



# Hardware User Guide

## PAC-RPP

### Second Edition



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## Document History

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## FCC Statement

This device complies with part 15 FCC rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class "A" digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

## Safety and Warranty

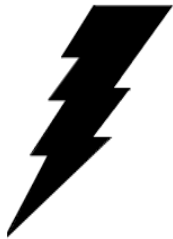
- Please read these safety instructions carefully.
- Please keep this user's manual for later reference.
- Please disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning, use a damp cloth.
- For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
- Keep this equipment away from humidity.
- Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
- The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
- Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- Position the power cord so that people cannot step on it. Do not place anything over the power cord.
- All cautions and warnings on the equipment should be noted.
- If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
- Never pour any liquid into an opening. This could cause fire or electrical shock.
- Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.
- If any of the following situations arises, get the equipment checked by service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment does not work well, or you cannot get it to work according to the user's manual.
  - The equipment has been dropped and damaged.
  - The equipment has obvious signs of breakage.
- Do not leave this equipment in an uncontrolled environment where the storage temperature is below -20° C (-4° F) or above 60° C (140° F), as this may damage the equipment.

## Notice

1. Do not touch the LCD panel surface with sharp or hard objects.
2. Do not use abrasive cleaners, waxes or solvents for cleaning, use only a dry or damp, soft cloth.
3. Use only with the provided high quality, safety-approved, AC/DC power adapter.

## Safety Precautions

- **Warning!**



Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

- **Caution!**



Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

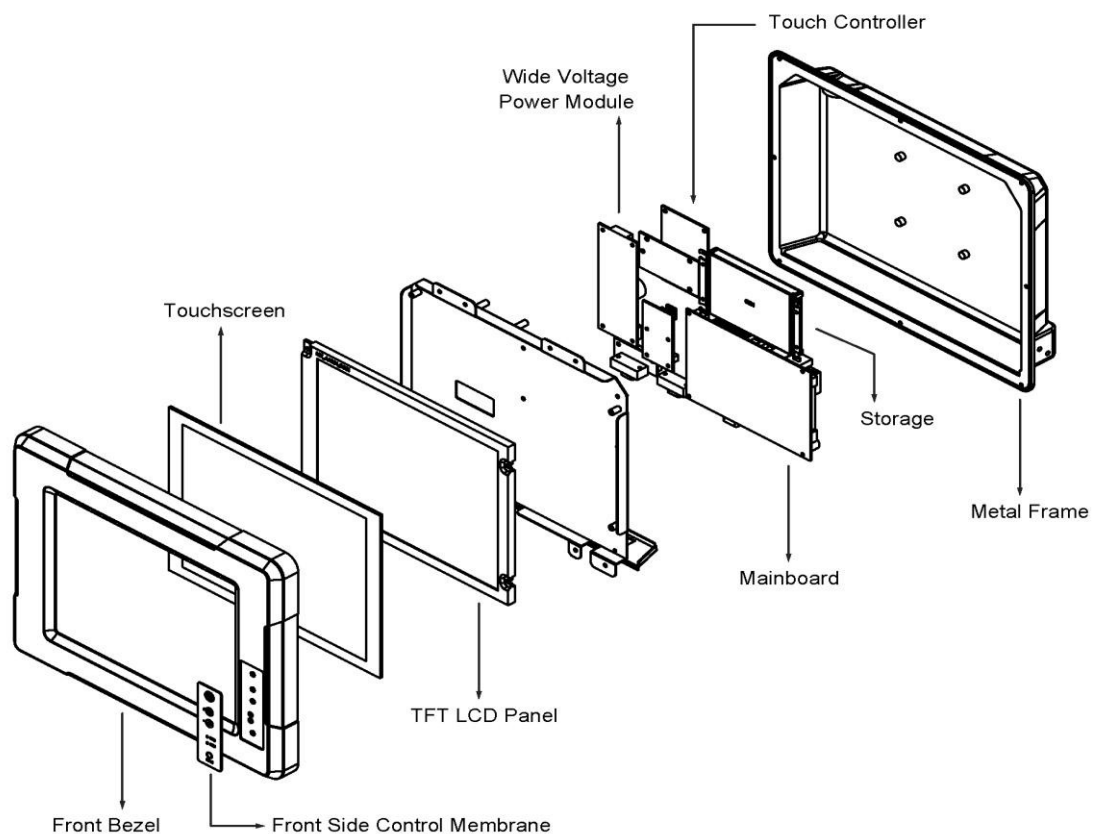
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# Chapter 1 GENERAL INFORMATION

## 1-1 Introduction

The **DisplayPAC-RPP** Rugged Panel PCs are a fanless, low power, high performance platform design with excellent resistance to shock & vibration enclosed in an aluminum alloy housing with IP65 protection and anti-corrosion Coating. The DisplayPAC-RPP is designed for the demands of very harsh environment applications such as logistics, transportation/ fleet management, heavy vehicles, utility and also outdoor usage.



