OPERATIONS MANUAL
LPM/MCM-7508

REVISION HISTORY

P/N 403-0057-000

ECO Number	Date Code	Rev Level
ORIGINATED	920515	B

Table of Contents

Section 1

General Information

Features

- STD Bus Compatible
- Up to 8 MHz operation
- Six eight bit bi-directional ports
- Equivalent to the Pro-Log 7508
- Designed to interface with the OPTO-22 mounting racks
- Easy to use – no complicated peripheral chip initialization routines required
- Pull up resistors on all input ports
- 8 or 10 bit jumper selectable board address with /IOEXP
- All I/O ports TTL compatible
- 5 volt operation
- Conformal coating available
- One year warranty

Additional Features: *LPM-7508*

- Extended Temperature Operation: -40°C. to 85°C.
- All CMOS for Low Power Operation

General Description

■ The LPM/MCM-7508, which is compatible with the Pro-Log 7508, is a STD-BUS compatible parallel input/output card with a total of 48 I/O lines. These I/O lines are organized as six eight bit bi-directional I/O ports. The I/O ports are accessed through a 50 pin connector which has a pin-out that is compatible with the OPTO-22 mounting racks PB-8, PB-16, and PB-24. The LPM/MCM-7508 is very easy to use, no complicated peripheral chip initialization routines are required to access the board. The LPM/MCM-7508 has a jumper selectable board address and can be positioned on any eight port boundary such as 0-7, 8-F, 10-17, etc.

Specifications

Word Size

- 8 bits

I/O Capacity

- Six eight bit bi-directional I/O ports. An additional two ports are used for optional +5 VDC power switching.

I/O Addressing

- Jumper selectable for 8 or 10 bit addressing on any eight port boundary. 0-7,8-F,10-17 etc.

Input/Output DC Characteristics

- Input ports - 74XX240 with 10k ohm pull up resistors.
- Output ports- 7406

Interface

- All address, data, control, and I/O signals are STD BUS compatible.

Connector

- STD BUS - 56 pin dual 0.125 inch centers
- Parallel I/0 - 50 dual 0.100 inch centers

STD BUS	Solder Tail	Winchester	2HW28	DO-111
	Wire Wrap	Winchester	HW28	DO-111

Power Requirements

- +5 VDC +/- 5% at 250 mA. maximum. (No load on inputs or outputs) ***(LPM-7508)***
- +5 VDC +/- 5% at 750 mA. maximum. (No load on inputs or outputs) (MCM-7508)

Operating Temperature

- -40°C. to +85°C. ***(LPM-7508)***
- 0°C. to +65°C. (MCM-7508)

Card Dimension

- Height 6.50 inches
- Width 4.48 inches
- Thickness 0.48 inches

Section 2

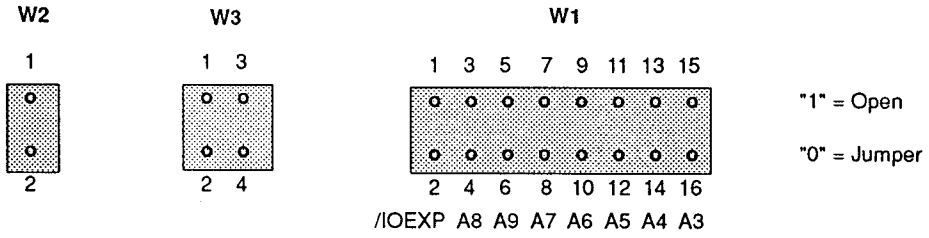
User Options

I/O Address Decoder

■ The LPM/MCM-7508 has a jumper selectable I/O address decoder so that more than one LPM/MCM-7508 board can be used in a system.

The LPM/MCM-7508 can be jumpered for an 8 or 10 bit address and can be positioned on any eight port boundary i.e., I/O address 0-7, 8-F,10-17, etc. In addition to the address decoder, the LPM/MCM-7508 can be jumpered to respond to /IOEXP. The I/O address for the LPM/MCM-7508 is controlled by jumper blocks W1 and W3, and /IOEXP is controlled by W2 and W1. Jumper blocks W1, W2, and W3 are shown in Figure 2-1.

