           | DC12V (5A; 60W) Input / ESD (IEC-1000-4-2) ; Line Transient Surge (IEC-1000-4-5 Level 2)  |
|                        | Environmental   |
| Operation Temp.        | 0 ~ +50°C   |
| Storage Temp.          | -20 ~ +80°C   |
| Relative Humidity      | 5 ~ 95%, non-condensing   |
| Operation Vibration    | 1.0G Random Operation, 5~500Hz (CF)   |
| Packaged Vibration     | 2.16G, 5~500Hz (CF)   |
| Shock                  | 15G peak acceleration (11 millisecond duration / operation)<br>3 times for each axis (under operation condition)  |
| Drop                   | Packaged with Carton from 96.5cm (1-Corner, 3-Axis, 6-Faces)  |
|                        | Approval  |
| Front Panel Protection | IP65 compliant<br>Dust @ 1N+10% test force for 8 hrs; Water @ 12.5 l/min+5% for 3 min<br>According to IEC 60529 Edition 2.1: 2001-02-IP6x (dust test) & IPx5 (water test) |
| Certificate            | CE/FCC Class B  |

# PPC65 Family



| Model Name         | PPC65-1211B   | PPC65-1511B  | PPC65-1711B   | PPC65-1911B   |
|--------------------|---|--|---|---|
| Weight             | 4.9KG   | 5.9KG  | 7.4KG   | 8.4KG   |
| Dimension          | 343 x 278 x 61 mm   | 392 x 323 x 63 mm  | 421 x 358 x 67 mm   | 463 x 392 x 67 mm   |
| Dimension (Carton) | 470 x 385 x 190 mm  | 535 x 465 x 250 mm   | 545 x 480 x 255 mm  | 585 x 515 x 255 mm  |
| LCD Display        | Size: 12.1"<br>Resolution: 800x600<br>Brightness: 400 cd/m2<br>Contrast Ratio: 600:1<br>Colors: 262K/16.2M<br>RGB: 6-bit/8-bit<br>LVDS Channel: Single<br>Backlight MTBF: 50K hrs | Size: 15"<br>Resolution: 1024x768<br>Brightness: 350 cd/m2<br>Contrast Ratio: 700:1<br>Colors: 262K/16.2M<br>RGB: 6-bit/8-bit<br>LVDS Channel: Single<br>Backlight MTBF: 50K hrs | Size: 17"<br>Resolution: 1280x1024<br>Brightness: 350 cd/m2<br>Contrast Ratio: 1000:1<br>Colors: 16.7M<br>RGB: 6-bit+Hi-FRC data<br>LVDS Channel: Dual<br>Backlight MTBF: 50K hrs | Size: 19"<br>Resolution: 1280x1024<br>Brightness: 250 cd/m2<br>Contrast Ratio: 1000:1<br>Colors: 16.7M<br>RGB: 6-bit+Hi-FRC data<br>LVDS Channel: Dual<br>Backlight MTBF: 50K hrs |

