WinSystems®
EMBEDDED COMPUTERS

6.5-inch Panel PC
AM TFT Panel
with Touchscreen

FEATURES

- Compact 6.5" AM TFT Flat Panel Display
  - 640 x 480 resolution
  - Two long-life, CCFL field replaceable backlights
  - Contrast ratio is 300:1
  - Luminance is 400 nits
  - Anti-reflective coating
  - Wide viewing angle
  - Extended temperature operation
- 12-in and 15-in screen sizes are also available
- Includes PC-compatible x86 single board computer
  - 500MHz AMD LX800 CPU
  - 10/100 ENET controller
  - Four RS-232 COM and two USB 2.0 ports
  - 16-DIO, LPT, keyboard, mouse, AC97 audio
  - EIDE controller and CFlash socket
  - PC/104 expansion modules
- Runs Linux, Windows® XP embedded and other x86-compatible operating systems
- Quick-response resistive touchscreen included
- Thin profile, open frame unit
- Rugged and reliable aluminum construction
- Unpluggable terminal strip for power supply input
- Easy to mount, assembled design
- Gasket material supplied to user for better fit into user's application enclosure

RoHS compliant

- Memory, CompactFlash, PC/104 I/O cards, and cable sets available
- Free technical and configuration support
- Long-term product support
- Operating temperature: -25°C to +70°C
- Requires +5V and +12V
- RoHS compliant

WinSystems' Panel PC (PPC2) is a compact, open frame display subsystem that includes a 6.5-inch flat panel display, PC-compatible Single Board Computer (SBC) with Ethernet and touchscreen integrated into an open-frame enclosure less than two inches thick. The combination of embedded PC functionality with industrial-grade construction makes the unit ideal for medical, kiosks, transportation, instrumentation, industrial automation and control applications with tight system integration and minimal space requirements.

The PPC2 supports operating systems such as Linux and Windows XP embedded, plus real time kernels compatible with the x86 architecture.

FUNCTIONAL CAPABILITY

What is an Open-Frame Panel PC? - A PPC2 consists of a color TFT flat panel, Pentium-class SBC, and touchscreen mounted in an open aluminum frame. The open frame chassis (without a front bezel) permits flexible mounting of the system for OEMs and integrators with content-rich applications. Its small size and wide operating temperature of the PPC2 makes it suitable for industrial and medical environments.

The unit is user-configurable to accommodate specific application design requirements. The PC/104 and PC/104-*Plus* connector allows industrial-grade expansion cards to be added for features such as GPS, cellular modems, analog and digital I/O, relays, etc.

Just like a standard desktop PC, a PPC2 provides a man-machine interface. A touch panel is included but a keyboard and mouse can be used for input as well. This is determined by the user's application and its operating environment.

Flat Panel Display - An Optrex, outdoor-use, 6.5-inch diagonal color TFT is the foundation of the PPC2. Its VGA screen resolution is 640 x 480.

This flat panel display is ideal for factory automation use because of its high luminance of 400 cd/m² (nits). It uses two long-life (50K hours minimum) CCFL lamps as edge lights which are replaceable by the user. The display supports a viewing angle of ±55° horizontal and -30° to +60° vertical. This wide viewing angle permits easy panel placement with maximum operator viewing flexibility. Its contrast ratio is 300:1.

An anti-reflective (AR) coating has been applied at the factory to reduce surface reflectivity to approximately 0.3% with no decrease in luminance or contrast and no increase in power. Optrex's AR technology is ideally suited to preserving screen readability in high ambient-light environments.

WinSystems also offers both a 12-inch and 15-inch open frame PPC2. Contact a WinSystems' factory application engineer with your specific needs.

Single Board Computer (SBC) - WinSystems has mounted the PPM-LX800-G single board computer behind the panel to serve as the computing and display engine for the open frame PPC2. This a highly integrated, PC/104-*Plus* SBC is designed for embedded, space-limited, low power applications.

