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PPC3-G-6.5-359

6.5” Touchscreen Panel PC

PRODUCT MANUAL



WinSystems, Inc.
715 Stadium Drive
Arlington, TX 76011

http://www.winsystems.com

REVISION HISTORY

P/N G500-5000-075

Date Code	REV Level	ECO Number
101119	Initial Release	
131008	Updated LED Backlight	

TABLE OF CONTENTS

TABLE OF CONTENTS **3**

BEST PRACTICES FOR SUCCESSFULLY USING AN EMBEDDED PC **4**

INTRODUCTION **10**

FEATURES **10**

INSTALLATION INSTRUCTIONS **12**

POWER 12

Powering the Panel PC 12

PPC3-G-6.5 INSTALLATION **13**

MECHANICAL DIMENSIONS 13

Mounting Holes 14

PPC3-G-6.5 BOM COMPONENTS **15**

COMPONENTS 15

SOFTWARE DRIVERS & EXAMPLES **16**

WARRANTY INFORMATION **17**

APPENDIX **18**

BEST PRACTICES FOR SUCCESSFULLY USING AN EMBEDDED PC

WinSystems offers best practice recommendations for using and handling WinSystems embedded PCs. These methods include valuable advice to provide an optimal user experience and to prevent damage to yourself and/or the product.

Please review these guidelines carefully and follow them to ensure you are successfully using your embedded PC.

For any questions you may have on WinSystems' products, contact our Technical Support Group at (817) 274-7553, Monday through Friday, between 8 AM and 5 PM Central Standard Time (CST).

YOU MAY VOID YOUR WARRANTY AND/OR DAMAGE AN EMBEDDED PC BY FAILING TO COMPLY WITH THESE BEST PRACTICES.

POWER SUPPLY

The power supply and how it is connected to the Single Board Computer (SBC) is very important.



Avoid Electrostatic Discharge (ESD)
Only handle the SBC and other bare electronics when electrostatic discharge (ESD) protection is in place. Having a wrist strap and a fully grounded workstation is the minimum ESD protection required before the ESD seal on the product bag is broken.

Power Supply Budget
Evaluate your power supply budget. It is usually good practice to budget 2X the typical power requirement for all of your devices.

Zero-Load Power Supply
Use a zero-load power supply whenever possible. A zero-load power supply does not require a minimum power load to regulate. If a zero-load power supply is not appropriate for your application, then verify that the single board computer's typical load is not lower than the power supply's minimum load. If the single board computer does not draw enough power to meet the power supply's minimum load, then the power supply will not regulate properly and can cause damage to the SBC.



Use Proper Power Connections (Voltage)
When verifying the voltage, you should always measure it at the power connector on the SBC. Measuring at the power supply does not account for voltage drop through the wire and connectors.

The single board computer requires +5V (±5%) to operate. Verify the power connections. Incorrect voltages can cause catastrophic damage.

Populate all of the +5V and ground connections. Most single board computers will have multiple power and ground pins, and all of them should be populated. The more copper connecting the power supply to the single board computer the better.

Adjusting Voltage
If you have a power supply that will allow you to adjust the voltage, it is a good idea to set the voltage at the power connector of the SBC to 5.1V. The SBC can tolerate up to 5.25V, so setting your power supply to provide 5.1V is safe and allows for a small amount of voltage drop that will occur over time as the power supply ages and the connector contacts oxidize.

Power Harness
Minimize the length of the power harness. This will reduce the amount of voltage drop between the power supply and the single board computer.

Gauge Wire
Use the largest gauge wire that you can. Most connector manufacturers have a maximum gauge wire they recommend for their pins. Try going one size larger; it usually works and the extra copper will help your system perform properly over time.



Contact Points
WinSystems' boards mostly use connectors with gold finish contacts. Gold finish contacts are used exclusively on high speed connections. Power and lower speed peripheral connectors may use a tin finish as an alternative contact surface. It is critical that the contact material in the mating connectors is matched properly (gold to gold and tin to tin). Contact areas made with dissimilar metals can cause oxidation/corrosion resulting in unreliable connections.

Pin Contacts
Often the pin contacts used in cabling are not given enough attention. The ideal choice for a pin contact would include a design similar to Molex's or Trifurcons' design, which provides three distinct points to maximize the contact area and improve connection integrity in high shock and vibration applications.

POWER DOWN

Make sure the system is **completely off/powered down** before connecting anything.



Power Supply OFF
The power supply should always be off before it is connected to the single board computer.