## 1-2 PAC-RPP Series Motherboard Specifications

### 1-2-1 Intel PAC-N270 SBC Specifications (945 GSE Based)

<b>Form Factor</b>	<b>3.5"</b>	
CPU	Intel® Atom N270 1.6GHz Processor	
Chipset	Intel® 945GSE / ICH7M Chipset	
Memory	1 x SODIMM socket, support up to 2GB DDR2 400/533	
BIOS	Award 4Mbit Flash	
VGA Controller	Integrated in Intel 945GSE, LVDS/CRT	
VGA Memory	Shared memory, max. 224MB	
LCD Support	Intel® GMA950 graphic engine built-in, single- or dual-channel panel support up to 1600 x 1200, 18bit	
Ethernet	2 x GigaLAN (Dual Realtek RTL811B Controller )	
Audio	Realtek AC97	
USB	4 x USB (2 x Rear I/O, 2 x pin-header)	
Serial	3 x RS-232(pin-header), 1 x RS-232/422/485 (Rear I/O)	
Expansion Slots	1 x Mini PCI	
Power Adapter	9~36V (Default) or DC IN 12V (Optional)	
Storage	<b>8.4" PPC</b>	<b>10.4"/15" PPC</b>
( Default )	4G Compact Flash Card	2.5" 500G HDD
( Optional )	Industrial Compact Flash Card	2.5" Flash Disk(SSD) Compact Flash Card Industrial Compact Flash Card
O/S(Optional)	Windows7 Embedded/ Windows XP Embedded/ Windows XP Professional Embedded/ Linux 2.6.11	

### 1-2-2 Intel PAC-D2550 SBC Specifications ( NM10 Based )

<b>Form Factor</b>	<b>3.5"</b>	
CPU	Intel® Atom Dual Core D2550 1.86GHz Processor	
Chipset	Intel® NM10 Chipset	
Memory	1 x SODIMM socket, support up to 4GB DDR3 800/1066	
BIOS	AMI 16Mbit Flash	
LCD Support	LVDS: Single-channel 24 bit LVDS Up to 1440 x 900 @ 60Hz VGA Mode : Up to 1920 x 1200 @ 60Hz DVI : 1920 x 1200 @ 60Hz	
Ethernet	2 x GigaLAN (Dual Broadcom BCM57780 GbE controller)	
Audio	Realtek ALC886 HD Audio Codec	
USB	6 x USB (2 x Rear I/O, 4 x pin-header)	
Serial	3 x RS-232(pin-header), 1 x RS-232/422/485 (Rear I/O)	
Expansion Slots	1 x Mini PCIe slot (for wireless module) 1 x Mini PCIe slot (for SATA SSD)	
Power Adapter	9~36V (Default) or DC IN 12V (Optional)	
Storage	<b>8.4" PPC</b>	<b>10.4"/12.1"/15" PPC</b>
( Default )	mSATA 32G SSD	mSATA 32G SSD
( Optional )	Industrial Compact Flash Card	2.5" 32/64/128G SSD 2.5" 500G HDD Industrial Compact Flash Card
O/S(Optional)	Windows7 Embedded/ Windows XP Embedded/ Windows XP Professional Embedded/ Linux 3.2	



### 1-2-3 PAC-N2930 SBC Specifications (Intel Atom SoC Based)

<b>Form Factor</b>	<b>3.5"</b>	
CPU	Intel® Celeron N2930 1.83GHz Processor	
Chipset	Intel® Atom SoC integrated	
Memory	1 x SODIMM socket, support up to 8GB DDR3 1066	
BIOS	AMI 16Mbit Flash	
LCD Support	LVDS: Dual-channel 24 bit LVDS Up to 1920 x 1080 @ 60Hz VGA Mode : Up to 1600 x 1200 @ 60Hz DVI : 1920 x 1080 @ 60Hz	
Ethernet	2 x GigaLAN (Intel WG82574L GbE controller)	
Audio	Realtek ALC886 HD Audio Codec	
USB	1 x USB3.0, 5 x USB2.0(4 x pin-header)	
Serial	3 x RS-232(pin-header), 1 x RS-232/422/485 (Rear I/O)	
Expansion Slots	1 x Mini PCIe slot (for wireless module) 1 x Mini PCIe slot (for SATA SSD)	
Power Adapter	9~36V (Default) or DC IN 12V (Optional)	
Storage	<b>8.4" PPC</b>	<b>10.4"/12.1"/15" PPC</b>
( Default )	mSATA 32G SSD	mSATA 32G SSD
( Optional )	Industrial Compact Flash Card	2.5" 32/64/128G SSD 2.5" 5000G HDD Industrial Compact Flash Card
O/S(Optional)	Windows Embedded Standard 7/ Windows Embedded 8 Standard/ Windows Embedded 8.1 Industry Pro/ Linux 3.2	

