



Integrated Solutions

Engineering Change Notice

ECN # **683**

SHEET 1 of 39

REFERENCE
RFI #

TYPE of CHANGE		RELEASE STATUS	AFFECTED PRODUCT(S)	ORIGINATOR		ORIGINATION DATE
RELEASE	<input checked="" type="radio"/>	PRE-PRODUCTION	VME-ETHERNET + OPTIONS	JIM LILJE		2-11-87
RECORD	<input type="radio"/>	PRODUCTION	RESPONSIBLE ENGINEER	LEO BREDEHOFT		
ORDINARY	<input type="radio"/>	EMERGENCY APPROVAL	INCORPORATION BY	2/20/87		INCORPORATION DATE
EMERGENCY	<input type="radio"/>					

REASON FOR CHANGE:

PRODUCTION RELEASE OF 151 1/2 VME ETHERNET CARD INTO ALL SYSTEMS.

DESCRIPTION OF CHANGE:

① RELEASE PCB ASSEMBLY 590099 PER ATTACHED BOM.

DOCUMENTS AFFECTED						CHANGE CLASSIFICATION and APPROVALS
PART #	REVISION FROM	TO	PART #	REVISION FROM	TO	
590099	A2	A	640014-02	G	H	PRE-PRODUCTION <input type="radio"/> RESP ENG MFG ENG <i>[Signature]</i> 2/20/87 QA <i>[Signature]</i> 2/26/87 PRODUCTION (CLASS 1) <input checked="" type="radio"/>
640010	B	C	640014-03	G	H	
640010-01	D	E	640014-04	G	H	
640010-02	D	E	520063	A4	A	
640010-03	D	E	750124	A1	A	
620053-01	B	B	750125	A1	A	
620053-02	A	B	750126	A1	A	
640014-01	G	H	750127-01	A1	A	

COST and EFFECTIVITY					APPROVAL DATE	
	ORDERS	STOCK	WIP	F/G		
SCRAP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2/20/87	H/W ENG <i>[Signature]</i>
REWORK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	FCO REQUIRED <input type="checkbox"/>	S/W ENG <i>[Signature]</i>
USE AS IS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PRODUCT COST EFFECT	PUBS <i>[Signature]</i>
COST EFF. DATE	<i>2/20/87</i>				TOTAL ECN COST	MAT CTL <i>[Signature]</i>
						SUPPORT <i>[Signature]</i>
						PRODUCTION (CLASS 2) <input type="radio"/>
						VP ENG
						VP MFG
						PRODUCTION (CLASS 3) <input type="radio"/>
						PRES



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Engineering Change Notice

DOC CTL USE ONLY

ECN # 683

SHEET 2 of

- ② ADD ASSY 590099 AND CABLE 600032-01 OR 02 TO THE V8, V16, AND V24, PER MARKETED UP BOMs. ADD ETHERNET MANUAL. REMOVE P/Ns 370036 349007 AND 430061-03 AS THEY ARE PART OF THE BOARD ASSY 590099. REFERENCE BOMs 640010, 640010-01, 02, AND 03.
- ③ INCORPORATE USE OF 600032-01 INTO DISKLESS NODE SUB-ASSY 620053-01 AND 02. SEE ATTACH BOMs.
- ④ COMPLETE DISKLESS NODE MODIFICATIONS BY ADD 590099 TO 640014-01, 02, 03, AND 04. REMOVE 430061-03 349007 AND 370036 AS THEY ARE PART OF 590099. SEE ATTACHED.
- ⑤ DISKLESS NODE MANUAL TOP ASSY WILL REQUIRE ISI, MANUAL 490127 BE SUBSTITUTED FOR 490101. SEE ATTACHED P/Ns 500012-01 AND 02.
- ⑦ RELEASE FIRMWARE MASTERS TO PRODUCTION. SEE DOCUMENTS AFFECTED.
- ⑧ RELEASE FIRMWARE PROGRAMS TO PRODUCTION.
- ⑨ CORRECT SPECIFICATION OF P/N 190030 TO CALL OUT PACKAGING INFORMATION.



