

OPERATIONS MANUAL

PPM-10/100

NOTE: *This manual has been designed and created for use as part of the WinSystems' Technical Manuals CD and/or the WinSystems' website. If this manual or any portion of the manual is downloaded, copied or emailed, the links to additional information (i.e. software, cable drawings) will be inoperable.*

WinSystems reserves the right to make changes in the circuitry
and specifications at any time without notice.
©Copyright 2001 by WinSystems. All Rights Reserved.

REVISION HISTORY

P/N 403-0282-000

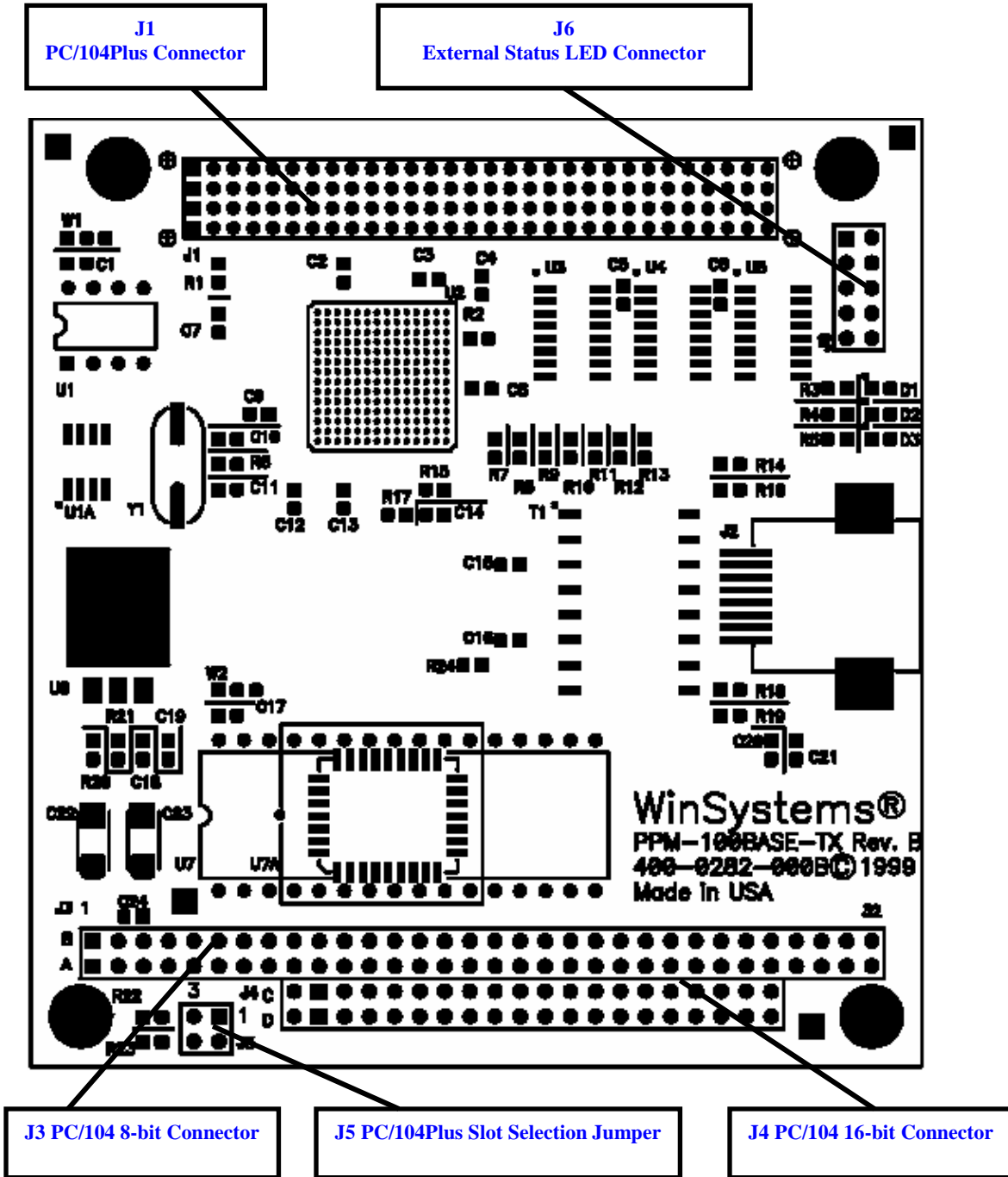
ECO Number	Date Code	Rev Level
Originated	010320	B
02-58	021003	B1