Figure 2-1
I/O Address Decoder Jumper Blocks W1, W2, and W3



To enable 8 bit addressing: Leave W3 1-2, 3-4 and W1 3-4, 5-6 OPEN.

➥ *Use address bits A7-A3 for address decoding.*

To enable 10 bit addressing: Connect W3 1-2, 3-4.

➥ *Use address bits A9-A3 for address decoding.*

To enable /IOEXP: Leave W2 OPEN. Connect W1 1-2 for /IOEXP to be active low, and leave W1 1-2 open for /IOEXP to be active high.

To disable /IOEXP: Connect W2 1-2; leave W1 1-2 OPEN.

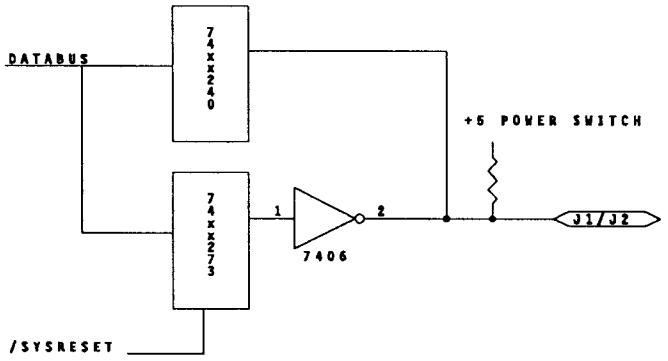
I/O Port Configurations

➥ *The LPM/MCM-7508 output ports are cleared by system reset or power on reset, i.e., after a system reset all output relays will be in the off state.*

■ Figure 2-2 shows the configuration for each of the I/O bits for the LPM/MCM-7508. Each bit is bi-directional, that is each bit can function as an input or output. The function of each bit is determined by the state of the output latch. To initialize a bit as an input, the output latch must be cleared by writing a '0' to the particular bit. **NOTE: Each line is initialized as an input after a system or power on reset.** To use a bit as an output, no initialization is required. When using a bit as an output, an input can be performed to the bit to form an output with read back function.

Figure 2-4 shows the bit position of each I/O port and its related OPTO-22 relay position.

Figure 2-2



TYPICAL 7508 OUTPUT

OPTO-22 Interface

■ The LPM/MCM-7508 is designed to interface to the OPTO-22 family of mounting racks such as the PB-24, PB-16, or the PB-8. Figures 2-3, 2-4, and 2-5 show the relationship of the LPM/MCM-7508 connectors J1, J2 and the OPTO-22 mounting rack connector and relay positions.

OPTO Module Rack Power

■ The LPM/MCM-7508 uses the MSB of I/O ports xx3 and xx7 for power switching (+5VDC) to pin 49 of J1 and J2 respectively. A '1' written to the MSB of these ports will TURN OFF the +5 VDC to J1/J2 pin 49.

To use the software power module control, connect W5 2-3 for J1 and W4 2-3 for J2. LED DS1 will illuminate when power is applied to J1-49, and LED DS2 will illuminate when power is applied to J2-49. A system or manual reset will turn on module power to both connectors J1 and J2.

The module power can be hardwired by connecting W5 1-2 for J1, and W4 1-2 for J2. By connecting these jumpers, +5 VDC will always be on pin 49 of J1 or J2.

Figure 2-3

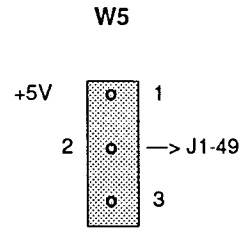
LPM/MCM-7508 J1/J2	OPTO-22 PB-24	OPTO-22 PB-16	OPTO-22 PB-8	RELAY POSITION
1	1			23
3	3			22
5	5			21
7	7			20
9	9			19
11	11			18
13	13			17
15	15			16
17	17	17		15
19	19	19		14
21	21	21		13
23	23	23		12
25	25	25		11
27	27	27		10
29	29	29		9
31	31	31		8
33	33	33	33	7
35	35	35	35	6
37	37	37	37	5
39	39	39	39	4
41	41	41	41	3
43	43	43	43	2
45	45	45	45	1
47	47	47	47	0
49	49	49	49	+5VDC

➥ *Pins 2-50 are ground.*

➥ *+5VDC can also be supplied to the panel through a separate cable. See the OPTO-22 mounting rack schematic.*