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Engineering Change Notice

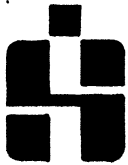
DOC CTL USE ONLY

ECN # 683

SHEET 3 of

DOCUMENTS AFFECTED CONT'D

PART NO	DESCRIPTION	REVISION	FROM	TO
750127-02	IC EPROM EC 1.0		A1	A
440169	FW MASTER EC RSTLUCCE		A1	A
440168	FW MASTER EC SELREF		A1	A
440149	FW MSTR EC UPADR		A1	A
450150-01	FW MSTR EC EN1.0E		A1	A
450150-02	FW MSTR EC EN 1.00		A1	A
190030	IC RAM 64Kx4		A	B
500012-01	H/W MAN. T. ASSY DL NODE 68K10		A	B
500012-02	H/W MAN. T. ASSY DL NODE 68K20		A	B



PROGRAMMABLE DEVICE AND MEDIA INPUT

ECN 683
 PAGE 8

ISI PART NUMBER									
7	5	0	1	2	6	-			
REVISION LEVEL								A	

ORIGINATOR JIM LILJE DATE 2-11-87 SHEET 1 OF 1

DESCRIPTION IC PAL EC UPADR

QTY REQ'D	U/M	ITEM NO	PART NUMBER	DESCRIPTION	REFERENCE INFORMATION
<u>1</u>	<u>EA</u>	<u>1</u>	<u>190009</u>	<u>PALZOL8ACUS</u>	
<u>1</u>	<u>EA</u>	<u>2</u>	<u>430032</u>	<u>LABEL .2x.7</u>	
<input checked="" type="checkbox"/>	<u>EA</u>	<u>3</u>	<u>440149</u>	<u>FW MSTZ EC UPADR</u>	

LABELING INFORMATION

430032

P/N 750126- A REV


430060

P/N - REV

DESCRIPTION


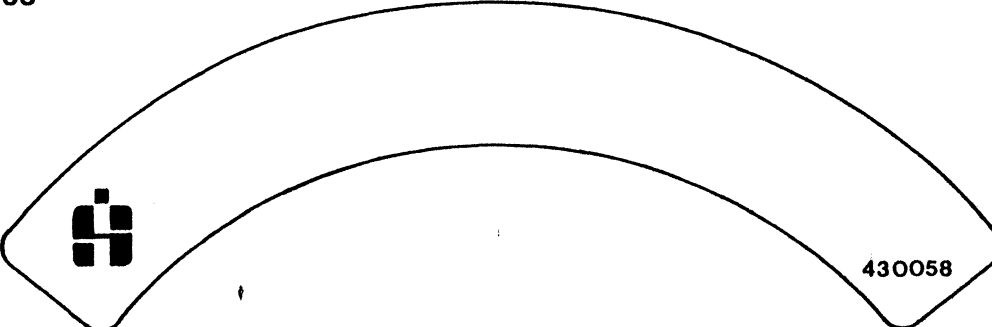
VERSION

430059

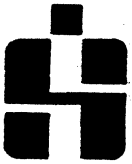


430059

430058

430058



PART NUMBER REQUEST

ISI PART NUMBER

FOR DOCUMENT CONTROL ONLY

190030-

REVISION LEVEL

ORIGINATOR JIM LILJE DATE 2-11-87 SHEET 1 OF 29 NEW ITEM CHANGE = UPDATE AVL + FILE, DATA ATTACHED CLASS CODE SINGLE SOURCE ITEM (REQUIRES V.P. ENG. APPROVAL) V.P. ENG. DESCRIPTION IC RAM UPD 4146A 64Kx4 15QNS

VENDOR LISTING

- 1. NEC
- 2. TI
- 3. NEC

~~DA186AC-15~~
 TMS 4465-15
 DA1464D-15

ECN 616
 ECN 616
 ECN 683

ECN 683
 PAGE 9 of

MATERIAL CONTROL INFORMATION

SOURCE CODE: MAKE BUY PURCHASING UNIT OF MEASURE

PHANTOM ASSY FLOOR STOCK CONSUMPTION UNIT OF MEASURE

COST 6.90 FIXED LEAD TIME WKS

FOR MATERIAL CONTROL USE ONLY

ORDER POLICY CODE REORDER POINT

LOCATION TYPE CODE THIS LEVEL OUTSIDE PROCESSING COST

APPROVALS ENG. MAT'L MFG. ENG.