## 1-3 Panel PC Selection Guide

The PAC-RPP series Rugged Panel PCs support 8.4-inch and 10.4-inch TFT

Panels, please refer to the table below:

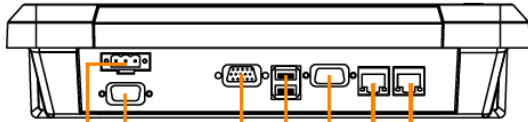
Model Name	LCD Spec.	Resolution (Recommended)	Display Color
<b>PAC-RPP-N270</b>	PAC-RPP08-N270	800 × 600	262,144 (6bit/colors)
	PAC-RPP08X-N270	1024 × 768	262,144 (6bit/colors)
	PAC-RPP10-N270	800 × 600	262,144 (6bit/colors)
	PAC-RPP10X-N270	1024 × 768	16.2M (8bit/colors)
	PAC-RPP15-N270	1024 × 768	16.7M (8bit/colors)
<b>PAC-RPP-D2550</b>	PAC-RPP08-D2550	800 × 600	16.2M (8bit/colors)
	PAC-RPP10X-D2550	1024 × 768	16.2M (8bit/colors)
	PAC-RPP10V-D2550	640 × 480	16.2M (8bit/colors)
	PAC-RPP10-D2550	800 × 600	16.2M (8bit/colors)
	PAC-RPP12-D2550	1280 × 800	16.2M (8bit/colors)
	PAC-RPP15-D2550	1024 × 768	16.2M (8bit/colors)
<b>PAC-RPP-N2930</b>	PAC-RPP08-N2930	800 × 600	16.2M (8bit/colors)
	PAC-RPP10X-N2930	1024 × 768	16.2M (8bit/colors)
	PAC-RPP10V-N2930	640 × 480	16.2M (8bit/colors)
	PAC-RPP10-N2930	800 × 600	16.2M (8bit/colors)
	PAC-RPP12-N2930	1280 × 800	16.2M (8bit/colors)
	PAC-RPP15-N2930	1024 × 768	16.2M (8bit/colors)

# Chapter 2 Getting Started

## 2-1 Input / Output Devices

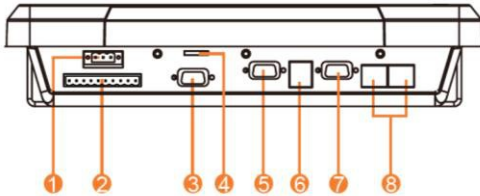
The following figure shows the I/O arrangement of the PAC-RPP-D2550 series Rugged Panel PC. The backside of the chassis contains most of the connectors.

### 8.4"



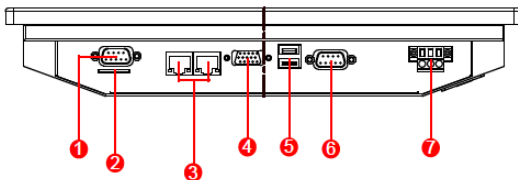
- |                                |         |
|--------------------------------|---------|
| 1. DC Terminal Block (Default) | 4. USB  |
| 2. COM4                        | 5. COM1 |
| 3. VGA                         | 6. LAN  |

### 10.4"



- |                            |         |
|----------------------------|---------|
| 1. DC in 9~36V             | 5. VGA  |
| 2. CanBus / DIO (Optional) | 6. USB  |
| 3. COM4                    | 7. COM1 |
| 4. 3G SIM Card (Optional)  | 8. LAN  |

### 12.1"



- |                              |                                |
|------------------------------|--------------------------------|
| 1. RS-232/422/485 (Optional) | 4. VGA                         |
| 2. SIM Slot                  | 5. USB                         |
| 3. LAN                       | 6. RS-232                      |
|                              | 7. DC Terminal Block (default) |

### 15"



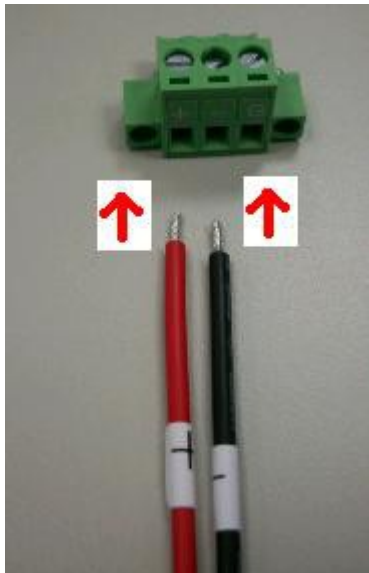
- |                             |                            |
|-----------------------------|----------------------------|
| 1. 9~36V Terminal Block     | 5. CanBus / DIO (Optional) |
| 2. RS-232 (Optional)        | 6. VGA                     |
| 3. RS-232                   | 7. USB                     |
| 4. SIM Card Slot (Optional) | 8. RS-232/422/485          |
|                             | 9. LAN                     |

1	DC Terminal Block ( Default)	Pluggable 3pin terminal block power input
2	COM	9-pin male Serial Port connector that can attach a serial mouse or other serial devices directly to the port.
3	VGA	Use VGA port to connect an external Display.
4	USB	USB-compatible devices can be plugged directly into the USB 2.0 port.
5	LAN	10/100/1000 Mbps, connect a network cable to the standard RJ-45 port and get connection to the Local Area Network (LAN).