Figure 2-4

Software controlled power switch W5 2-3
MSB I/O PORT xx3 '1' turns +5 VDC OFF

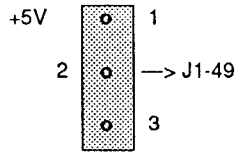


RELAY	PORT BIT	JUMPER
23	(LSB) Port xx0 Bit 0 —>	J1-1
22	1 —>	J1-3
21	2 —>	J1-5
20	3 —>	J1-7
19	4 —>	J1-9
18	5 —>	J1-11
17	6 —>	J1-13
16	7 —>	J1-15
15	(LSB) Port xx1 Bit 0 —>	J1-17
14	1 —>	J1-19
13	2 —>	J1-21
12	3 —>	J1-23
11	4 —>	J1-25
10	5 —>	J1-27
9	6 —>	J1-29
8	7 —>	J1-31
7	(LSB) Port xx2 Bit 0 —>	J1-33
6	1 —>	J1-35
5	2 —>	J1-37
4	3 —>	J1-39
3	4 —>	J1-41
2	5 —>	J1-43
1	6 —>	J1-45
0	Port xx2 Bit 7 —>	J1-47

NOTE : xx represents programmable board address.

Figure 2-5

Software controlled power switch W4 2-3
MSB xx7 I/O PORT xx7 '1' turns +5VDC OFF

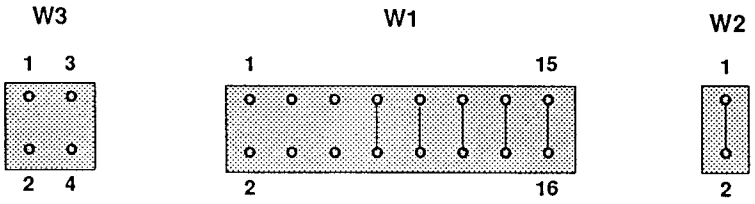


RELAY	PORT BIT	JUMPER
23	(LSB) Port xx4 Bit 0 —>	J2-1
22	1 —>	J2-3
21	2 —>	J2-5
20	3 —>	J2-7
19	4 —>	J2-9
18	5 —>	J2-11
17	6 —>	J2-13
16	7 —>	J2-15
15	(LSB) Port xx5 Bit 0 —>	J2-17
14	1 —>	J2-19
13	2 —>	J2-21
12	3 —>	J2-23
11	4 —>	J2-25
10	5 —>	J2-27
9	6 —>	J2-29
8	7 —>	J2-31
7	(LSB) Port xx6 Bit 0 —>	J2-33
6	1 —>	J2-35
5	2 —>	J2-37
4	3 —>	J2-39
3	4 —>	J2-41
2	5 —>	J2-43
1	6 —>	J2-45
0	Port xx6 Bit 7 —>	J2-47

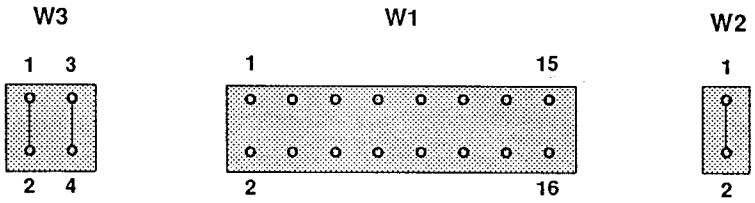
NOTE: xx represents programmable board address.

Examples

■ Configuration for board I/O address 0-7. 8 bit address mode, /IOEXP disabled.

