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Find the *WinSystems PPM-10/100* at our website: *Click HERE*

OPERATIONS MANUAL
PPM-10/100

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REVISION HISTORY

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1 GENERAL INFORMATION

1.1 Features

- IEEE 802.3 10BASE-T and 100BASE-TX compatible
- Intel 82559 single-chip controller for increased performance and reliability
- 10/100 auto-negotiation provides flexible support for Ethernet, Fast Ethernet and mixed bandwidth networks.
- PC/104*Plus* 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 82559 single-chip controller which integrates both the Media Access Controller (MAC) and the physical layer (PHY) on a single chip. The 82559 is a full bus mastering controller and also incorporates 6K of buffer memory. Full duplex operation provides throughput of up to 200Mbs 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 Groupto 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 82559 Ethernet Controller

The 82559 is part of Intel's second generation family of fully integrated 10BASE-T/100BASE-TX LAN solutions. The 82559 consists of both the Media Access Controller (MAC) and the physical layer (PHY) combined into a single component solution.

The 82559 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 82559 bus master capabilities enable the component to process high level commands and perform multiple operations offloading communications tasks from the system CPU. Two large transmit and recieve FIFOs of 3 Kbytes each help provent data underuns and overruns, allowing the 82559 to transmit data with minimum interframe spacing (IFS).

The 82559 can operate in either full duplex or half duplex mode. In full duplex mode the 82559 adheres to the IEEE 802.3x Flow Control specification. Half duplex performance is enhanced by a proprietary collision reduction mechanism.

The 82559 inclludes a simple PHY interface to the wire transformer at rates of 10BASE-T amd 100BASE-TX, and auto-negotiation for speed, duplex, and flow control. The 82559 also includes an interface to a serial EEPROM. The EEPROM provides power-on initialization for hardwarwe and software configuration parameters. The 82559 is 100% PnP compatible and is connfigured 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 defintions for this connector are shown here :

J6

/Green	1 **o o** 2	+3V
/Red	3 **o o** 4	+3V
/Yellow	5 **o o** 6	+3V
N/C	7 **o o** 8	N/C
N/C	9 **o o** 10	N/C

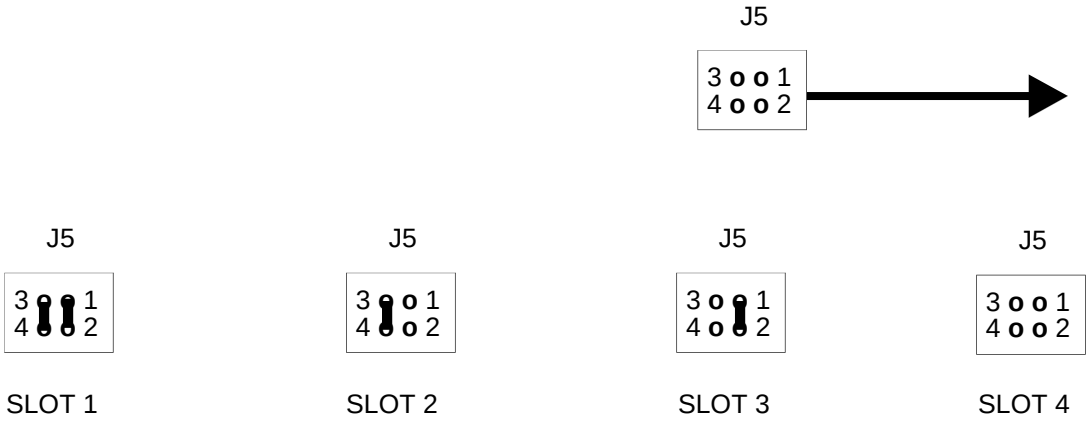
NOTE : when attaching external LED's via J6 the onboard LED's at D1, D2, and D3 must be removed.