I/O Connections OFF
I/O Connections should also be off before connecting them to the single board computer or any I/O cards. Connecting hot signals can cause damage whether the single board computer is powered or not.

MOUNTING AND PROTECTING THE SINGLE BOARD COMPUTER

Do Not Bend or Flex the SBC
Never bend or flex the single board computer. Bending or flexing can cause irreparable damage. Single board computers are especially sensitive to flexing or bending around Ball-Grid-Array (BGA) devices. BGA devices are extremely rigid by design and flexing or bending the single board computer can cause the BGA to tear away from the printed circuit board.

Mounting Holes
The mounting holes are plated on the top, bottom and through the barrel of the hole and are connected to the single board computer's ground plane. Traces are often routed in the inner layers right below, above or around the mounting holes.

Never use a drill or any other tool in an attempt to make the holes larger.

Never use screws with oversized heads. The head could come in contact with nearby components causing a short or physical damage.

Never use self-tapping screws; they will compromise the walls of the mounting hole.

Never use oversized screws that cut into the walls of the mounting holes.

Always use all of the mounting holes. By using all of the mounting holes you will provide the support the single board computer needs to prevent bending or flexing.

MOUNTING AND PROTECTING THE SINGLE BOARD COMPUTER (continued)



Plug or Unplug Connectors Only on Fully Mounted Boards
Never plug or unplug connectors on a board that is not fully mounted. Many of the connectors fit rather tightly and the force needed to plug or unplug them could cause the single board computer to be flexed.

Avoid cutting of the SBC
Never use star washers or any fastening hardware that will cut into the single board computer.

Avoid Overtightening of Mounting Hardware
Causing the area around the mounting holes to compress could damage interlayer traces around the mouting holes.

Use Appropriate Tools
Always use tools that are appropriate for working with small hardware. Large tools can damage components around the mounting holes.

Placing the SBC on Mounting Standoffs
Be careful when placing the single board computer on the mounting standoffs. Sliding the board around until the standoffs are visible from the top can cause component damage on the bottom of the single board computer.

Avoid Conductive Surfaces
Never allow the single board computer to be placed on a conductive surface. Almost all single board computers use a battery to backup the clock-calendar and CMOS memory. A conductive surface such as a metal bench can short the battery causing premature failure.

ADDING PC/104 BOARDS TO YOUR STACK

Be careful when adding PC/104 boards to your stack.

Never allow the power to be turned on when a PC/104 board has been improperly plugged onto the stack. It is possible to misalign the PC/104 card and leave a row of pins on the end or down the long side hanging out of the connector. If power is applied with these pins misaligned, it will cause the I/O board to be damaged beyond repair.

OPERATIONS / PRODUCT MANUALS

Every single board computer has an operations manual or product manual.



Manual Updates
Operations/Product Manuals are updated often. Periodicially check the WinSystems website (http://www.winsystems.com) for revisions.

Check Pinouts
Always check the pinout and connector locations in the manual before plugging in a cable. Many single board computers will have identical headers for different functions and plugging a cable into the wrong header can have disastrous results.

Contact an Applications Engineer with questions
If a diagram or chart in a manual does not seem to match your board, or if you have additional questions, contact your Applications Engineer.

INTRODUCTION

This manual is intended to provide the necessary information regarding configuration and usage of the PPC3 6.5" Touchscreen Panel PC. WinSystems maintains a Technical Support Group to help answer questions not adequately addressed in this manual. Contact Technical Support at (817) 274-7553, Monday through Friday, between 8 AM and 5 PM Central Standard Time (CST).

FEATURES

Panel PC

- Analog resistive Touch Panel PC with Active Matrix color LCD
- Thin profile, small size
- Easy to mount, open-frame design
- Rugged and reliable construction
- Includes a PC-compatible single board computer (SBC) with PC/104 I/O expansion capability
- Gasket material supplied to user for better fit into user's application enclosure

Flat Panel Display

- Colors: 262,144; 6-bit digital via LVDS
- Surface Coating: Anti-glare hard coating
- Backlight: LED
- Pixel Format: 640x480 (max)
- Dot Size: 0.207 mm (H) x 0.207 mm (V)
- Brightness: 700 cd/m2 (nits)
- Contrast Ratio 600:1
- Horizontal View Angle: ± 70°
- Vertical View Angle: +60°