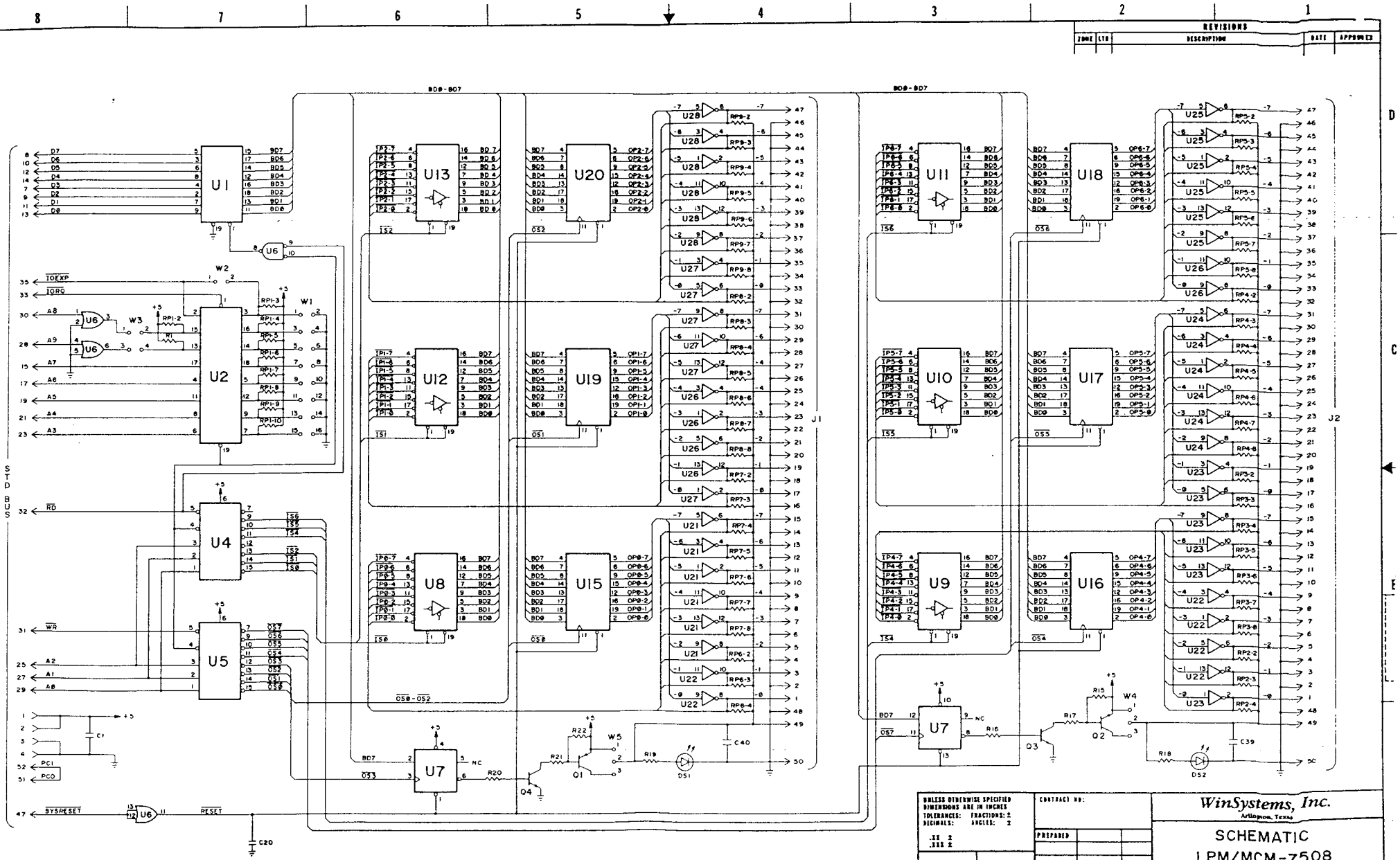


■ Configuration for board I/O address 3F8-3FF (HEX). 10 bit address mode, /IOEXP disabled.



Appendix

Schematic Diagram
LPM-7508 Parts List
MCM-7508 Parts List
Parts Placement Diagram
Warranty and Repair Information