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" assigment and must not conflict with any PCI "slot" assignments on the CPU card. The jumperings for J5 are shown here :

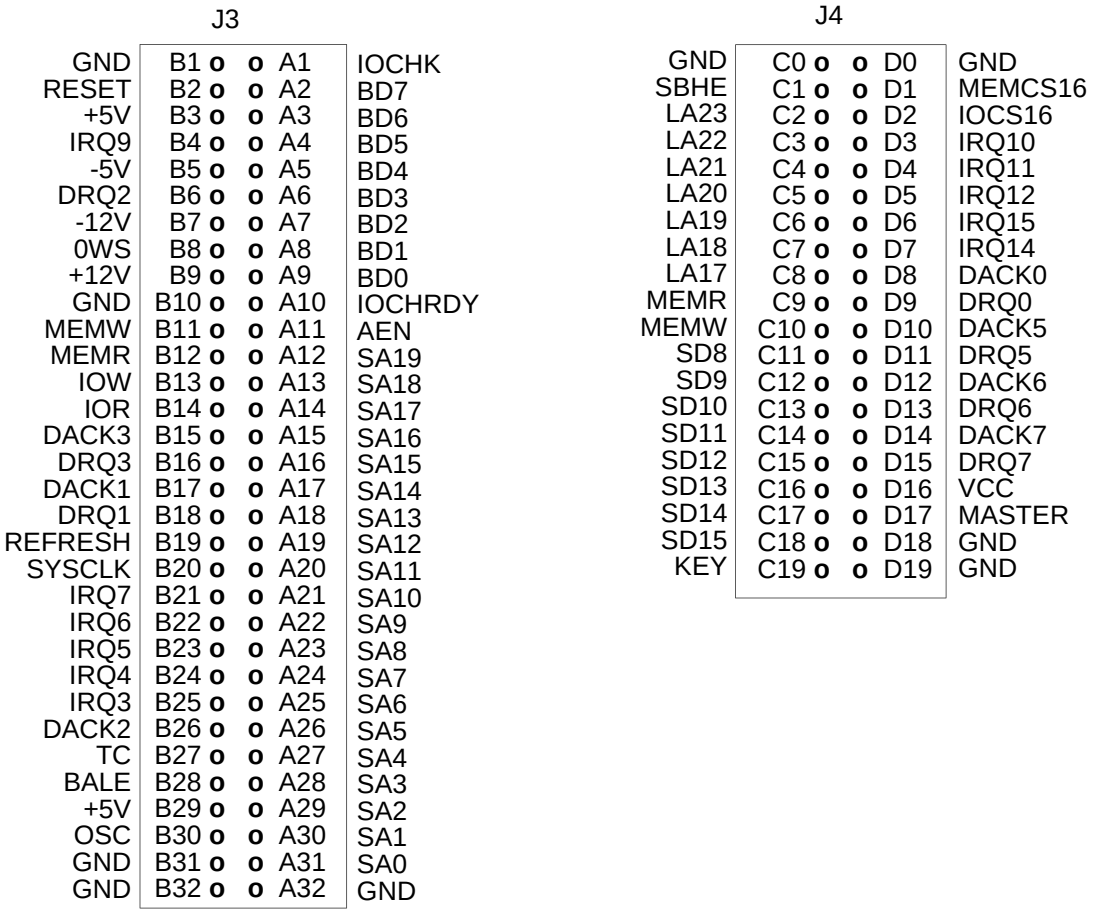
2.4 PC/104 Bus Pin Definitions

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 defintions for the PC/104 connectors are shown here for reference :



2.5 PC/104Plus Pin Definitions

J1 is the PC/104Plus bus connector. The pin defintions for this connector are shown here for reference:



Pin	A	B	C	D
1	GND/5.0 KEY	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	AD06
8	+3.3V	C/BE1*	AD15	+3.3V

9	SERR*	GND	SB0*	PAR
10	GND	PERR*	+3.3V	SDONE
11	STOP*	+3.3V	LOCK*	GND
12	+3.3V	TRDY*	GND	DEVSEL*
13	FRAME*	GND	IRDY*	+3.3V
14	GND	AD16	+3.3.V	C/BE3*
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	Reserved	Reserved	GND/3.3V KEY

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

Alternately, most drivers will be available from the WinSystems site at :