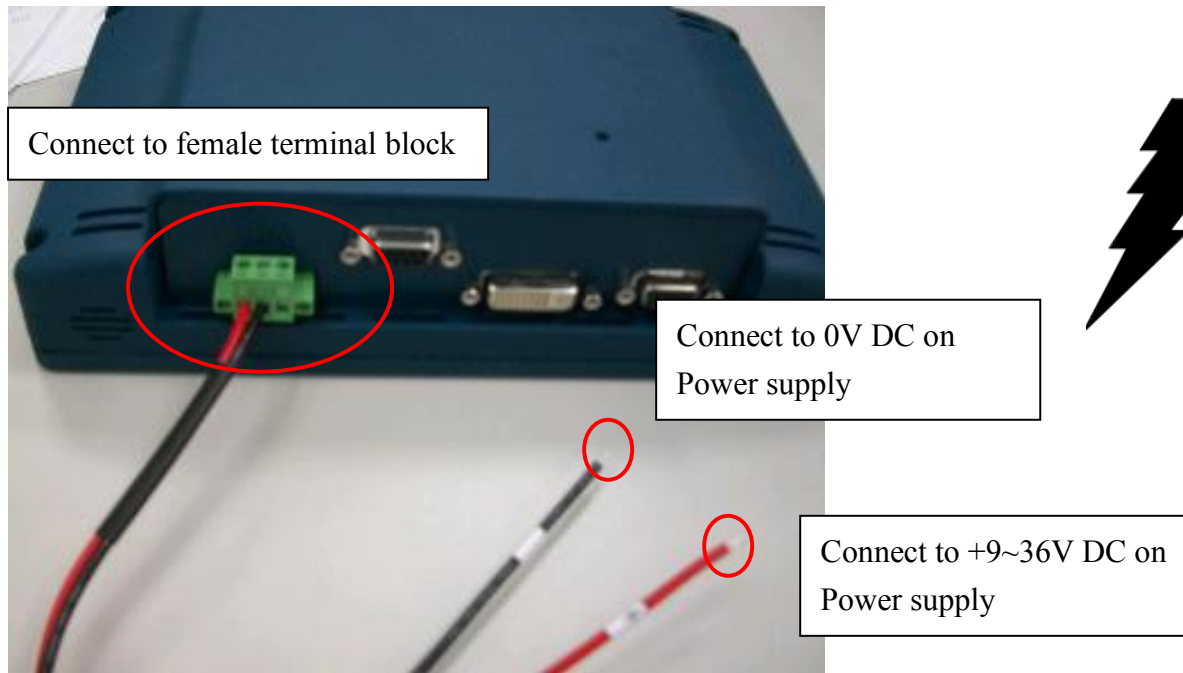


## 2-2 Starting the Panel PC & O/S Installation

- 1) Connect the cable as picture below. 2) Screw the Terminal block to fix the cable



3) Connect the cable as picture below.



4. Press the power on switch to start the Panel PC.
5. Press “DEL” to enter the CMOS setting and check the BIOS setup.
6. You may install your own O/S if it is not installed.

When installing O/S for this Panel PC, please follow the steps and use external equipment as **Keyboard and Mouse.**

(a) Please use external USB DVD-ROM to run the O/S and Driver setting (as picture showed below).