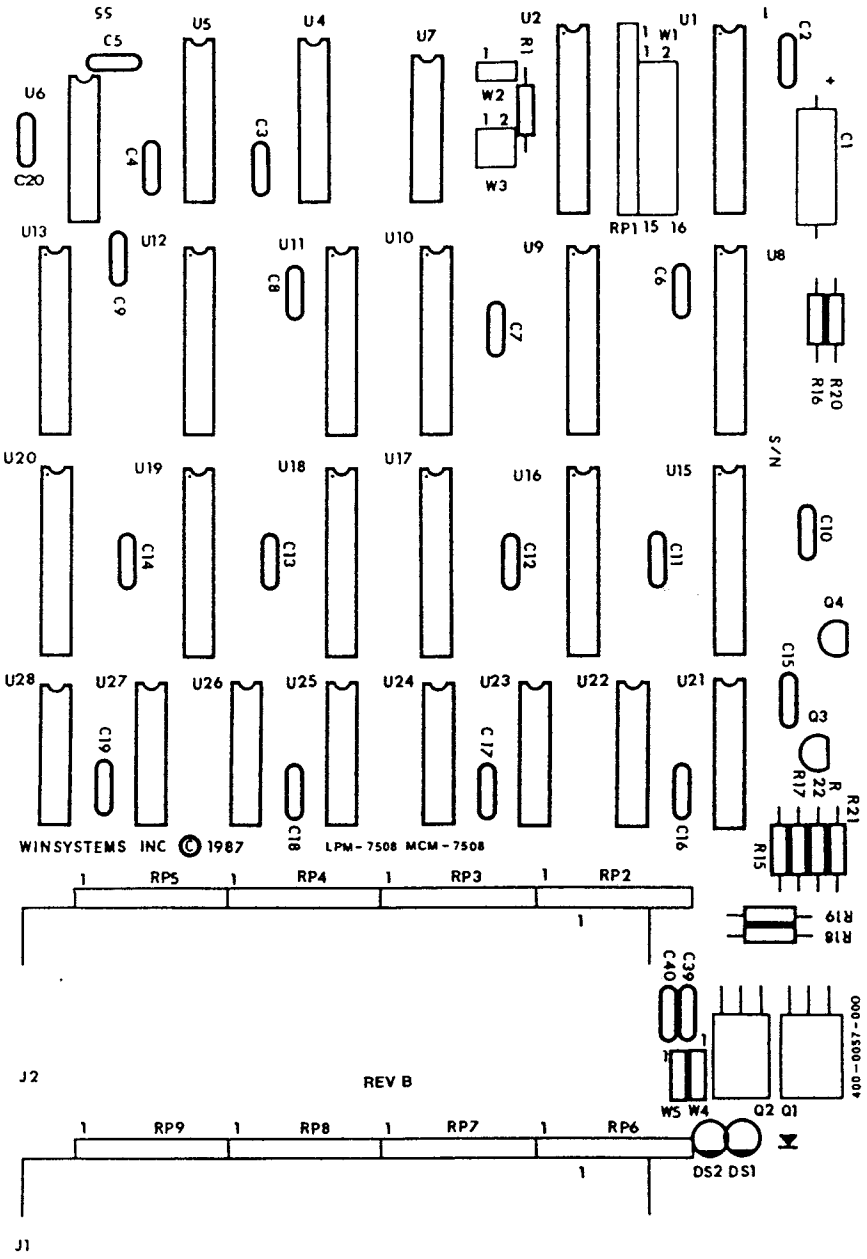

REVISIONS
ZONE
LTR
DESCRIPTION
DATE
APPROVED
STD BUS
U1
U2
U4
U5
U6
U7
U8
U9
U10
U11
U12
U13
U15
U16
U17
U18
U19
U20
J1
J2
W1
W2
W3
W4
W5
Q1
Q2
Q3
Q4
DS1
DS2
C1
C20
C39
C40
R15
R16
R17
R18
R19
R20
R21
R22
RESET
SYSRESET
WinSystems, Inc.
Arlington, Texas
SCHEMATIC
LPM/MCM-7508
SIZE
D
CODE IDENT NO.
87098
DRAWING NO.
401-0057-000
SCALE
REV
SHT 1 OF 1

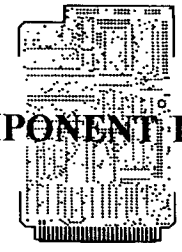
BEGINNING RANGE: LPM-7508 ENDING RANGE: LPM-7508