MFG,RE,210,2 INTEGRATED SOLUTIONS, INC.
10-FEB-1987 14:43

BILL OF MATERIALS REPORT

DATABASE: 133 REQUESTER: INTSOL
PAGE NO: 1

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SORTED BY ASSEMBLY PART NUMBER, ITEM NUMBER
AS OF 02/10/87

CLASS CODE: 64
TOP ASSY, KITS, OPTION, ACC.
PART: 640010
DESC: OPTION, ETHERNET

UOM: EA SC: M REV: X

COMPONENT PART	DESCRIPTION	ITEM RV NUMBR	ST SC	QTY UM	PER ASSEMBLY	YIELD FACTR	TO SEQ	ROUTE	OFFSET	EFFECTIV DATE	INACTIVE DATE	REFERENCE INFORMATION
								LEAD TIME				
500000 590099	PCBA,VME ENET 128K A	1	B	EA	1.00	1.000	0	0	0	10/02/86	99/99/99	
400000	ASSY, VME ETHERNET	1	B	EA	1.00	1.000	0	0	0	00/00/00	99/99/99	
400000 490127	SUMMARY,VME ETHERN B	3	B	EA	1.00	1.000	0	0	0	00/00/00	99/99/99	SHIP WITH MANUAL SET
500000	ASCR,FLN XREC,H2-3-A	1	B	EA	1.00	1.000	0	0	0	10/02/86	99/99/99	
500000	PCB-EXTRACTOR,VME	1	B	EA	1.00	1.000	0	0	0	10/02/86	99/99/99	

Page 10 void
(see Page 23A)

ECN 683
PAGE 11

ECN 683
PAGE 11

BILL OF MATERIALS REPORT

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SORTED BY ASSEMBLY PART NUMBER, ITEM NUMBER
 AS OF 02/10/87

CLASS CODE: 64
 TOP ASSY, KITS, OPTION, ACC.
 PART: 640010-01
 DESC: OPTION, ETHERNET, VB

UOM: EA SC: M REV: 1

COMPONENT PART	DESCRIPTION	ITEM RV NUMBR	ST SC	QTY UM	PER ASSEMBLY	YIELD FACTR	ROUTE OFFSET		EFFECTIV DATE	INACTIVE DATE	REFERENCE INFORMATION
							TO SEQ	LEAD TIME			
610027-01 590099	PCBA,VME ENET 12BK A	1	B	EA	1.00	1.000	0	0	10/02/86	99/99/99	MOUNTS IN THE CARD CAGE
610033-01 60032-D1	CABLE ASSY,VME E-N C	2	B	EA	1.00	1.000	0	0	04/24/86	99/99/99	CONNECT THE MALE 15P D-SUB CONNECTOR TO P3 OF THE VME ETHERNET PCB AND THE FEMALE 15P D-SUB TO THE SHIELD OPENING OF THE CONNECTOR PANEL.
490101 490127	SUMMARY,VME ETHERN B	3	B	EA	1.00	1.000	0	0	04/24/86	99/99/99	SHIP WITH MANUAL SET
610054-10	ASSY,E-NET TRANSCV A	5	B	EA	1.00	1.000	0	0	04/24/86	99/99/99	
3001-03	LABEL EXTRACTOR EN	1	B	EA	1.00	1.000	0	0	03/11/86	99/99/99	R.H. CARD EXTRACTOR
31007	MSGR,PLH XRES,MS-E A	2	B	EA	2.00	1.000	0	0	10/02/86	99/99/99	
370038	PCB EXTRACTOR,VME	2	B	EA	2.00	1.000	0	0	10/02/86	99/99/99	