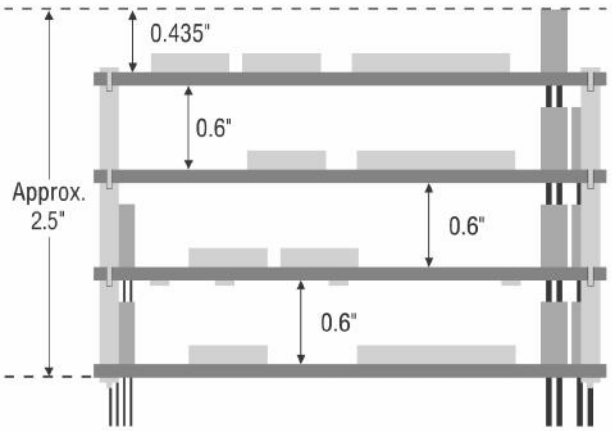
The PPM-LX800-G is a full-featured SBC that includes a AMD LX800 x86-compatible CPU, 1GB SDRAM, CRT and LVDS flat panel video controller, 10/100 Ethernet port, two USB 2.0 ports, 16 lines of digital I/O and four COM channels. It also includes the standard PC controllers for IDE hard disks, mouse, keyboard, AC97 audio and LPT.

It supports expansion with PC/104 or PC/104-*Plus* modules and/or with its USB and serial ports. It does not require a fan and will operate over an industrial temperature range making it ideal for rugged applications requiring an embedded PC. A full data sheet is available at http://www.pc104plus.com/products/PPM-LX800.cfm

PC/104 Expansion Capability - The SBC supports both PC/104 and PC/104-*Plus* interface connectors so that a designer can add off-the-shelf or user-designed, application specific PC/104 modules. PC/104 modules are self-stacking and plug together in a "piggy back" configuration to serve as a mezzanine expansion bus. PC/104-*Plus* is the PCI bus for the I/O functions requiring higher data transfer speeds.

PC/104 modules are very compact, measuring only 3.6 x 3.8 inches (90 mm x 96 mm), and are offered by WinSystems and a number of third party companies worldwide. Module functions include serial I/O, ZigBee, Cellular modems, digital I/O, GPS, and analog I/O among other functions.

More PC/104 information including white papers, products, and specifications are on our web site at http://pc104.winsystems.com/products/pc104/index.html



PC/104-*Plus* Module Stack

CompactFlash - A CompactFlash socket on the PPM-LX800-G supports up to 16GB of solid state disk storage for programs and data. WinSystems offers industrial-grade CompactFlash cards that provide operational, high capacity, solid state disk storage from -40° to +85°C for harsh embedded applications. The sustained data transfer rate is very fast, plus an on-card wear leveling algorithm extends the number of write cycles to the part. These RoHS-compliant cards will fit into any computer, SBC, or instrument with a CF socket. www.industrialcompactflash.com

WinSystems' Industral-grade CompactFlash Cards

Touchscreen - WinSystems' PPC2s feature a quick-response, 5-wire resistive touchscreen, manufactured by Elo Touchsystems for keyboardless operation. This technology is superior for applications that demand reliability, input flexibility, and contamination resistance. Their touchscreen has been operationally tested to over

35 million touches in one location, making them ideal for heavy-usage environments. It is durable since it is coated with an enhanced, scratch-resistant hardcoat.

A touchscreen is the simplest, most direct way for a person to interact with a computer. Touchscreens eliminate the keyboard and mouse, which may be cumbersome to use in certain application areas. Also there may be no space available for keyboard or mouse. Plus touchscreens are rugged enough to stand up to harsh environments where keyboards and mice often get damaged.

Resistive touchscreens allow all kinds of touch input devices to activate the screen, including fingers, fingernails, styluses, and gloved hands all the while maintaining an exceptional tactile feel.

Resistive touchscreens are used in more applications than any other touch technology including hand-held computers, PDAs, industrial equipment, point-of-sale equipment, medical equipment, office automation equipment, and consumer electronics.

The Elo panel is an accurate, linear glass design which makes it inherently stable. Elo's patented AccuTouch® five-wire resistive touchscreens have unmatched accuracy, staying linear without relying on lookup tables and curve fitting corrections. The initial setup should last the life of the product, because only a two-point video alignment is required to normalize the touchscreen and video coordinate systems.

An AccuTouch 2216 Combo Dual Serial/USB touchscreen controller is mounted on the chassis. Its function is to interface and communicate from the touchscreen to the PPM-LX800-G SBC. It will support the complete full AccuTouch SmartSet protocol. The standard factory configuration uses one of the USB channels.