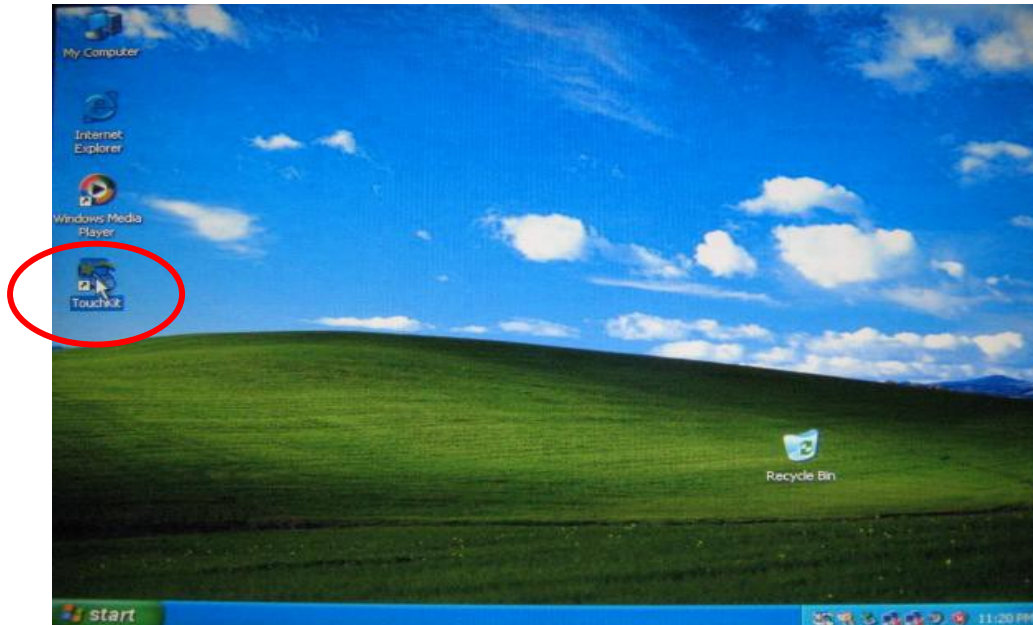
## **2-3 Driver Installation**

The PPC comes pre-installed with the latest drivers for the PAC-RPP. Contact Computer Dynamics for the drivers.

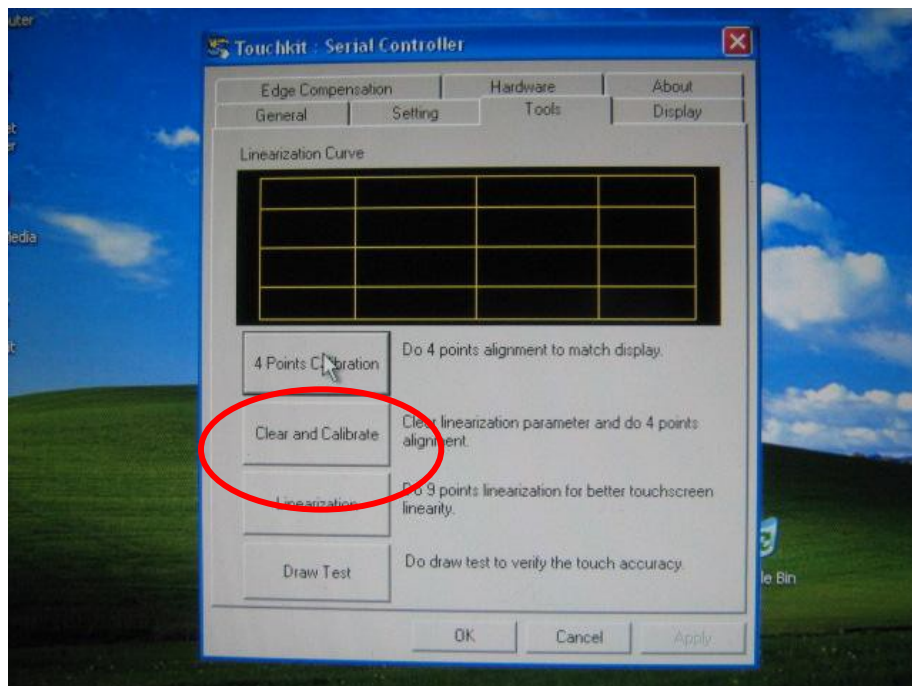
## Chapter 3 Touch Screen Calibration

If the touchscreen does not respond to touches correctly, perform the calibration routine.

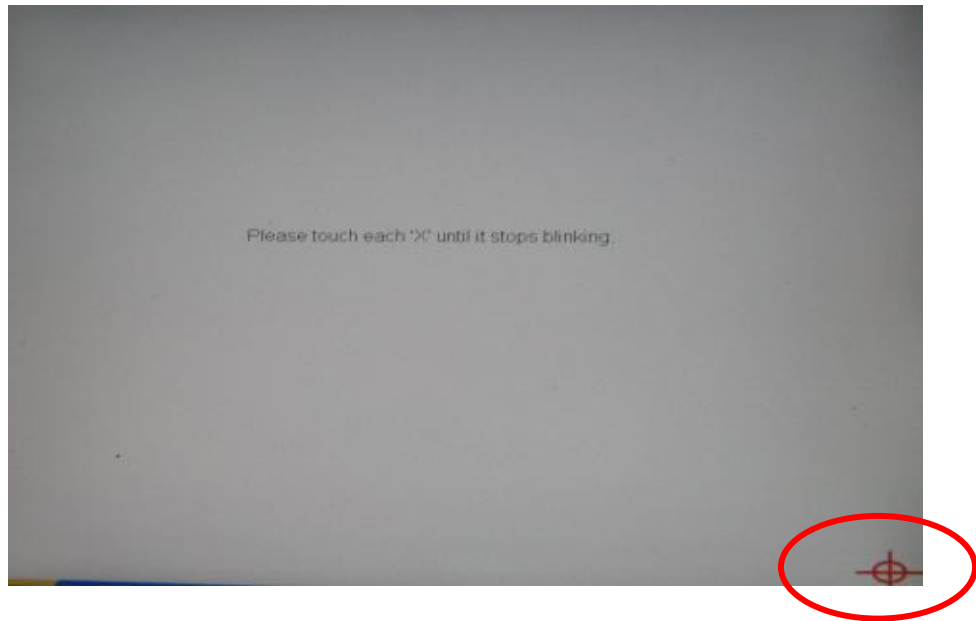
Step.1 Click the “Touch-Kit” shortcut function in the desktop.