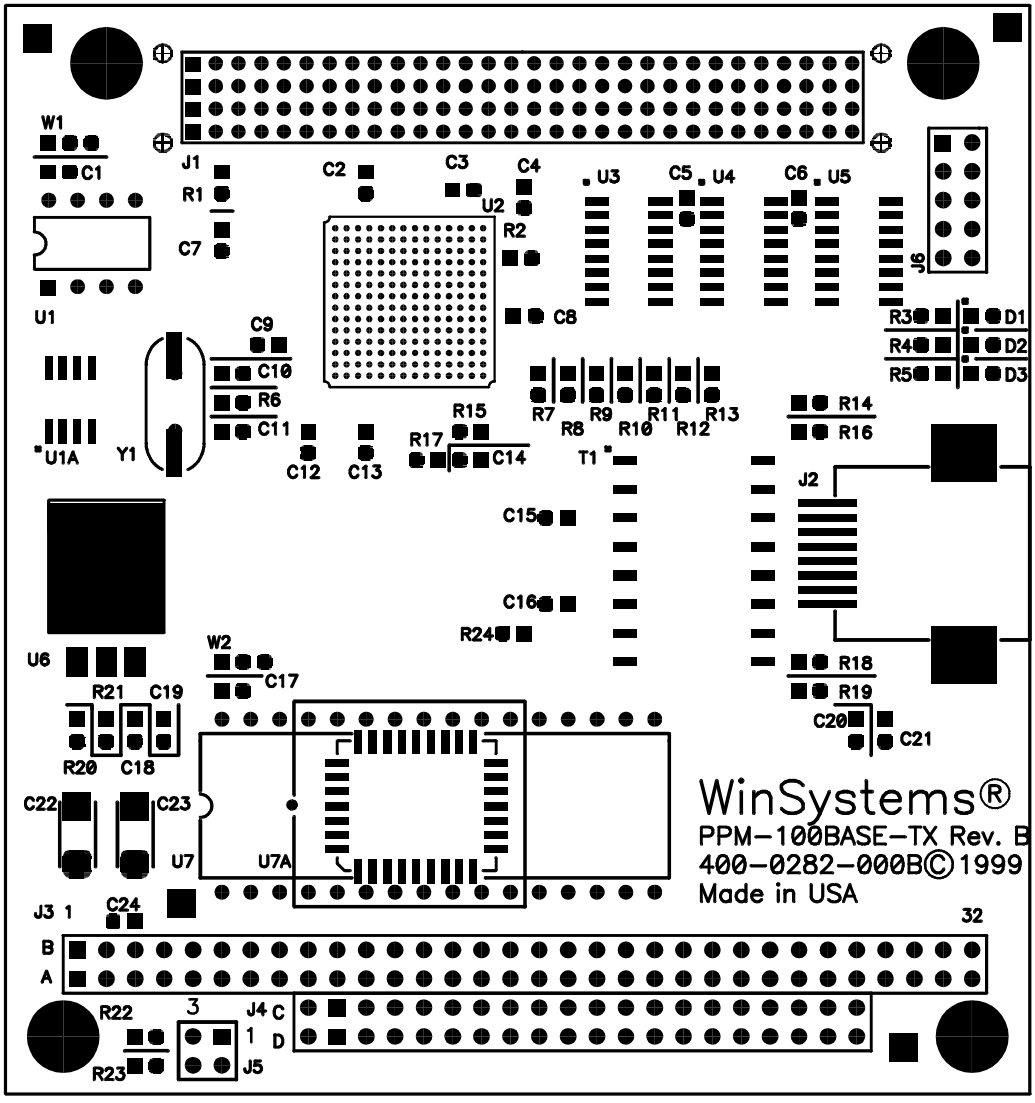
http://www.winsystems.com/resources/appnotes/ftp/ebctx_drivers/100pdisk.exe

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

3 APPENDIX A

PPM-10/100 Parts Placement Guide



4 APPENDIX B

PPM-10/100 Parts List

ASSM ITEM FROM: PPM-10/100 ASSM ITEM THRU: PPM-10/100
PARENT LOC FROM: <FIRST> DEFAULT COMPONENT LOCATION: ARLIN PARENT LOC THRU: <LAST>