## Touch Screen

5-Wire Resistive type with durability up to 35,000,000 times

|                        | Electrical  |
|------------------------|---|
| CPU                    | Intel® ATOM N270 1.6GHz processor   |
| Chipset                | Intel® 945GSE + ICH7M   |
| BIOS                   | AWARD BIOS  |
| Memory                 | 2GB DDR2 SODIMM   |
| Storage Device         | 2.5" SATA HDD (Optional)  |
| Soild State Disk       | CompactFlash up to 32GB (Optional)  |
| VGA                    | Intel® GMA 950 Graphics   |
| Ethernet               | Dual LAN {Realtek Gigabit Ethernet ( IEEE 802.3 ) + Asix USB2.0 to Gigabit Ethernet}  |
| LVDS                   | Dual Channel 18-bit / 24-bit Output   |
| Audio                  | Realtek High Definition Audio   |
| I/O                    | 1x VGA port / 2x Gigabit Ethernet ports / 4x USB 2.0 ports<br>1x Line-out, 1x MIC port / 1x RS-232 + 1x RS-232/422/485 / 1x CompactFlash                                  |
| OS                     | Windows XP / XPE / CE6 / WES7/ Windows 7 supported  |
|                        | Mechanical  |
| Front Bezel            | Anodized 10mm aluminum frame is corrosion resistant   |
| Mounting               | VESA Mount 75 x 75, 100 x 100, and Panel Mount  |
| Power Supply           | 3-Pin Terminal Block DC24V/28V/48V Input (60W) Input  |
|                        | Environmental   |
| Operation Temp.        | 0 ~ +50°C   |
| Storage Temp.          | -20 ~ +80°C   |
| Relative Humidity      | 5 ~ 95%, non-condensing   |
| Operation Vibration    | 1.0G Random Operation, 5~500Hz (CF)   |
| Packaged Vibration     | 2.16G, 5~500Hz (CF)   |
| Shock                  | 15G peak acceleration (11 millisecond duration / operation)<br>3 times for each axis (under operation condition)  |
| Drop                   | Packaged with Carton from 96.5cm (1-Corner, 3-Axis, 6-Faces)  |
|                        | Approval  |
| Front Panel Protection | IP65 compliant<br>Dust @ 1N+10% test force for 8 hrs; Water @ 12.5 l/min+5% for 3 min<br>According to IEC 60529 Edition 2.1: 2001-02-IP6x (dust test) & IPx5 (water test) |
| Certificate            | CE/FCC Class B  |

# Validation Tests

The PPC65 passed the following tests to earn its Ingress Protection (IP) Certification. The IP65 rating certifies that the PPC65 provides protection against solid objects, such as dust and water, making it an ideal fit for harsh environments.

## Dust-proof Test

**IEC/EN 60529-IP6x  
Compliant**

Conducted in a Sand and Dust 1-m<sup>3</sup> chamber and following IEC 60529 Edition 2.1: 2001-02-IP6x test methods, the PPC65 was tested against solid objects by using 2kg Talcum powder as a dust source for a duration of eight hours at a -20 mbar maximum depression level.



## Water-proof Test

**IEC/EN 60529-IPx5  
Compliant**

Managed under IEC 60529 Edition 2.1: 2001-02-IPx5 test methods, the PPC65's enclosure surface was sprayed with stream of water, with a core of 40mm, from a standard 6.3mm test water nozzle located at a distance of 2.5m to 3.0m for a duration of three minutes.

# Vibration and Shock Resistance

Vibration and shock resistance tests were performed to simulate the various environments the PPC65 might experience. Its rugged, compact design and durable construction passed these vigorous tests.



Both these tests simulate the environments the PPC65 may experience during its transportation, installation, and usage. The vibration test verifies the PPC65's ability to withstand mechanical resonance based on its three axis: X, Y, and Z. The shock test verifies the PPC65's ruggedness, and the test is also based on its three axis.

## Vibration Test

The powered PPC65 is tested at the frequency of 10~150Hz; displacement of 0.075mm (peak-to-peak) 10~57Hz acceleration at 0.5G (peak) 57~150Hz, at a sweep rate of 15 min/cycle by two cycles. This test duration is 90 minutes which includes 30 minutes for each of the three axis.

- 1.0G random operation, 5~500Hz, all three axis, 30 min/axis.
- 2.16G, 5~500Hz, all three axis, 30 min/axis.

## Shock Test

The powered PPC65 is tested at 15G shock peak acceleration, 11 millisecond duration, in the directions of the three axis and six faces for a total of 18 shocks. An 1.0G random operation test is also conducted, 5~500Hz, three axis, 30 min/axis.

- 15G peak acceleration, 11 ms duration/operation.
- Six faces (three axis), each face tested three times.

## MIL-STD-461D/462D RE102 (10kHz~18GHz)



## EMI, EMS, ESD

The PPC65 series is fully compliant with the FCC Part 15 Class B, IC ICE-003, and CE EMC Directive 2004/108/EC (EN55022/EN55024) technical standards.

### EMI

Electromagnetic interference (also called radio frequency interference or RFI) is a disturbance that affects an electrical circuit due to either electromagnetic induction or electromagnetic radiation emitted from an external source. The disturbance may interrupt, obstruct, or limit the effective performance of the circuit. The source may be any object, artificial or natural, that carries rapidly changing electrical currents, such as an electrical circuit, Sun or Northern Lights.