Single Board Computers Supported

- PPM-LX800-G

Power

- +5V @ ±5% required, 3.4A typical
- +12V @ ±5% required, 0.25A typical

Operating Systems Supported

- Windows XP, XP Embedded, Linux, DOS, x86 RTOS

Industrial Operating Temperature Range

- -30°C to +70°C

Power Supply

- Unpluggable terminal strip for power supply input

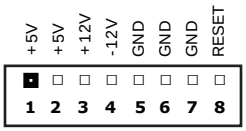
Standard

- Free technical and configuration support
- Long-term product support

POWER

Powering the Panel PC

Mating Connector: **WECO 302-NSLW-HDS/08**

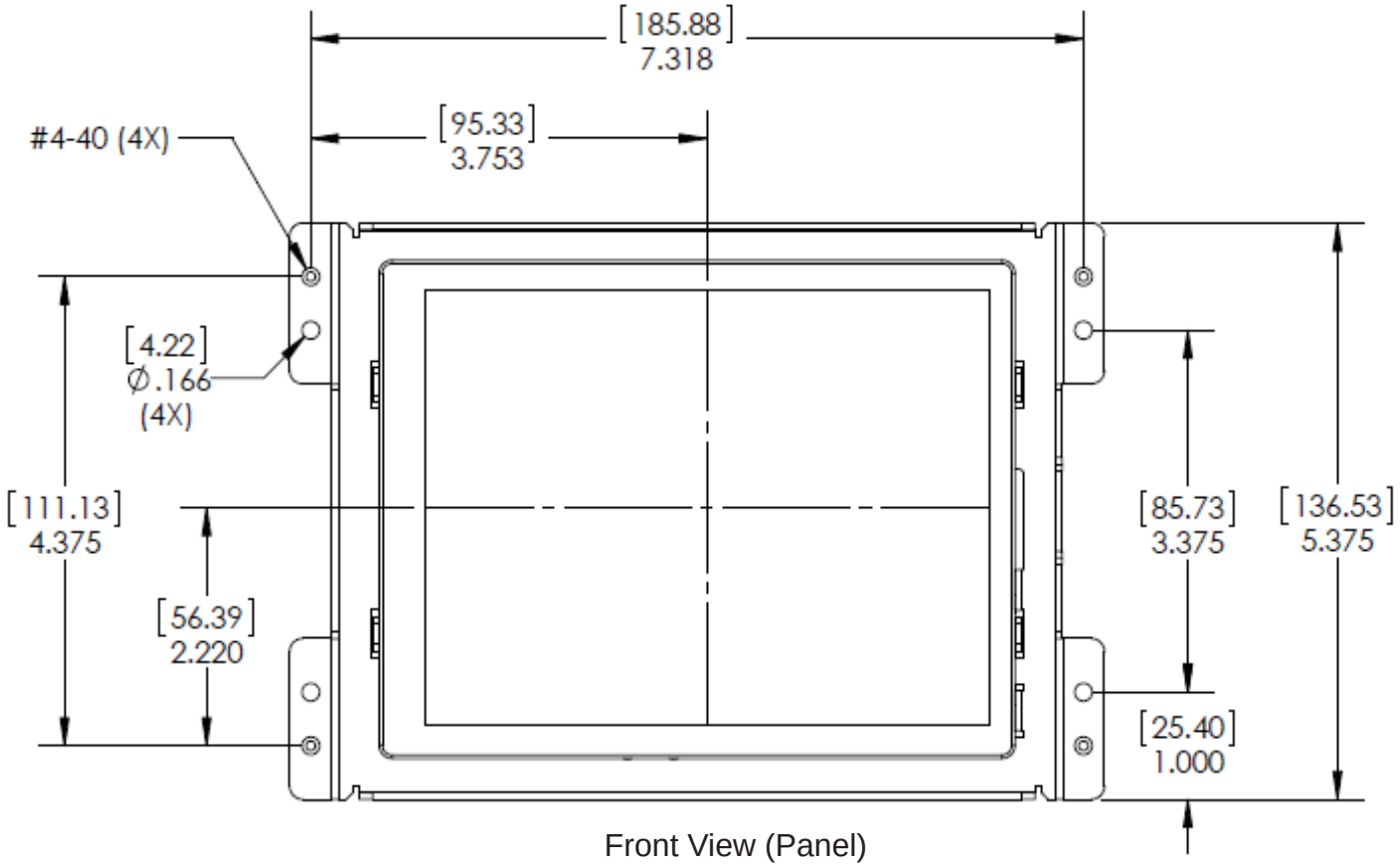


Power is supplied to the PPC3-G-6.5 Panel PC through a power terminal strip, which is comprised of two parts: a plug (Part# WECO 302-NSLW-HDS/08) and a socket (Part# WECO 302-NFLW-DS/08).