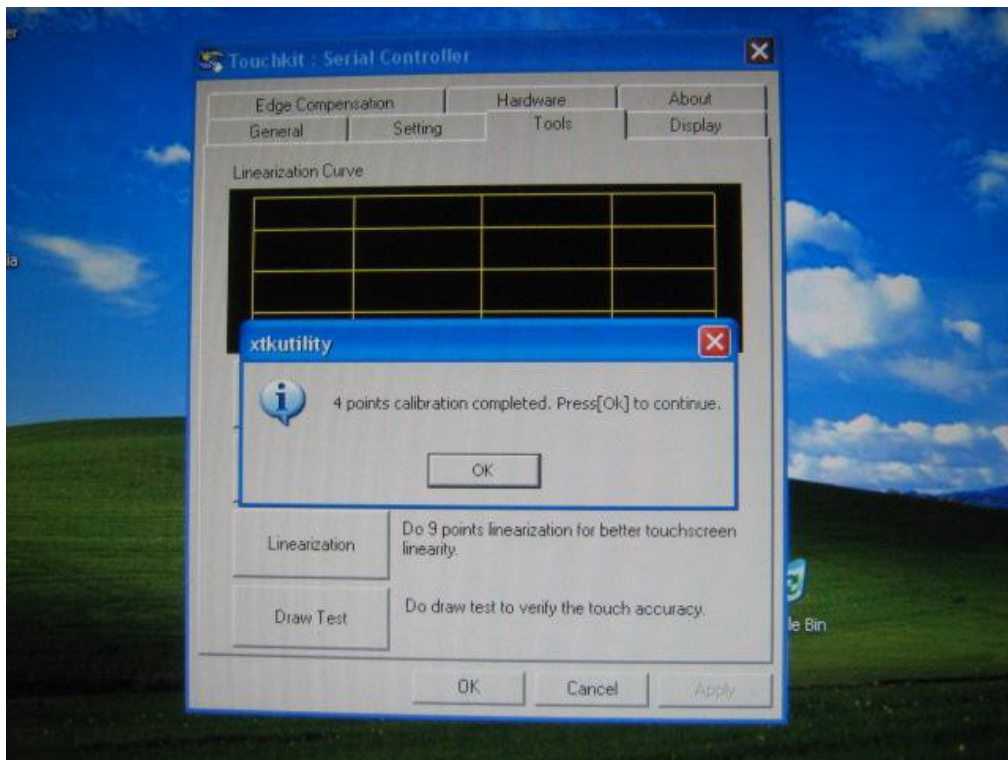
Step.2 On the “Tool” tab, select “4 Points Calibration”.



Step.3 Touch (and hold for several seconds) each of the four points displayed on the screen.



Step.4 Press “Yes” to continue if the 4 point calibration test is fine to finish the testing.