Electromagnetic interference at 2.4 GHz can be caused by 802.11b and 802.11g wireless devices, which include bluetooth devices, cordless telephones, and microwave ovens.

Placing a large amount of electrical and electronic systems into a very confined space poses the problem of keeping the EMI of these systems from interfering with each other through radiated and conducted emissions. With most systems now fully electronic, the need to contain EMI is more important than ever starting from design stage.

## EMS

Electromagnetic Susceptibility (EMS) testing determines the ability of an electronic product to operate properly in an undesirable electromagnetic environment. The PPC65 underwent and passed the following compliance tests.

1

### Electrical Fast Transient (EFT)

Also referred to as "Bursts", EFT examines the product's immunity of an operating system by simulating possible circumstances.

\* Compliance with IEC 61000-4-4 EFT 4.4KV

2

### Surge Immunity

Ensures an electronic product's continued reliable operation if subjected to realistic levels of surge voltages.

\* Compliance with IEC 61000-4-5 SURGE 4.1KV/2KA and 61000-4-9 (Magnetic field SURGE)

3

### DIPS

Evaluates a product's immunity when subjected to voltage dips, short interruptions, and voltage variations.

\* Compliance with IEC 61000-4-11 DIPS/ VARIATION, IEC 61000-4-8 (50/60Hz Magnetic field 50A/m) with the additional MF1000-1 antenna (1x1m)

5

### Conducted Immunity Test (CIT)

Determines the product's ability to withstand the presence of RF signals from the cables or power cords attached to the product.

\* Compliance with IEC/EN 61000-4-6

4

### Conducted Susceptibility (CS)

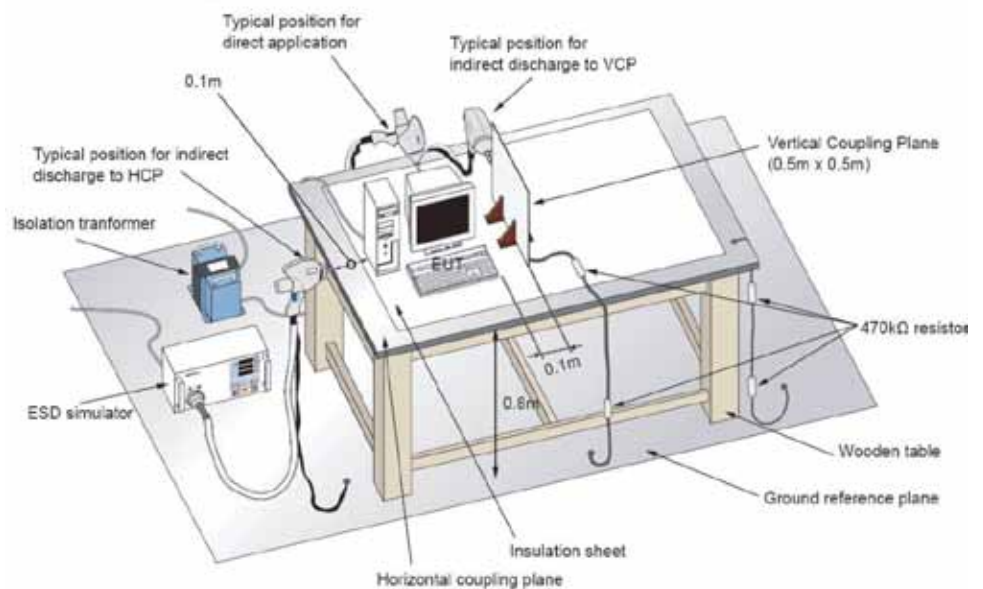
Examines the product's immunity in terms of conduction for frequency ranges from 150kHz to 80MHz.

\* Compliance with IEC/EN 61000-4-6 (IEC-Frequency range from 150 kHz ~ 80MHz)

## ESD

Electrostatic Discharge (ESD) can damage electronic components resulting in a product's reduced reliability or permanent damage.

The PPC65 was carefully designed and tested to conform to the ESD immunity requirements.