LVL	ITEM KEY	ITEM DESCRIPTION	BOM COMMENT	ITEM TYPE	QTY REQUIRED
PPM-10/100		PC/104 PLUS 10/100 ETHERNET BOARD	PC/104 PLUS 10/100 ETHERNET BOARD	F	1.0
1	999-9999-001	SPECIAL NOTES	03/21/01 MEB (NEW FINISHED# PPM-10/100)	I	1.0
1	0282-000-0000B	ASSY, TOP SMT PPM-10/100 ENET REV.B	ASSY, TOP SMT PPM-10/100 ENET REV.B	F	1.0
2	999-9999-001	SPECIAL NOTES	09-08-00 MEB ECO 99-69	I	1.0
2	999-9999-001	SPECIAL NOTES	04-05-99 MEB (REVA)	I	1.0
2	603-1047-803	CAP .1uF 50v 20% CER 0805	C1-C9,C12,C13,C17-C19,C21,C24	I	16.0
2	603-2207-503	CAP 22PF 50v 2% NPO 0805	C10,C11	I	2.0
2	603-82R7-303	CAP 8.2pF 50v .50pF CER 0805	C14	I	1.0
2	603-1527-803	CAP .0015uF 50v 20% CER 0805	C20	I	1.0
2	603-1065-82D	CAP 10uF 25v 20% TAN 6032	C22,C23	I	2.0
2	607-0005-005	LED, GREEN SMT	D1	I	1.0
2	607-0006-005	LED, RED SMT	D2	I	1.0
2	607-0007-005	LED, YELLOW SMT	D3	I	1.0
2	650-0120-09A	PC104 PLUS, COMM CON 50808-120G	J1	I	1.0
2	650-3008-0A0	CONN, RJ45 SURFACE MOUNT	J2	I	1.0
2	201-0072-120	HDR 2X36 UN TSW-136-07-G-D	J5=2X2	I	.4
2	601-0103-503	RES 10K Ohm 5% 1/10W 0805	R1,R8,R10-R13,R22,R23	I	8.0
2	601-1000-303	RES 100 Ohm 1% 1/10w 0805	R2,R15	I	2.0
2	601-0201-503	RES 200 Ohm 5% 1/10w 0805	R3,R4,R5	I	3.0
2	601-0330-503	RES 33 Ohm 5% 1/10w 0805	R6	I	1.0
2	601-5760-303	RES 576 Ohms 1% 1/10W 0805	R7	I	1.0
2	601-6040-303	RES 604 Ohms 1% 1/10W 0805	R9	I	1.0
2	601-0750-503	RES 75 Ohm 5% 1/10W 0805	R14,R16,R18,R19	I	4.0
2	601-1210-303	RES 121 Ohm 1% 1/10w 0805	R17,R21	I	2.0
2	601-2000-303	RES 200 Ohm 1% 1/10w 0805	R20	I	1.0
2	621-0023-025	IC, 82559 PCI ETHERNET CONTROLLER	U2	I	1.0
2	672-0001-101	IC, P15C3253W DUAL 4:1 MUX/DEMUX	U3,U4,U5	I	3.0
2	670-0001-025	REGULATOR 5V-3.3V LINEAR TECH. LT1086CM	U6	I	1.0
2	650-0032-002	SOCKET 32P AMP 822498-1 (28)	U7	I	1.0
2	601-0000-503	RES 0 Ohm 5% 1/10w 0805	W1,W2=2-3	I	1.0
2	681-0001-005	XTAL 25MHZ U49SM-18-250F	Y1	I	1.0
2	606-0005-000	IC, XFMR 10/100 ENET	T1	I	1.0
2	650-0104-0CA	CONNECTOR PC/104 COMM CON 50711C-104G	J3,J4	I	2.0
2	635-0001-001	IC, 24C02 SEEPROM S08 IS93C46-3GR	U1A	I	1.0
2	400-0282-000B	PCB, PPM-100BASE-TX REV B	PCB, PPM-100BASE-TX REV B	I	1.0
SUB-ASSEMBLY TOTAL: 0282-000-0000B ARLIN - 32 Items					
1	0282-100-0000B	SUB ASSY, PPM-10/100 ENET REV.B	SUB ASSY, PPM-10/100 ENET REV.B	F	1.0
2	999-9999-001	SPECIAL NOTES	09-08-00 MEB ECO 99-69	I	1.0
2	999-9999-001	SPECIAL NOTES	04-05-99 MEB (REVA)	I	1.0
2	201-0002-000	PLUG JUMPER 999-19-310-00-000000	J5=1-2 3-4	I	2.0
2	200-0120-001	PC104 PLUS SHROUDED COMM CON 1264-120	PC104 PLUS SHROUDED COMM CON 1264-120	I	1.0
SUB-ASSEMBLY TOTAL: 0282-100-0000B ARLIN - 4 Items					