TABLE OF CONTENTS

Section	Paragraph Title	Page
	Visual Index – Quick Reference	i
1	General Information	1-1
1.1	Features	1-1
1.2	Introduction	1-1
1.3	Specifications	1-2
2	PPM-10/100 Technical Reference	2-1
2.1	Introduction	2-1
2.2	Intel 82551 Ethernet Controller	2-1
2.3	PC/104Plus Slot Selection	2-2
2.4	PC/104 Bus Pin Definitions	2-3
2.5	PC/104Plus Pin Definitions	2-4
2.6	PPM-10/100 Software/Driver Support	2-4
2.7	Connector/Jumper Summary	2-5
	APPENDIX Software Drivers & Examples	
	Warranty and Repair Information	

Visual Index – Quick Reference

For the convenience of the user, a copy of the Visual Index has been provided with direct links to connector and jumper configuration data.



1

GENERAL INFORMATION

1.1 Features

- IEEE 802.3 10BASE-T and 100BASE-TX compatible
- Intel 82551 single-chip controller for increased performance and reliability
- 10/100 auto-negotiation provides flexible support for Ethernet, Fast Ethernet and mixed bandwidth networks.
- PC/104Plus 5 volt compatible
- Full driver suite for broad compatibility, flexibility, and advanced functionality for Windows 95, 98, UNIX, Netware, Windows NT and Linux
- Full duplex allows for two-way transmission between nodes for up to 200Mbps on Fast Ethernet segments.
- -40° to +85° C operating temperature
- Socket for Intel boot agent firmware provided
- Software compatible with the Intel PRO/100+ family of PCI ethernet adapters

1.2 Introduction

The PPM-10/100 is an auto-negotiating PC/104Plus Ethernet adapter. The PPM-10/100 utilizes the popular Intel 82551 single-chip controller includes both the Media Access Controller (MAC) and the physical layer (PHY) on a single chip. The 82551 is a full bus mastering controller and also incorporates 6K of buffer memory. Full duplex operation provides throughput of up to 200Mbps on fast ethernet segments. The module is compatible with the PC/104Plus 5 volt bus specification.

Intel provides a vast array of driver support for all of the popular network operating systems including : Windows CE, Windows 95, Windows 98, Windows 98SE, Windows ME, Windows NT, Windows 2000, Novell Netware 3.11- 4.1, Solaris, Linux, and Unix.

The optional Intel Boot Agent firmware allows for remote booting of the system for O/S's that support BOOTP or the PXE 2.0 or 2.1 specification. Some versions of the Boot Agent also include support for remote Program Load (RPL) runtime and loader software.

The PPM-10/100 is a full plug and play board which must be used with a CPU board with a Plug and play BIOS which will assign the necessary I/O, Memory, DMA, and IRQ resources required by the board.

1.3 Specifications

1.3.1 Electrical

PC/104Plus Bus : 32-bit ,5 volt
PC/104 Bus : 16-bit, stackthrough
VCC : +5V 270mA typical
Wiring : Cat5 2PR

1.3.2 Mechanical

Dimmensions : 3.6" X 3.8" (90mm x 96mm)
PC Board : FR4, 4 layer epoxy glass with screened component legend and plated through holes
Jumpers : 0.025" square posts on 0.10" centers
Connectors : Ethernet : RJ-45
PC/104 Bus : 74-Pin SAMTEC type ESQ-132-12-G-D
40-Pin SAMTEC type ESQ-120-12-G-D
PC/104Plus Bus : COMM CON 50808-120Q

1.3.3 Environmental

Operating Temperature : -40° to +85°
Non-condensing relative humidity: 5% to 95%

2

PPM-10/100 TECHNICAL REFERENCE

2.1 Introduction

This section of the manual is intended to provide sufficient information regarding the configuration and usage of the PPM-10/100 board. WinSystems maintains a Technical Support Group to help answer questions regarding configuration, or usage of the board. For answers to questions not adequately addressed in this manual, contact Technical Support at (817) 274-7553 between 8AM and 5PM Central Time.

2.2 Intel 82551 Ethernet Controller

The 82551 is part of Intel's evolutionary family of fully integrated 10BASE-T/100BASE-TX LAN solutions. The 82551 consists of both the Media Access Controller (MAC) and the physical layer (PHY) combined into a single component solution.

The 82551 is a 32-bit PCI controller that features enhanced scatter-gather bus mastering capabilities which enables it to perform high-speed data transfers over the PCI bus. The 82551 bus master capabilities enable the component to process high level commands and perform multiple operations off-loading communications tasks from the system CPU. Two large transmit and receive FIFOs of 3 Kbytes each help prevent data underruns and overruns, allowing the 82551 to transmit data with minimum inter-frame spacing (IFS).