LEVEL	ITEM KEY	ITEM DESCRIPTION	BOM DESCRIPTION	LOC	OVHD KEY	ITEM TYPE	QTY REQUIRED
1	LPM-7508	48-BIT PARALLEL OPTO-22					1
2	0057-100-0000	ASSY LPM-7508 REV B	ASSY LPM-7508 REV B	ARLIN		Inv	1
3	>999-9999-001	SPECIAL NOTES	3-01-91	ARLIN		Inv	1
3	>110-0010-003	CAP .1 UF CER RAD SR215E104MAA	C2-C19,C39,C40	ARLIN		Inv	20
3	>110-0017-002	CAP 22 UF ALU ELEC AX TLB1C220M	C1	ARLIN		Inv	1
3	>110-0036-003	CAP .01 UF .2 SP CER RAD C317C10	C20	ARLIN		Inv	1
3	>114-0101-450	RESISTOR 100 OHM 1/4 5%	R17,R21	ARLIN		Inv	2
3	>114-0103-450	RESISTOR 10K 1/4 5%	R1	ARLIN		Inv	1
3	>114-0222-450	RESISTOR 2.2K 1/4 5%	R15,R16,R20,R22	ARLIN		Inv	4
3	>114-0471-450	RESISTOR 470 OHM 1/4 5%	R18,R19	ARLIN		Inv	2
3	>116-0103-050	RN SIP 8P-7 RES 10K SRDSA-08P-C1	RP2-RP9	ARLIN		Inv	8
3	>117-0103-050	RN SIP 10P-9 RES 10K CSC10A01103	RP1	ARLIN		Inv	1
3	>124-0007-000	LED MIN RED LTL-201	DS1,DS2	ARLIN		Inv	2
3	>125-0001-000	TRANSISTOR PN2222	Q3,Q4	ARLIN		Inv	2
3	>125-0004-000	TRANSISTOR MJE253	Q1,Q2	ARLIN		Inv	2
3	>201-0072-120	HDR 2X36 UN TSW-136-07-G-D	W1=2X8, W2=2X1, W4/5=2X3,	ARLIN		Inv	.388
3	>999-9999-001	SPECIAL NOTES	W3=2X2 MADE FROM 2X36	ARLIN		Inv	1
3	>201-1050-123	HDR RA SIDE IDH-50PK1-SR3-TG/TR	J1,J2	ARLIN		Inv	2
3	>400-0057-000	PCB 7508 REV B (T)	PCB 7508 REV B (T)	ARLIN		Inv	1
3	>500-0001-000	EJECTOR SCANBE S208	STAMP (BLUE) 7508	ARLIN		Inv	1
3	>500-0002-000	ROLL PIN		ARLIN		Inv	1
3	>741-0032-200	IC, 74HC32	U6	ARLIN		Inv	1
3	>741-0074-200	IC, 74HC74	U7	ARLIN		Inv	1
3	>741-0138-200	IC, 74HC138	U4,U5	ARLIN		Inv	2
3	>741-0240-200	IC, 74HC240	U8-U13	ARLIN		Inv	6
3	>741-0245-200	IC, 74HC245	U1	ARLIN		Inv	1
3	>741-0273-200	IC, 74HC273	U15-U20	ARLIN		Inv	6
3	>741-0688-200	IC, 74HC688	U2	ARLIN		Inv	1
3	>742-0006-100	IC, 7406	U21-U28	ARLIN		Inv	8
2	0057-300-0000	SUB ASSY LPM-7508 REV B	SUB ASSY LPM-7508 REV B	ARLIN		Inv	1
3	>999-9999-001	SPECIAL NOTES	3-01-91	ARLIN		Inv	1
3	>201-0002-000	PLUG JUMPER 999-19-310-00	TO TEST W3=1-2 3-4 W4=2-3	ARLIN		Inv	6
3	>999-9999-001	SPECIAL NOTES	W5=2-3	ARLIN		Inv	1
3	>999-9999-001	SPECIAL NOTES	TO SHIP W1=1-2 7-8 11-12	ARLIN		Inv	1
3	>999-9999-001	SPECIAL NOTES	15-16, W4=2-3, W5=2-3	ARLIN		Inv	1
2	950-0001-000	BAG ANTISTATIC 6X10 CHARLES WATE	BAG ANTISTATIC 6X10 CHARLES WATER CP303	ARLIN		Inv	1