ASSM ITEM FROM: PPM-10/100 ASSM ITEM THRU: PPM-10/100
PARENT LOC FROM: <FIRST> DEFAULT COMPONENT LOCATION: ARLIN PARENT LOC THRU: <LAST>

LVL	ITEM KEY	ITEM DESCRIPTION	BOM COMMENT	TYPE	REQUIRED
1	950-0001-000	BAG STATIC BARRIER 07-0610 6X10	BAG STATIC BARRIER 07-0610 6X10	I	1.0
1	910-0024-000	LABEL, STATIC SENSITIVE 130-02	LABEL, STATIC SENSITIVE 130-02	I	1.0
1	500-0200-174	VINYL, PC-104 PROTECTIVE ESD CAP.	VINYL, PC-104 PROTECTIVE ESD CAP.	I	1.0
1	KIT-PCM-STANDOFF-2	PC/104 STANDOFF KIT CONSISTING OF 2	PC/104 STANDOFF KIT CONSISTING OF 2	F	2.0
2	CONTRACT LABOR	OUTSIDE CONTRACT LABOR		L	.3
2	999-9999-001	SPECIAL NOTES	04-28-95 MEB (NEW BOM)	I	2.0
2	500-0200-091	SPACER M/F RAF 4000-440-N-MODL.600	SPACER M/F RAF 4000-440-N-MODL.600	I	4.0
2	500-0200-033	SCREW PPH 4-40 X 1/4"	SCREW PPH 4-40 X 1/4"	I	4.0
2	500-0200-092	NUT HEX NYLON 4-40	NUT HEX NYLON 4-40	I	4.0
2	525-0304-001	SIZE 3 COIN ENVLPE 2.5" X 4.25" 50260	SIZE 3 COIN ENVELOPE 2 1/2 X 4 1/4	I	2.0