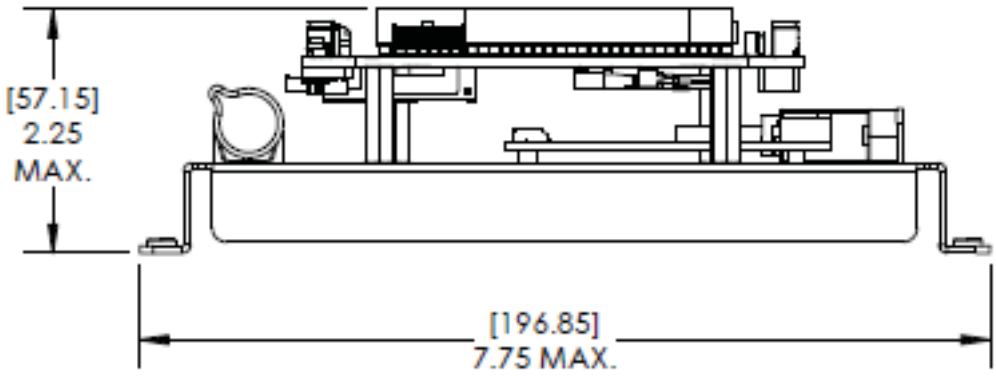
PPC3-G-6.5 INSTALLATION

MECHANICAL DIMENSIONS

View the following Mechanical Drawings for more information on the appropriate cut-out dimensions to use when installing the PPC3-G-6.5 Panel PC series.



Front View (Panel)



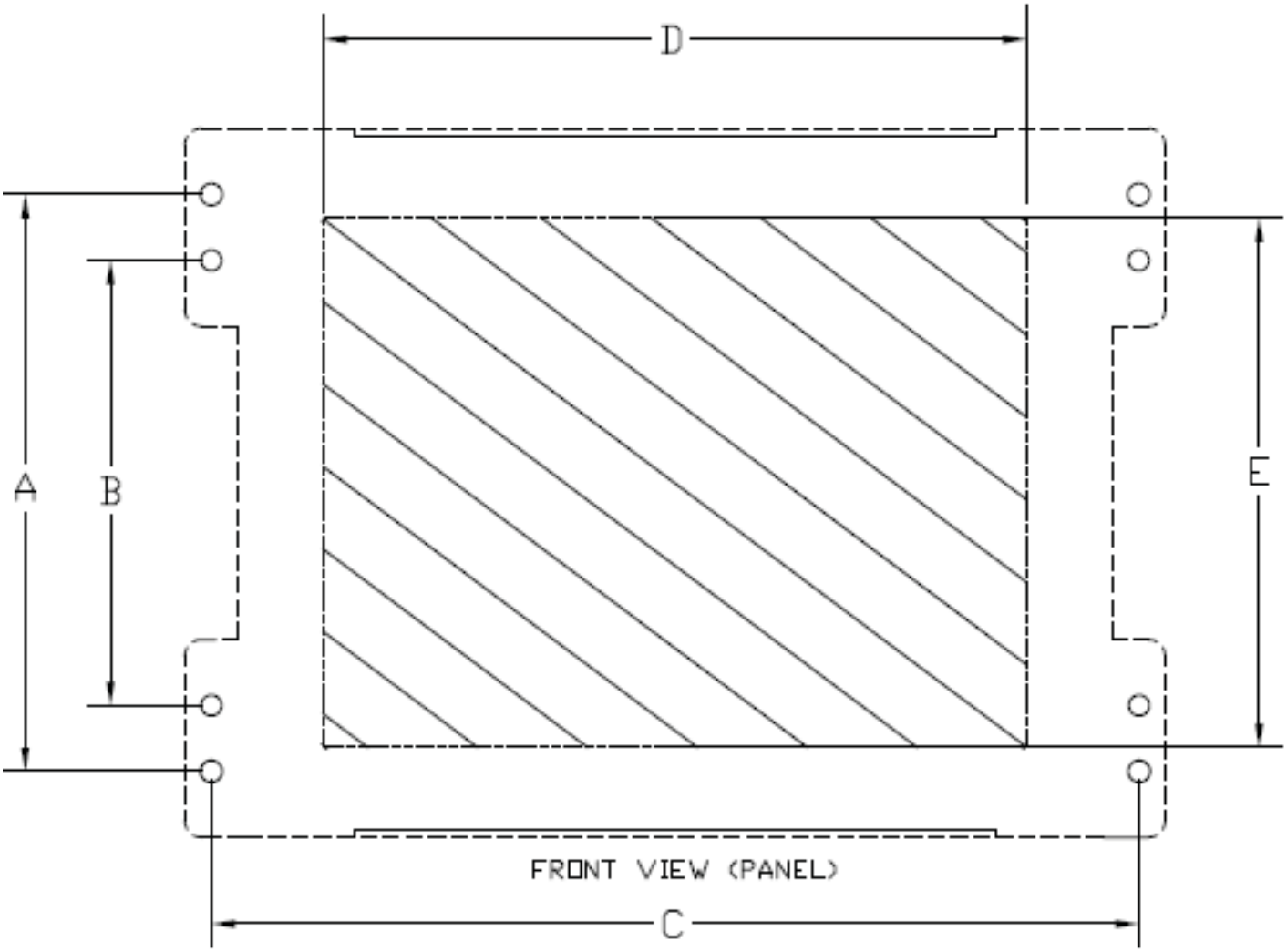
Overall dimensions: 7.75 x 5.375 x 2.25 inches (WxHxD)