BEGINNING RANGE: MCM-7508 ENDING RANGE: MCM-7508

LEVEL	ITEM KEY	ITEM DESCRIPTION	BOM DESCRIPTION	LOC	OVHD KEY	ITEM TYPE	QTY REQUIRED
1	MCM-7508	48-BIT PARALLEL OPTO-22					1
2	0057-200-0000	ASSY MCM-7508 REV B	ASSY MCM-7508 REV B	ARLIN		Inv	1
3	>999-9999-001	SPECIAL NOTES	3-01-91	ARLIN		Inv	1
3	>110-0010-003	CAP .1 UF CER RAD SR215E104MAA	C2-C19,C39,C40	ARLIN		Inv	20
3	>110-0017-002	CAP 22 UF ALU ELEC AX TLB1C220M	C1	ARLIN		Inv	1
3	>110-0036-003	CAP .01 UF .2 SP CER RAD C317C10	C20	ARLIN		Inv	1
3	>114-0101-450	RESISTOR 100 OHM 1/4 5%	R17,R21	ARLIN		Inv	2
3	>114-0103-450	RESISTOR 10K 1/4 5%	R1	ARLIN		Inv	1
3	>114-0222-450	RESISTOR 2.2K 1/4 5%	R15,R16,R20,R22	ARLIN		Inv	4
3	>114-0471-450	RESISTOR 470 OHM 1/4 5%	R18,R19	ARLIN		Inv	2
3	>116-0103-050	RN SIP 8P-7 RES 10K SRDSA-08P-C1	RP2-RP9	ARLIN		Inv	8
3	>117-0103-050	RN SIP 10P-9 RES 10K CSC10A01103	RP1	ARLIN		Inv	1
3	>124-0007-000	LED MIN RED LTL-201	DS1,DS2	ARLIN		Inv	2
3	>125-0001-000	TRANSISTOR PN2222	Q3,Q4	ARLIN		Inv	2
3	>125-0004-000	TRANSISTOR MJE253	Q1,Q2	ARLIN		Inv	2
3	>201-0072-120	HDR 2X36 UN TSW-136-07-G-D	W1=2X8, W2=2X1, W4/5=2X3	ARLIN		Inv	.388
3	>999-9999-001	SPECIAL NOTES	W3=2X2 MADE FROM 2X36	ARLIN		Inv	1
3	>201-1050-123	HDR RA SIDE IDH-50PK1-SR3-TG/TR	J1,J2	ARLIN		Inv	2
3	>340-0032-100	IC, 74LS32	U6	ARLIN		Inv	1
3	>340-0074-100	IC, 74LS74	U7	ARLIN		Inv	1
3	>340-0138-100	IC, 74LS138	U4,U5	ARLIN		Inv	2
3	>340-0240-100	IC, 74LS240	U8-U13	ARLIN		Inv	6
3	>340-0245-100	IC, 74LS245	U1	ARLIN		Inv	1
3	>340-0273-100	IC, 74LS273	U15-U20	ARLIN		Inv	6
3	>340-0688-100	IC, 74LS688	U2	ARLIN		Inv	1
3	>400-0057-000	PCB 7508 REV B (T)	PCB 7508 REV B (T)	ARLIN		Inv	1
3	>500-0001-000	EJECTOR SCANBE S208	STAMP (RED) 7508	ARLIN		Inv	1
3	>500-0002-000	ROLL PIN		ARLIN		Inv	1
3	>742-0006-100	IC, 7406	U21-U28	ARLIN		Inv	8
2	0057-400-0000	SUB ASSY MCM-7508 REV B	SUB ASSY MCM-7508 REV B	ARLIN		Inv	1
3	>999-9999-001	SPECIAL NOTES	3-01-91	ARLIN		Inv	1
3	>201-0002-000	PLUG JUMPER 999-19-310-00	FOR TESTING INSTALL	ARLIN		Inv	6
3	>999-9999-001	SPECIAL NOTES	W3=1-2 3-4, W4,W5=2-3	ARLIN		Inv	1
3	>999-9999-001	SPECIAL NOTES	FOR SHIPPING INSTALL	ARLIN		Inv	1
3	>999-9999-001	SPECIAL NOTES	W1=1-2 7-8 11-12 15-16	ARLIN		Inv	1
3	>999-9999-001	SPECIAL NOTES	W4,W5=2-3	ARLIN		Inv	1
2	950-0001-000	BAG ANTISTATIC 6X10 CHARLES WATE	BAG ANTISTATIC 6X10 CHARLES WATER CP303	ARLIN		Inv	1





COMPONENT LAYOUT

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http://www.winsystems.com • E-mail: info@winsystems.com

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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.