ECN _____
 PAGE 12 of 1083

MFG,RE,210,2 INTEGRATED SOLUTIONS, INC.
10-FEB-1987 14:45

DATABASE: 133 REQUESTER: INTSOL
PAGE NO: 1

BILL OF MATERIALS REPORT

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SORTED BY ASSEMBLY PART NUMBER, ITEM NUMBER
AS OF 02/10/87

CLASS CODE: 64
TOP ASSY, KITS, OPTION, ACC.
PART: 640010-02
DESC: OPTION, ETHERNET, V16

UOM: EA SC: M REV: 1

COMPONENT PART	DESCRIPTION	RV	ITEM NUMBR	SC	ST UOM	QTY PER ASSEMBLY	YIELD TO FACTR	ROUTE SEQ	OFFSET LEAD TIME	EFFECTIV DATE	INACTIVE DATE	REFERENCE INFORMATION
630027-01 610099	PCBA,VME ENET 128K A		1	B	EA	1.00	1.000	0	0	10/02/86	99/99/99	MOUNTS IN THE CARD CAGE
600000-02 610032-02	CABLE ASSY,VME ENE C		2	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	CONNECT THE MALE LCP SUB CONNECTOR TO P3 OF THE VME ETHERNET PCBA AND THE FEN LCP SUB CONNECTOR TO THE ENET OPENING OF THE CONNECTOR CHANNEL
490101 490127	SUMMARY,VME ETHERN B		3	B	EA	1.00	1.000	0	0	04/24/86	99/99/99	SHIP WITH MANUAL SET
610054-10	ASSY,E-NET TRANSCV A		5	B	EA	1.00	1.000	0	0	04/24/86	99/99/99	
430041-03	LABEL EXTRACTOR - EN B		6	B	EA	1.00	1.000	0	0	08/11/86	99/99/99	RHY CARD EXTRACTOR
844007	HOOR,FLH XREC VHS A		7	B	EA	2.00	1.000	0	0	10/02/86	99/99/99	
370035	PCB EXTRACTOR, VME B		8	B	EA	2.00	1.000	0	0	10/02/86	99/99/99	

ECN _____
PAGE 13 of 1083

BILL OF MATERIALS REPORT

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SORTED BY ASSEMBLY PART NUMBER, ITEM NUMBER
 AS OF 02/10/87

CLASS CODE: 64
 TOP ASSY, KITS, OPTION, ACC.
 PART: 640010-03
 DESC: OPTION, ETHERNET, V24

UOM: EA SC: M REV: 1

COMPONENT PART	DESCRIPTION	ITEM RV NUMBR	SC	ST QTY UM	PER ASSEMBLY	YIELD FACTR	ROUTE OFFSET		EFFECTIV DATE	INACTIVE DATE	REFERENCE INFORMATION
							TO SEQ	LEAD TIME			
590099 590099	PCBA,VME ENET 128K A	1	B	EA	1.00	1.000	0	0	10/02/86	99/99/99	MOUNTS IN THE CARD CAGE
600032 600032	CABLE ASSY,VME ENE C	2	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	CONNECT THE MALE 157 D SUB ETHERNET PCB AND THE FEM 157 SUB CONNECTOR TO THE ENET OPENING OF THE CONNECTOR PANEL
490127 490127	SUMMARY,VME ETHERN B	3	B	EA	1.00	1.000	0	0	04/24/86	99/99/99	SHIP WITH MANUAL SET
610054-10	ASSY,E-NET TRANSCV A	5	B	EA	1.00	1.000	0	0	04/24/86	99/99/99	
400001-03	CASE EXTRACTOR VME B	1	B	EA	1.00	1.000	0	0	08/11/86	99/99/99	WITH CARD EXTRACTOR
310007	MSGR,FLH WRD,VME B A	1	B	EA	1.00	1.000	0	0	10/02/86	99/99/99	
320008	PCB EXTRACTOR,VME B	1	B	EA	1.00	1.000	0	0	10/02/86	99/99/99	

ECN _____
 PAGE 14 of _____
 683

MFG,RE,210,2 INTEGRATED SOLUTIONS, INC.
 11-FEB-1987 07:33

DATABASE: 133 REQUESTER: INTSOL
 PAGE NO: 1

BILL OF MATERIALS REPORT

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SORTED BY ASSEMBLY PART NUMBER, ITEM NUMBER
 AS OF 02/11/87

CLASS CODE: 62
 ELECTRO/MECH ASSY (ASSEMBLED)
 PART: 420053-01
 DESC: ASSY,SUB REAR DL,115V

UOM: EA SC: X REV: A

COMPONENT PART	DESCRIPTION	ITEM RV NUMBR	ST SC	QTY PER UM ASSEMBLY	YIELD TO FACTR	ROUTE OFFSET		EFFECTIV DATE	INACTIVE DATE	REFERENCE INFORMATION	
						SEQ	TIME				
410132	PANEL, REAR CARD C	1	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	
370046	FAN, 6" 115V	2	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	
590033	PCB ASSY, VME RS23	3	M	EA	1.00	1.000	0	0	05/22/86	99/99/99	
590069	PCB ASSY, RESET SW, A	4	M	EA	1.00	1.000	0	0	00/00/00	99/99/99	
370015	FILTER, LINE 115/2	5	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	
400000 600032-01	CABLE ASSY, VME E-N C	6	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	
349016	CLIP, BEZEL MTG	7	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	
349005	SCREW, JACK 4-40 x A	8	B	EA	4.00	1.000	0	0	05/22/86	99/99/99	
610041	HARNESS ASSY, AC D	9	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	
341450-24	HSCR, PH 4-40X1.50	10	F	EA	2.00	1.000	0	0	05/22/86	99/99/99	
600010-04	CABLE ASSY, 10 PIN	11	B	EA	1.00	1.000	0	0	05/22/86	99/99/99	
420016	PANEL, REAR, DL NODE B	12	P	EA	1.00	1.000	0	0	00/00/00	99/99/99	
340453-04	HSCR, PH 8-32x1/4"	13	F	EA	5.00	1.000	0	0	05/22/86	99/99/99	
610045	ASSY, FAN GND, DL NO A	14	B	EA	1.00	1.000	0	0	05/22/86	99/99/99	
360004	FUSE, 3.1AMP SLO-B	15	B	EA	1.00	1.000	0	0	05/22/86	99/99/99	