A backlight controller is mounted on the chassis and requires +12V to generate power to the two CCFL tubes.

Chassis - The chassis plate is made of heavy duty aluminum alloy. It is designed to hold both the flat panel in place and to prevent any twisting or excessive stress on the glass surface. 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 is thermally conductive to dissipate component heat.

Both the single board computer and flat panel display are mounted directly to the same plate. The rigid plate serves as a base to hold the SBC, I/O connector plate, power terminal strip, backlight controller, and touchscreen controller. It is designed to rigidly hold the LCD yet not twist or stress the panel or cables.

This assembly design is slim with a depth of less than two inches. Contact WinSystems' application engineering department if you need a different size or feature set.

Mounting - The PPC2 is designed to be rear mounted to a panel or placed in an instrument as a system component. Four through holes plus four captured #4-40 press fit nuts are in the chassis for mounting flexibility.

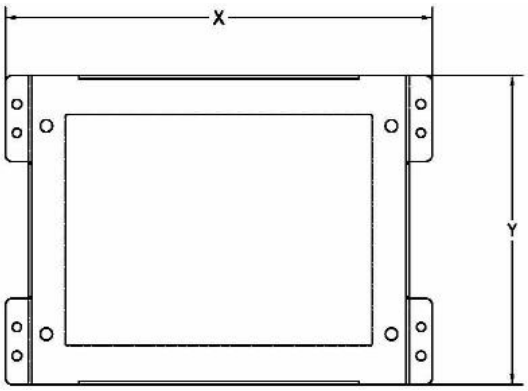
The cutout dimensions for the panel display area is approximately 5.333 x 4.011 inches. A 0.031-inch thick pre-cut gasket kit is included with each panel for use in mounting it to the designer's final assembly.

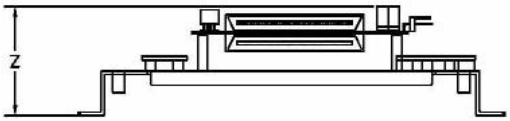
WinSystems can provide electronic CAD drawings for a blank mounting plate to help you begin your design.

Power - Power is accessed via an 8-pin pluggable terminal block located on the back of the Panel PC. The wiring harness from the power supply is attached to the mating male plug which permits convenient and solid attachment of the unit to the power source without the worry of disconnection. It will accept a range of wire from 26 to 14 AWG. All wire retention screws are located in their towers that cannot fall out during transportation, installation and use. Wire protectors are available to protect small gauge stranded wire from screw damage. WinSystems ships both the terminal strip and plug with each unit.

Most applications require only +5 volts and +12 volts. A negative 12 volt input is provided, but is usually used by PC/104 and PC/104-*Plus* expansion boards.

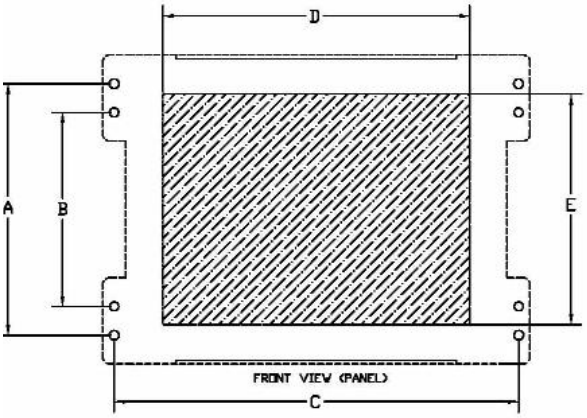
Power Supply - If an external supply is needed, WinSystems offers the PS-80W-2-PPC2. It is an 80-Watt universal switcher that will accept input voltages from 85 VAC to 264 VAC (50/60Hz). It provides output voltages of +5 volts@12A, +12 volts @ 3A, and -12 volts @ 1A. The supply is housed in a black anodized aluminum case. http://www.winsystems.com/products/misc/ps80.html





Overall dimensions:

X = 7.429" Y = 5.375" Z = 1.901"



Mounting Holes:

A = 4.375", #4-40 Threaded Hole, 4 Places

B = 3.375", 0.156" Dia. Hole, 4 Places

C = 7.033"

Cutout Dimensions:

D = 5.333" E = 4.011"

Mounting Outline for the PPC2

WinSystems' External 80 Watt Power Supply

SOFTWARE, TOOLS & SUPPORT

Operating Systems - The SBC is x86 software compatible and will run the latest versions of Windows XPe and Linux. It will support other operating systems such as QNX and real-time executives that require a "PC-AT" hardware environment. The PPC2 does not ship with an operating system installed in its standard configuration from the factory.