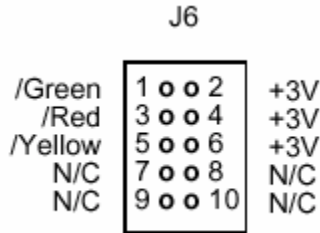
The 82551 can operate in either full duplex or half duplex mode. In full duplex mode the 82551 adheres to the IEEE 802.3x Flow Control specification. Half duplex performance is enhanced by a proprietary collision reduction mechanism.

The 82551 includes a simple PHY interface to the wire transformer at rates of 10BASE-T and 100BASE-TX, and auto-negotiation for speed, duplex, and flow control. The 82551 also includes an interface to a serial EEPROM. The EEPROM provides power-on initialization for hardware and software configuration parameters. The 82551 is 100% PnP compatible and is configured through this interface. Ethernet connection to the PPM-10/100 is provided via the RJ-45 connector at J2.

There are three ethernet status LEDs at D1, D2, and D3. The color and function of each is listed below :

- D1 - (Green) Ethernet Activity
- D2 - (Red) Speed indication, lit = 100BASE-TX
- D3 - (Yellow) Link Active

The PPM- 10/100 also provides for a factory installed connector supporting remote mounted LEDs using a 10- pin connector populated at J6. The pin definitions for this connector are shown here:



NOTE : When attaching external LED's via J6 the on board LED's at D1, D2, and D3 must be removed.

2.3

PC/104Plus Slot Selection

J5 is used to select the "slot" number of the PCI connection for the board. Each PC/104Plus board installed in a system must have a unique "slot" assignment and must not conflict with any PCI "slot" assignments on the CPU card. The jumperings for J5 are shown here:



2.4

PC/104 Bus Pin Definitions

J3 and J4 are the PC/104 Bus connectors. The PPM- 10/100 does not use any connections to the PC/104 bus but provides the connectors to allow stacking of PC/104 modules. The pin definitions for the PC/104 connectors are shown here for reference:

J3			J4				
GND	B1	A1	IOCHK	GND	C0	D0	GND
RESET	B2	A2	BD7	SBHE	C1	D1	MEMCS16
+5V	B3	A3	BD6	LA23	C2	D2	IOCS16
IRQ9	B4	A4	BD5	LA22	C3	D3	IRQ10
-5V	B5	A5	BD4	LA21	C4	D4	IRQ11
DRQ2	B6	A6	BD3	LA20	C5	D5	IRQ12
-12V	B7	A7	BD2	LA19	C6	D6	IRQ15
OWS	B8	A8	BD1	LA18	C7	D7	IRQ14
+12V	B9	A9	BD0	LA17	C8	D8	DACK0
GND	B10	A10	IOCHRDY	MEMR	C9	D9	DRQ0
MEMW	B11	A11	AEN	MEMW	C10	D10	DACK5
MEMR	B12	A12	SA19	SD8	C11	D11	DRQ5
IOW	B13	A13	SA18	SD9	C12	D12	DACK6
IOR	B14	A14	SA17	SD10	C13	D13	DRQ6
DACK3	B15	A15	SA16	SD11	C14	D14	DACK7
DRQ3	B16	A16	SA15	SD12	C15	D15	DRQ7
DACK1	B17	A17	SA14	SD13	C16	D16	VCC
DRQ1	B18	A18	SA13	SD14	C17	D17	MASTER
REFRESH	B19	A19	SA12	SD15	C18	D18	GND
SYSCLK	B20	A20	SA11	KEY	C19	D19	GND
IRQ7	B21	A21	SA10				
IRQ6	B22	A22	SA9				
IRQ5	B23	A23	SA8				
IRQ4	B24	A24	SA7				
IRQ3	B25	A25	SA6				
DACK2	B26	A26	SA5				
TC	B27	A27	SA4				
BALE	B28	A28	SA3				
+5V	B29	A29	SA2				
OSC	B30	A30	SA1				
GND	B31	A31	SA0				
GND	B32	A32	GND				

2.5 PC/104-Plus Pin Definitions

J1 is the PC/104-Plus bus connector. The pin definitions for this connector are show here for reference:

Pin	A	B	C	D
1	GND	RESERVED	+5	AD00
2	VI/O	AD02	AD01	+5V
3	AD05	GND	AD04	AD03
4	C/BE0#	AD07	GND	AD06
5	GND	AD09	AD08	GND
6	AD11	VI/O	AD10	M66EN
7	AD14	AD13	GND	AD12
8	+3.3V	C/BE1#	AD15	+3.3V
9	SERR#	GND	RESERVED	PAR
10	GND	PERR#	+3.3V	RESERVED
11	STOP#	+3.3V	LOCK#	GND
12	+3.3V	TRDY#	GND	DEVSEL#
13	FRAME#	GND	IRDY#	+3.3V
14	GND	AD16	+3.3V	C/BE2#
15	AD18	+3.3V	AD17	GND
16	AD21	AD20	GND	AD19
17	+3.3V	AD23	AD22	+3.3V
18	IDSEL0	GND	IDSEL1	IDSEL2
19	AD24	C/BE3#	VI/O	IDSEL3
20	GND	AD26	AD25	GND
21	AD29	+5V	AD28	AD27
22	+5V	AD30	GND	AD31
23	REQ0#	GND	REQ1#	VI/O
24	GND	REQ2#	+5V	GNT0#
25	GNT1#	VI/O	GNT2#	GND
26	+5V	CLK0	GND	CLK1
27	CLK2	+5V	CLK3	GND
28	GND	INTD#	+5V	RST#
29	+12V	INTA#	INTB#	INTC#
30	-12V	REQ3#	GNT3#	GND

NOTE: 1. The shaded area denotes power or ground signals.

2.6 PPM-10/100 Software/Driver Support

The PPM-10/100 is software compatible with the Intel line of Pro 100+ PCI adapters. The PPM-10/100 is supported by a number of network operating systems directly. Intel provides the latest drivers through their web site at:

<http://support.intel.com/support/network/adapter/pro100/pro100plus/index.htm>

2.7

Connector/Jumper Summary

Connector/ Jumper	Description	Page Reference
J1	PC/104Plus Connector	2-4
J2	RJ-45 Ethernet Connector	N/A
J3	PC/104-8 Connector	2-3
J4	PC/104-16 Connector	2-3
J5	PC/104Plus Slot select jumper	2-2
J6	External status LED connector	2-2

APPENDIX

Software Drivers & Examples (from Intel.com)

Windows* 2000 and XP Network Adapter Base Drivers	PRO2KXPM.ZIP
Windows NT* 4.0 Network Adapter Driver Set.	PRONT4.ZIP
Windows* 98 SE/Me Network Adapter Base Drivers	PRO98MEM.ZIP
Windows* 95 Driver Release	PRO95.ZIP
MS-DOS* and OS/2* Drivers	PRODOS.ZIP
NetWare* Drivers for PRO Network Adapters	PRONWARE.ZIP
Linux* 2.2 10/100 Adapter Base Driver	e100-2.1.15.tar.gz
Linux* 2.4 10/100 Adapter Base Driver	e100-2.3.30.tar.gz



Telephone: 817-274-7553 . . Fax: 817-548-1358
<http://www.winsystems.com> . . E-mail: info@winsystems.com

WARRANTY

WinSystems warrants 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. 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 changes and other fees and 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 or Software which have been subject to abuse, misuse, vandalism, accidents, alteration, neglect, unauthorized repair or improper installations.

THERE ARE NO WARRANTIES BY WINSYSTEMS EXCEPT AS STATED HEREIN. THERE ARE NO OTHER WARRANTIES EXPRESS OR IMPLIED INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN NO EVENT SHALL WINSYSTEMS BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, OR SPECIAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF DATA, PROFITS OR GOODWILL. WINSYSTEMS' MAXIMUM LIABILITY FOR ANY BREACH OF THIS AGREEMENT OR OTHER CLAIM RELATED TO ANY PRODUCTS, SOFTWARE, OR THE SUBJECT MATTER HEREOF, SHALL NOT EXCEED THE PURCHASE PRICE OR LICENSE FEE PAID BY CUSTOMER TO WINSYSTEMS FOR THE PRODUCTS OR SOFTWARE OR PORTION THEREOF TO WHICH SUCH BREACH OR CLAIM PERTAINS.

WARRANTY SERVICE

All products returned to WinSystems must be assigned a Return Material Authorization (RMA) number. To obtain this number, please call or FAX WinSystems' factory in Arlington, Texas and provide the following information:

1. Description and quantity of the product(s) to be returned including its serial number.
2. Reason for the return.
3. Invoice number and date of purchase (if available), and original purchase order number.
4. Name, address, telephone and FAX number of the person making the request.
5. Do not debit WinSystems for the repair. WinSystems does not authorize debits.

After the RMA number is issued, please return the products promptly. Make sure the RMA number is visible on the outside of the shipping package.

The customer must send the product freight prepaid and insured. The product must be enclosed in an anti-static bag to protect it from damage caused by static electricity. Each bag must be completely sealed. Packing material must separate each unit returned and placed as a cushion between the unit(s) and the sides and top of the shipping container. WinSystems is not responsible for any damage to the product due to inadequate packaging or static electricity.