ECN _____
 PAGE 13 of _____
 083

MFG,RE,210,2 INTEGRATED SOLUTIONS, INC.
 11-FEB-1987 07:33

BILL OF MATERIALS REPORT

DATABASE: 133 REQUESTER: INTSOL
 PAGE NO: 1

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SORTED BY ASSEMBLY PART NUMBER, ITEM NUMBER
 AS OF 02/11/87

CLASS CODE: 62
 ELECTRO/MECH ASSY (ASSEMBLED)
 PART: 420053-02
 DESC: ASSY,SUB REAR DL,230V

UOM: EA SC: X REV: A

COMPONENT PART	DESCRIPTION	ITEM RV NUMBR	ST SC	QTY UM	PER ASSEMBLY	YIELD FACTR	TO SEQ	ROUTE OFFSET		EFFECTIV DATE	INACTIVE DATE	REFERENCE INFORMATION
								LEAD TIME	OFFSET			
410132	PANEL, REAR CARD C	A	1	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	
370047	FAN, 6" 230V	A	2	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	
590033	PCB ASSY, VME RS23	A	3	M	EA	1.00	1.000	0	0	05/22/86	99/99/99	
590069	PCB ASSY, RESET SW,	A	4	M	EA	1.00	1.000	0	0	00/00/00	99/99/99	
370015	FILTER, LINE 115/2	A	5	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	
400000 400032-01	CABLE ASSY, VME E-N	C	6	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	
349016	CLIP, BEZEL MTG		7	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	
349005	SCREW, JACK 4-40 x	A	8	B	EA	4.00	1.000	0	0	05/22/86	99/99/99	
410041	HARNESS ASSY, AC D	A	9	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	
341450-24	HSCR, PH 4-40x1.50	A	10	F	EA	2.00	1.000	0	0	05/22/86	99/99/99	
600010-04	CABLE ASSY, 10 PIN	F	11	B	EA	1.00	1.000	0	0	05/22/86	99/99/99	
420016	PANEL, REAR, DL NODE	B	12	P	EA	1.00	1.000	0	0	00/00/00	99/99/99	
340453-04	HSCR, PH 8-32x1/4"	A	13	F	EA	5.00	1.000	0	0	05/22/86	99/99/99	
610045	ASSY, FAN GND, DL NO	A	14	B	EA	1.00	1.000	0	0	05/22/86	99/99/99	
360005	FUSE, 1.6AMP SLO-B	A	15	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	INSERT INTO FUSE HOLDER OF THE LINE FILTER FOR 230 VOLT USAGE