SUB-ASSEMBLY TOTAL: KIT-PCM-STANDOFF-2 ARLIN - 6 Items

TOP ASSEMBLY TOTAL: PPM-10/100 ARLIN - 7 Items

REPORT RECAP

0 WARNING(S)

PARAMETER RECAP

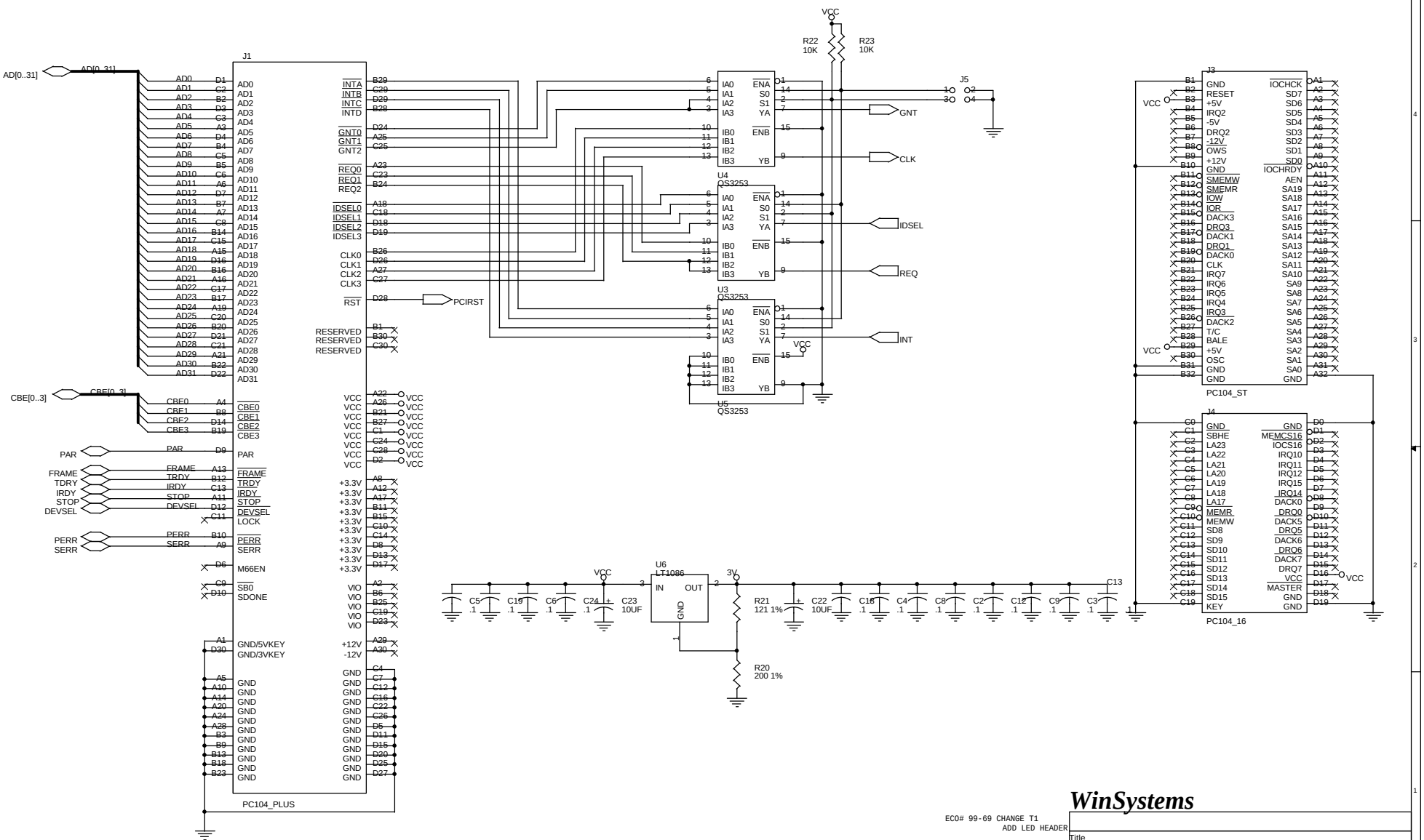
PARAMETER KEY : 10 BOM with Ref. Desc.
REPORT TITLE : BOM for Manuals

ASSM ITEM RANGE : PPM-10/100 THRU PPM-10/100
PARENT LOC RANGE : <FIRST> THRU <LAST>
PRODUCT KEY RANGE : <FIRST> THRU <LAST>
COMMODITY KEY RANGE : <FIRST> THRU <LAST>
DEFAULT COMP LOC : ARLIN
BOM STATUS PRIORITY : A

COSTING METHOD : A
QUANTITY TO EXPLODE : 1
USE SCRAP FACTOR (Y/N) : N
UPDATE INV STD COST : N
NO. LEVELS TO EXPLODE : 999
COLUMNS OF DESC TEXT : 42
SHORT OR LONG (S/L) : S
PRINT ITEM DESC (Y/N) : Y