Remote Booting - WinSystems' SBCs supports remote booting with an onboard EPROM socket for use as a diskless network computer. Their PC-AT compatibility supports numerous network OS and kernels.

Source - WinSystems' enclosures are designed, manufactured, and assembled in the United States.

RoHS - The panel, SBC, touchscreen, enclosure, and fasteners from WinSystems are RoHS compliant.

Standard Ordering Configurations - WinSystems has standard versions with different size of panels, SBCs and with/without a rotational disk drive. The 15-inch and 12-inch PPC2s have their own separate data sheets.

Technical Support and Custom Configurations - WinSystems offers free support to speed your initial design cycle into production. Our engineers are dedicated to answering your questions. If you do not see a product or feature listed.

SPECIFICATIONS

Display

Viewable Image Size:	6.5" diagonal
Display Type:	Active Matrix color LCD TFT
Pixel Format:	640 x 480 (maximum)
Dot Size:	0.069 mm (H) x 0.207 mm (V)
Colors:	262,144, 6 bit digital via LVDS
Brightness (without touchscreen):	400 cd/m2 (nits)
Contrast Ratio:	300:1
Horizontal Viewing Angle:	±55º
Vertical Viewing Angle:	+60º/-30º
Surface Coating:	Anti-glare hard coating
Backlight:	Two field replaceable, cold cathode fluorescent
Touchscreen:	Analog resistive

PPM-LX800-G Single Board Computer

CPU Clock Speed:	500MHz
Memory:	1GB SDRAM
Solid State Disk:	Up to 16GB CFlash
Ethernet:	One 10/100 Mbits/second port
Serial Interface:	Four serial COM channels, all with RS-232 levels; two with RS-422/485 (COM 1 and 2)
USB:	Two ports, Version 2.0 compliant
LPT Interface:	Bidirectional
Parallel Interface:	24 I/O lines, TTL compatible
EIDE Interface:	Supports two drives
Audio:	AC97 compatible
PC/104 Interface:	16-bit, non-stackthrough
PC/104-*Plus* Interface:	32-bit PCI, non-stackthrough

Vcc = +5V at TBD mA
Vcc = +12V at TBD mA

Environmental

Operating Temperature: -20°C to +70°C
Non-condensing Relative Humidity: 5% to 95%

ORDERING INFORMATION

PPC2-G-6.5-359	6.5-inch Panel PC with 500MHz LX800 SBC, and resistive touchscreen

Software Developers Kit

DV-S-359-L30	Linux (2.6 kernel) Developer Kit, includes software, hardware, enclosure, and cables
DV-S-359-XP-2007	Windows XPe Developer Kit, includes software, hardware, enclosure, and cables

-40°C to +85°C Industrial CompactFlash Memory

CFLASH-G-128M-I	128MB CFlash - RoHS
CFLASH-G-256M-I	256MB CFlash - RoHS
CFLASH-G-512M-I	512MB CFlash - RoHS
CFLASH-G-1024-I	1GB CFlash - RoHS
CFLASH-G-2048-I	2GB CFlash - RoHS
CFLASH-G-4096-I	4GB CFlash - RoHS
CFLASH-G-8192-I	8GB CFlash - RoHS

High-Speed Industrial CompactFlash Memory

CFDC-G-1GB-I	1GB CFlash - RoHS
CFDC-G-2GB-I	2GB CFlash - RoHS
CFDC-G-4GB-I	4GB CFlash - RoHS
CFDC-G-8GB-I	8GB CFlash - RoHS
CFDC-G-16GB-I	16GB CFlash - RoHS

Cables

CBL-251-G-1-1.5	Multi-I/O interface cable
CBL-270-G-1-1.5	Stereo audio cable
CBL-352-G-1-1.5	Dual IDE, digital I/O interface

Power Supply

PS-80W-2-PPC2:	80 Watt switching power supply

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