ECN _____
 PAGE 16 of _____
 683

ASSEMBLY PART NUMBER? 640014-01
 11-FEB-1987 07:28

BILL OF MATERIALS REPORT

PAGE NO: 1

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SORTED BY ASSEMBLY PART NUMBER, ITEM NUMBER
 AS OF 02/11/87

CLASS CODE: 64
 TOP ASSY, KITS, OPTION, ACC.
 PART: 640014-01
 DESC: ASSY,F. COMPUTE N 68K20,115V

UOM: EA SC: M REV: G

COMPONENT PART	DESCRIPTION	ITEM RV	NUMBR	SC	ST UM	QTY PER ASSEMBLY	YIELD FACTR	ROUTE OFFSET		EFFECTIV DATE	INACTIVE DATE	REFERENCE INFORMATION
								TO SEQ	LEAD TIME			
620055-01	ASSY, CHASSIS DL NO B	1	X	EA		1.00	1.000	0		0 05/22/86	99/99/99	
590075	PCB ASSY, VME 6802 K	2	M	EA		1.00	1.000	0		0 05/22/86	99/99/99	
590031-01	PCB ASSY, VME HS ME C	3	M	EA		2.00	1.000	0		0 09/18/86	99/99/99	
430037-01 590099	PCBA, VME ENET 128K A	4	B	EA		1.00	1.000	0		0 10/02/86	99/99/99	
620054	ASSY, COVER DL NODE C	5	X	EA		1.00	1.000	0		0 05/22/86	99/99/99	
610054-10	ASSY, E-NET TRANSCV A	6	B	EA		1.00	1.000	0		0 05/22/86	99/99/99	
500012-02	H/W MAN, T/ASSY, DL A	7	X	EA		1.00	1.000	0		0 08/11/86	99/99/99	
320006	PWR CORD, UL SJT, 18 A	8	B	EA		1.00	1.000	0		0 05/22/86	99/99/99	
460017	CARTON/FOAM, DL NOD -	9	F	EA		1.00	1.000	0		0 05/22/86	99/99/99	
341453-20	MSCR, PH 8-32X1.25 A	10	F	EA		4.00	1.000	0		0 05/22/86	99/99/99	
430011	LABEL, SERIAL No.,	11	P	EA		1.00	1.000	0		0 05/22/86	99/99/99	
430041-03	LABEL, XTRACTOR EN B	12	B	EA		1.00	1.000	0		0 06/11/86	99/99/99	INSTALL IN R-N CARD EXTRACTOR
530005	LICENSE, ISI AGREE B	13	B	EA		1.00	1.000	0		0 09/01/86	99/99/99	SHIP WITH MANUALS
430007	MSCR, PH XTRACT, MS, B A	14	B	EA		2.00	1.000	0		0 10/02/86	99/99/99	OR ETHERNET BOARD 430077
370034	PCB EXTRACTOR, VME B	15	B	EA		2.00	1.000	0		0 10/02/86	99/99/99	

ECN _____
 PAGE 12 of 683

BILL OF MATERIALS REPORT

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SORTED BY ASSEMBLY PART NUMBER, ITEM NUMBER
AS OF 02/11/87

CLASS CODE: 64
TOP ASSY, KITS, OPTION, ACC.
PART: 640014-02
DESC: ASSY,F. COMPUTE N 68K20,230V

UOM: EA SC: M REV: G

COMPONENT PART	DESCRIPTION	RV	ITEM NUMBR	SC	ST UM	QTY PER ASSEMBLY	YIELD TO FACTR	ROUTE	OFFSET	EFFECTIV DATE	INACTIVE DATE	REFERENCE INFORMATION
								SEQ	LEAD TIME			
620055-02	ASSY,CHASSIS DL NO B		1	M	EA	1.00	1.000	0	0	05/22/86	99/99/99	
590075	PCB ASSY, VME 6802 K		2	M	EA	1.00	1.000	0	0	05/22/86	99/99/99	
590031-01	PCB ASSY,VME HS ME C		3	M	EA	2.00	1.000	0	0	09/18/86	99/99/99	
680027 590099	PCBA,VME ENET 128K A		4	B	EA	1.00	1.000	0	0	10/02/86	99/99/99	
620054	ASSY,COVER DL NODE C		5	X	EA	1.00	1.000	0	0	05/22/86	99/99/99	
610054-10	ASSY,E-NET TRANSCV A		6	B	EA	1.00	1.000	0	0	05/22/86	99/99/99	
500012-02	H/W MAN,T/ASSY,DL A		7	X	EA	1.00	1.000	0	0	08/11/86	99/99/99	
320006	PWR CORD,UL SJT,18 A		8	B	EA	1.00	1.000	0	0	05/22/86	99/99/99	
460017	CARTON/FOAM,DL NOD -		9	F	EA	1.00	1.000	0	0	05/22/86	99/99/99	
341453-20	MSCR, PH B-32X1.25 A		10	F	EA	4.00	1.000	0	0	05/22/86	99/99/99	
430011	LABEL, SERIAL No..		11	P	EA	1.00	1.000	0	0	05/22/86	99/99/99	
430011-02	LABEL,TRACTOR EN B		12	B	EA	1.00	1.000	0	0	05/11/86	99/99/99	INSTALL IN R.H. CARD EXTRACTOR
530005	LICENSE, ISI AGREE B		13	B	EA	1.00	1.000	0	0	09/01/86	99/99/99	SHIP WITH MANUALS
590075	PCB,PHI XREG,H20 A		14	B	EA	3.00	1.000	0	0	10/02/86	99/99/99	
670028	PCB EXTRACTOR, VME B		15	B	EA	2.00	1.000	0	0	10/02/86	99/99/99	