Note: Touchscreen to Flange
Depth axis diff. (0.0001", @ zero gasket compression.
(Approximately -0.0156" @ gasket compression.)

Front View (Panel)

Mounting Holes

Four through holes plus four capture #4-40 press fit nuts are in the chassis for mounting flexibility.



Mounting Holes:

A = 4.375” #4-40 Threaded Hole, Four Places

B = 3.375” 0.156” Dia. Hole, Four Places

C = 7.318”

CUTOUT DIMENSIONS:

D = 5.350”

E = 4.047”

PPC3-G-6.5-359 BOM SUBASSEMBLIES

COMPONENTS

Following is a list of components that comprise the PPC3-G-6.5 Panel PC Series.

Part Number	Description
PPM-LX800-G	PC/104-*Plus* LX800 Single Board Computer
SODIMM200-G-27-1G	1GB SDRAM
LCD-G065VN01V2	TFT-LCD Color Panel
G820-0021-007	Touchscreen Overlay
G820-0021-006	USB Touchscreen Controller Board
CBL-174-G-1-1.5	DC Power Harness
CBL-312-G-1-0.5	Flat Panel Display Cable, PPM-LX800 to ADP-LVDS-T-1-G
CBL-LVDS24-203-6.5	Flat Panel Display and Inverter Cable
CBL-USB2-002-08	USB Touch Controller Cable
BAT-LTC-E-36-16-1	3.6V 1650 mAH Removable Battery
ADP-LVDS-T-1-G	TTL to LVDS Adapter

SOFTWARE DRIVERS & EXAMPLES

WinSystems Single Board Computer
Visit the section entitled, “Software” in the link below for the various drivers associated with the appropriate SBC. http://www.winsystems.com/PPC3-G-65-359.cfm

WARRANTY INFORMATION

(http://www.winsystems.com/warranty.cfm)

WinSystems warrants to Customer that for a period of two (2) years from the date of shipment any Products and Software purchased or licensed hereunder which have been developed or manufactured by WinSystems shall be free of any material defects and shall perform substantially in accordance with WinSystems' specifications therefore. With respect to any Products or Software purchased or licensed hereunder which have been developed or manufactured by others, WinSystems shall transfer and assign to Customer any warranty of such manufacturer or developer held by WinSystems, provided that the warranty, if any, may be assigned. Notwithstanding anything herein to the contrary, this warranty granted by WinSystems to the Customer shall be for the sole benefit of the Customer, and may not be assigned, transferred or conveyed to any third party. The sole obligation of WinSystems for any breach of warranty contained herein shall be, at its option, either (i) to repair or replace at its expense any materially defective Products or Software, or (ii) to take back such Products and Software and refund the Customer the purchase price and any license fees paid for the same. Customer shall pay all freight, duty, broker's fees, insurance charges for the return of any Products or Software to WinSystems under this warranty. WinSystems shall pay freight and insurance charges for any repaired or replaced Products or Software thereafter delivered to Customer within the United States. All fees and costs for shipment outside of the United States shall be paid by Customer. The foregoing warranty shall not apply to any Products of Software which have been subject to abuse, misuse, vandalism, accidents, alteration, neglect, unauthorized repair or improper installations.

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WARRANTY SERVICE

1. To obtain service under this warranty, obtain a return authorization number. In the United States, contact the WinSystems' Service Center for a return authorization number. Outside the United States, contact your local sales agent for a return authorization number.

2. You must send the product postage prepaid and insured. You must enclose the products in an anti-static bag to protect from damage by static electricity. WinSystems is not responsible for damage to the product due to static electricity.

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