\*Illustrative ESD Test Bench

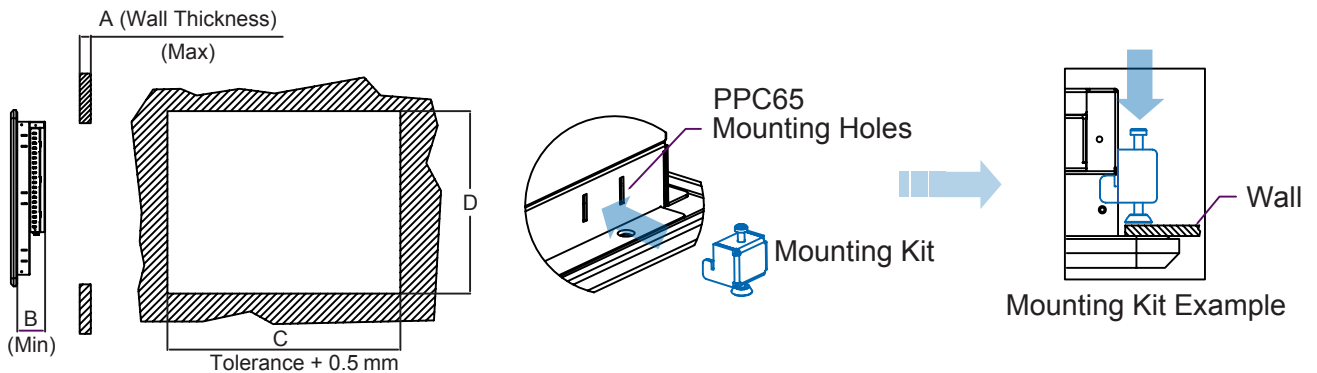
# PPC65 Mounting Options

## Panel Mounting

The panel mount aluminum front bezel is environmentally sealed to comply with NEMA/IP65 specifications to prevent damaging moisture, dust, and dirt from getting into the system. A panel mount kit with fasteners is shipped with each PPC65. The cut-out dimensions are as follows:

| PPC65 Family |             | A     | B      | C     | D     | Mounting Kits |
|--------------|-------------|-------|--------|-------|-------|---------------|
| PPC65-1210S  | PPC65-1211S | 4.0mm | 51mm   | 301mm | 236mm | x 10          |
| PPC65-1510S  | PPC65-1511S | 5.0mm | 52.8mm | 351mm | 281mm | x 12          |
| PPC65-1710S  | PPC65-1711S | 8.5mm | 56.9mm | 381mm | 317mm | x 14          |
| PPC65-1910S  | PPC65-1911S | 8.5mm | 57mm   | 421mm | 349mm | x 14          |

Remember that your enclosure must also be rated as IP65 or greater.



## VESA Mounting

The PPC65 also supports VESA mounting. The back of the unit has been strengthened to support this mounting option. You can use either the standard 75x75mm or 100x100mm mounting bracket.



# Customization Options

The PPC65's configuration can be modified with the following options:

- Custom bezel inlay      Provide your artwork and drawing to complete your product's unique identification
- Hard disk                      WinSystems can add a 2.5" SATA drive to your PPC65
- Operating System          WinSystems can pre-load an OS and other special configurations

*Contact our Factory Application Engineers for details;  
Call 817-274-7553 or Email [Info@WinSystems.com](mailto:Info@WinSystems.com)*



## Customer Applications

WinSystems has a diverse customer base which ranges from small companies to Fortune 500 Corporations. Our customers depend on us to deliver quality products and customer service so that they can get their project to market quicker and easier.

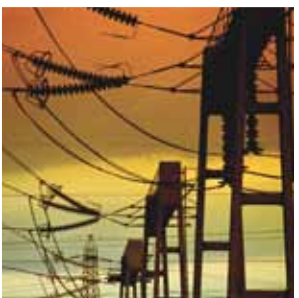
- Pipelines
- Transportation
- Security
- Machinery
- Waste Water
- Oil and Gas
- Utilities
- Food Processing
- Medical
- Test Equipment
- Data Logging
- Packaging

*Contact us today. Our goal is  
to be your embedded  
product supplier of choice.*



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