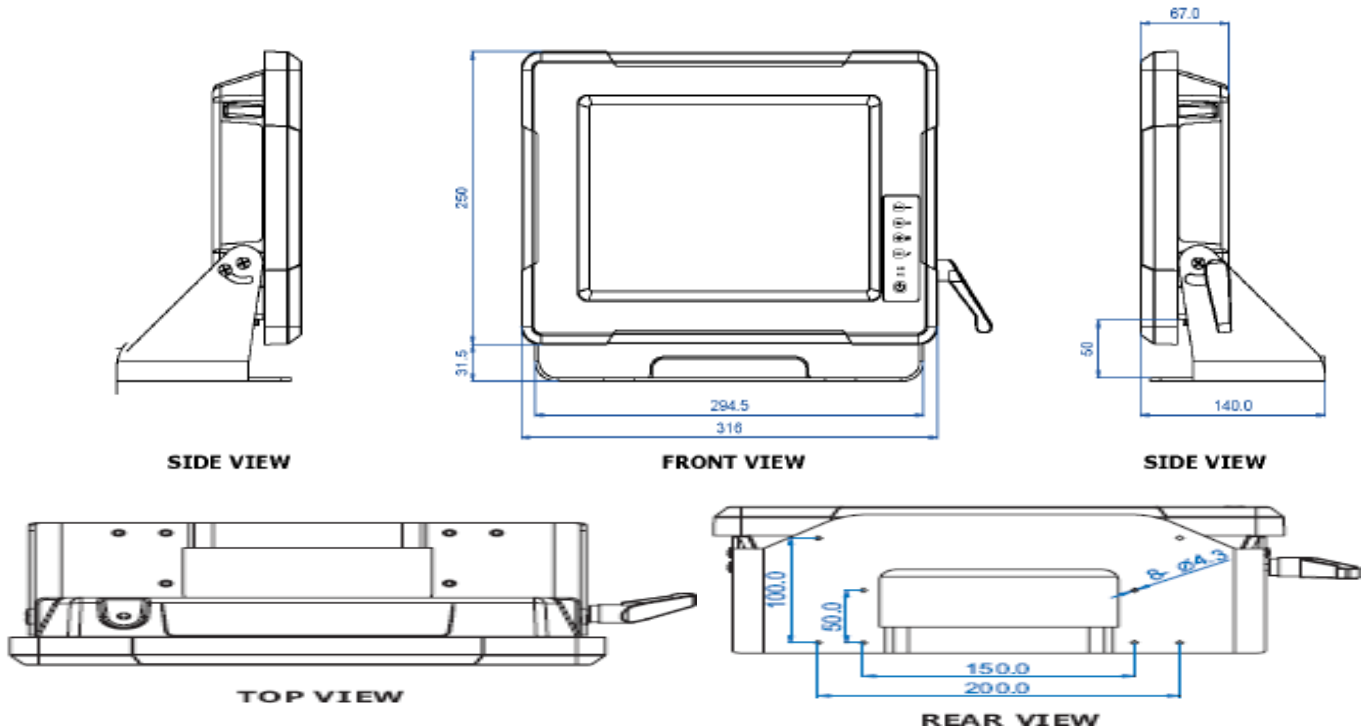


## Chapter 4 PAC-RPP Rugged Panel PC Mounting Guide

The PAC-RPP is suitable for mounting in most industrial/commercial applications by using the rear VESA mounting holes.

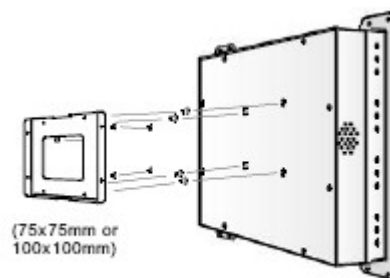
### VEHICLE MOUNTING

Mount with Vehicle mount kits and then mount onto mounting bracket.



### WALL / ARM MOUNTING

Mount with VESA mount kit and then mount onto a wall or use a VESA mounting arm.



## 4-1 Vehicle Mounting

Before setting up the rugged bracket, please check to make sure all items are Included.

### Rugged Panel PC bracket accessory list

- One Bracket Stand
- Three M5x10 screws with washer
- One “Locking handle” adjustment tool with metal washer

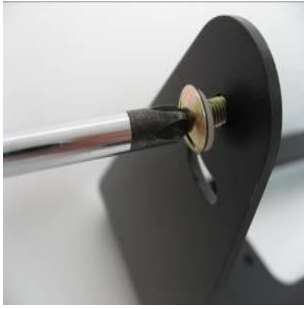


### Bracket Stand Assembly

1. Put the Rugged Panel PC or LCD on the bracket stand and align all screw holes.



- Screw on three of the M5x10 screws to affix the rugged product to the stand.



- Screw on the Locking handle to the remaining screw hole.



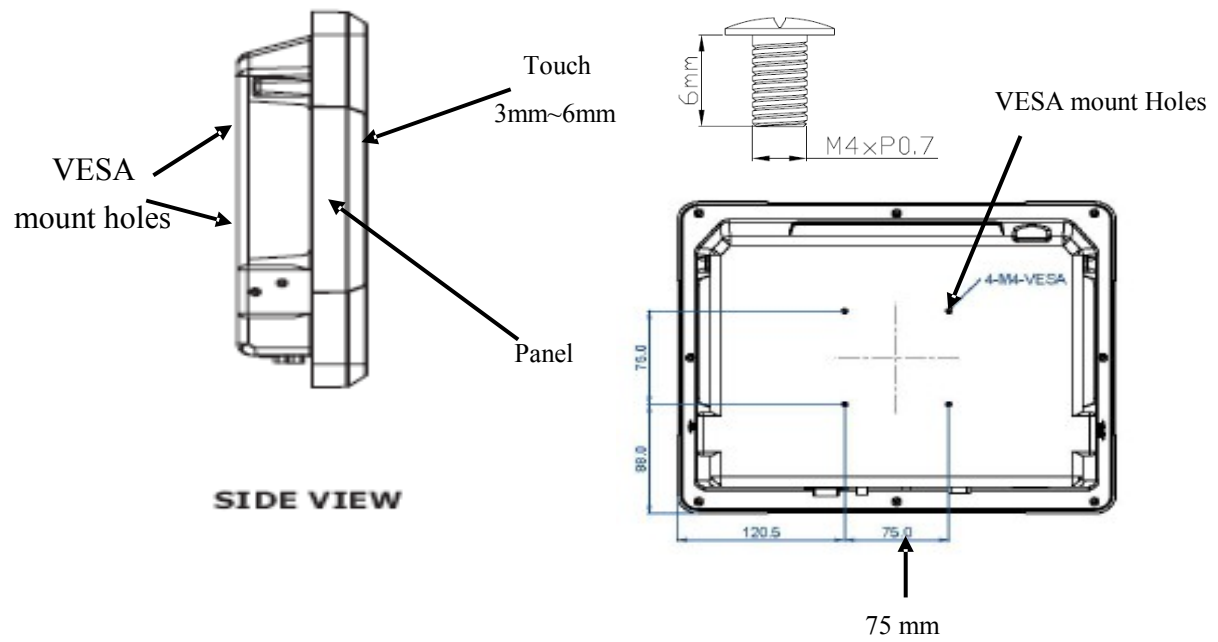
- By loosening the hand-screw adjustment tool, you can adjust the product to the desired angle on the stand. Then tighten the handle to lock the display in place.