5 APPENDIX C

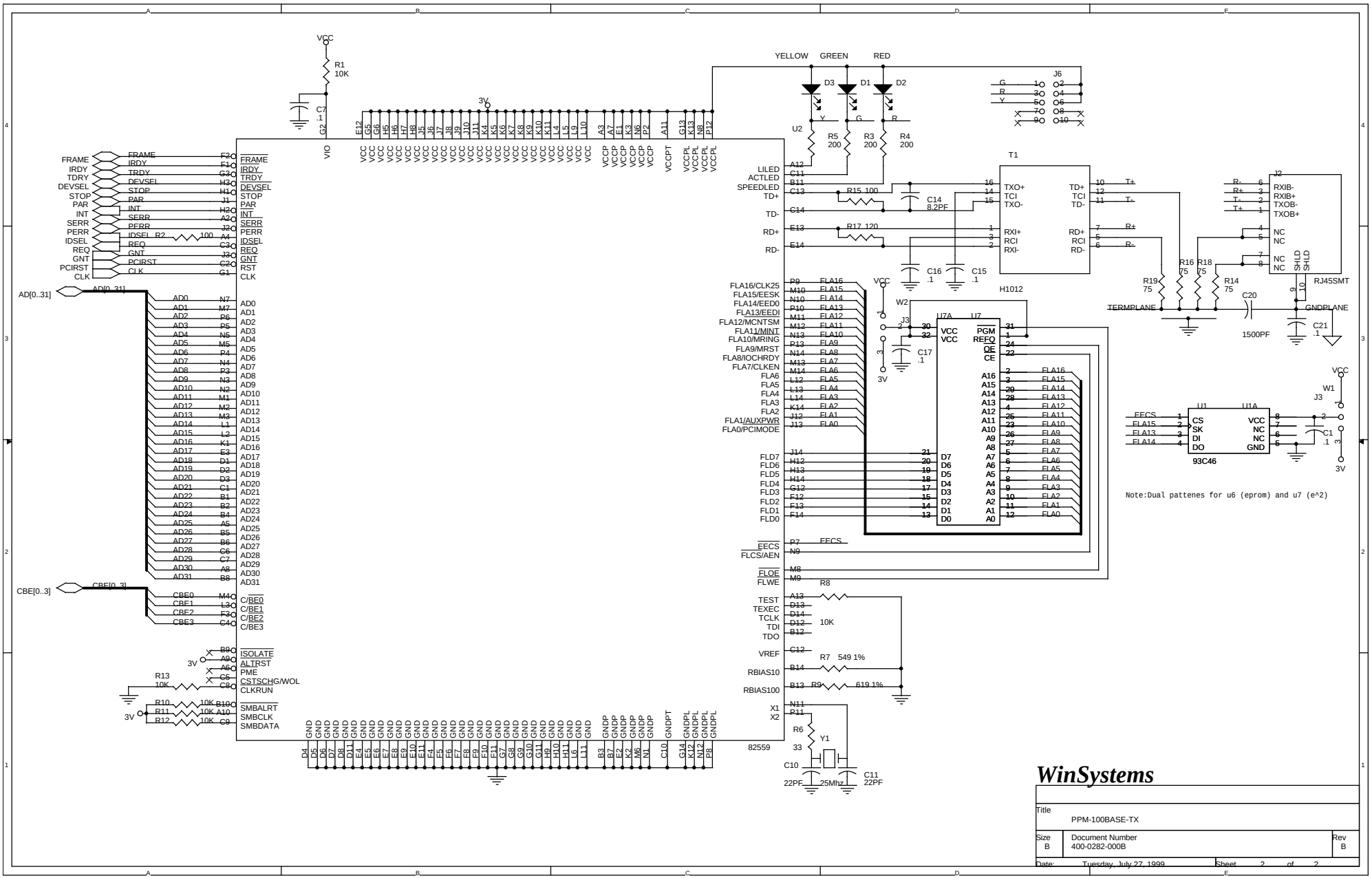
PPM-10/100 Schematic Diagrams



ECO# 99-69 CHANGE T1
ADD LED HEADER

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Title	PPM-100BASE-TX	
Size B	Document Number 400-0282-000B	Rev B
Date: Tuesday, July 27, 1999	Sheet 1 of 2	



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Title: PPM-100BASE-TX		
Size: B	Document Number: 400-0282-000B	Rev: B
Date: Tuesday, July 27, 1999	Sheet 2 of 2	



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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.

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