## 4-2 VESA Mounting

Fix the Panel PC with four screws (standard 75mm VESA), and fasten on the wall or mounting arm as necessary.

- 75 mm x 75 mm

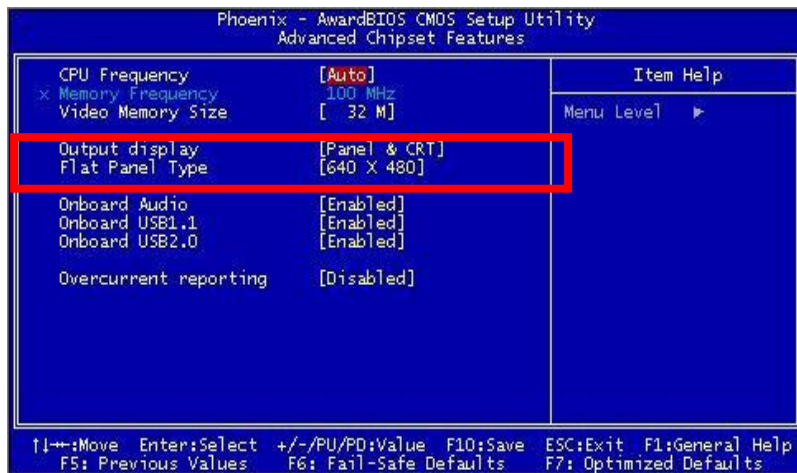


## KNOWN ISSUES

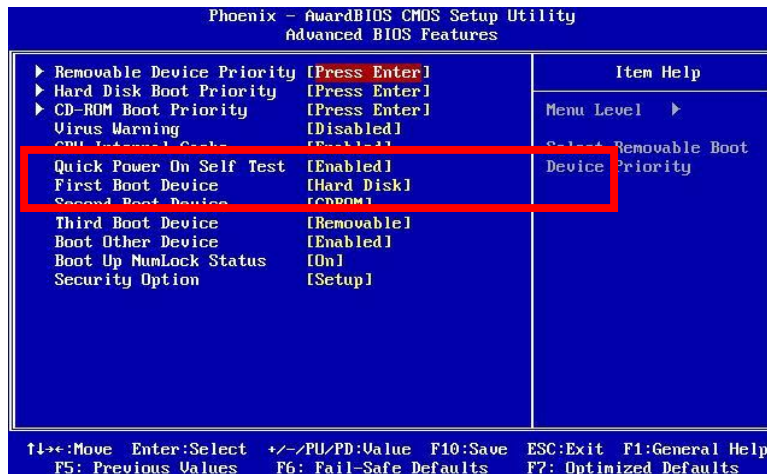
- When using an “external display” such as a CRT or LCD in external mode (Panel & CRT), the resolution of the external display must be greater than or equal to the resolution of the PAC-RPP LCD Panel. If the external display is lower resolution than the CMOS setting, video may not show properly on the external display.

- Recommendation in CMOS setting :

- Choose “CRT” only when using an external display.
- Choose “Panel” only when using an internal panel display.



- If using a USB-HDD or USB-CDROM to boot an operating system, disabling the “Quick Power On Self Test” function in CMOS setting is recommended.



## NOTICES

The following items apply ONLY when using a specially requested configuration that uses the internal CF Card slot. This is not a typical configuration of the PAC-RPP product.

1. If using a CF card as storage for the Operating System, you need to use **“Fixed Disk Mode”** for the Compact Flash Card instead of removable disk mode.
2. The internal Compact Flash socket is **NOT A PLUG & PLAY DEVICE**, you may **remove the CF card only at POWER-OFF status.**