ECN _____
PAGE 18 of _____
BBB

MFG,RE,210,2 INTEGRATED SOLUTIONS, INC.
 11-FEB-1987 07:30

DATABASE: 133 REQUESTER: INTSOL
 PAGE NO: 1

BILL OF MATERIALS REPORT
 =====
 SORTED BY ASSEMBLY PART NUMBER, ITEM NUMBER
 AS OF 02/11/87

CLASS CODE: 64
 TOP ASSY, KITS, OPTION, ACC.
 PART: 640014-03
 DESC: ASSY,F. COMPUTE N 68K10,115V

UOM: EA SC: M REV: G

COMPONENT PART	DESCRIPTION	ITEM RV	NUMBR	SC	ST UM	QTY PER ASSEMBLY	YIELD TO FACTR	ROUTE OFFSET		EFFECTIV DATE	INACTIVE DATE	REFERENCE INFORMATION
								SEQ	LEAD TIME			
420055-01	ASSY,CHASSIS DL NO B	1	X	EA		1.00	1.000	0	0	00/00/00	99/99/99	
590056	PCB ASSY, VME 68K B	2	M	EA		1.00	1.000	0	0	00/00/00	99/99/99	
590031-01	PCB ASSY,VME HS ME C	3	M	EA		2.00	1.000	0	0	09/18/86	99/99/99	
430027-01 590099	PCBA,VME ENET 128K A	4	B	EA		1.00	1.000	0	0	10/02/86	99/99/99	
420054	ASSY,COVER DL NODE C	5	X	EA		1.00	1.000	0	0	00/00/00	99/99/99	
610054-10	ASSY,E-NET TRANSCV A	6	B	EA		1.00	1.000	0	0	00/00/00	99/99/99	
500012-01	H/W MAN,T/ASSY,DL A	7	M	EA		1.00	1.000	0	0	08/11/86	99/99/99	
320006	PWR CORD,UL SGT,18 A	8	B	EA		1.00	1.000	0	0	00/00/00	99/99/99	
460017	CARTON/FOAM,DL NOD -	9	F	EA		1.00	1.000	0	0	00/00/00	99/99/99	
341453-20	MSCR, PH 8-32X1.25 A	10	F	EA		4.00	1.000	0	0	00/00/00	99/99/99	
430011	LABEL, SERIAL No..	11	P	EA		1.00	1.000	0	0	00/00/00	99/99/99	
430011-03	LABEL,TRACTOR GEN B	12	B	EA		1.00	1.000	0	0	06/11/86	99/99/99	INSTALL IN A N CARB EXTRACTOR
530005	LICENSE, ISI AGREE B	13	B	EA		1.00	1.000	0	0	09/01/86	99/99/99	SHIP WITH MANUALS
410009	WOOD,PLN KREG,HOLE A	14	B	EA		2.00	1.000	0	0	10/02/86	99/99/99	ETHERNET BOARD (130009)
370036	PCB EXTRACTOR, VME B	15	B	EA		2.00	1.000	0	0	10/02/86	99/99/99	

ECN _____
 PAGE 19 of _____
 683

BILL OF MATERIALS REPORT

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SORTED BY ASSEMBLY PART NUMBER, ITEM NUMBER
 AS OF 02/11/87

CLASS CODE: 64
 TOP ASSY, KITS, OPTION, ACC.
 PART: 640014-04
 DESC: ASSY,F. COMPUTE N 68K10,230V

UOM: EA SC: M REV: G

COMPONENT PART	DESCRIPTION	ITEM RV NUMBR	ST SC	QTY PER UM ASSEMBLY	YIELD FACTR	ROUTE OFFSET		EFFECTIV DATE	INACTIVE DATE	REFERENCE INFORMATION
						TO SEQ	LEAD TIME			
620055-02	ASSY,CHASSIS DL NO B	1	M EA	1.00	1.000	0	0	00/00/00	99/99/99	
590056	PCB ASSY, VME 68K G	2	M EA	1.00	1.000	0	0	00/00/00	99/99/99	
590031-01	PCB ASSY,VME HS ME C	3	M EA	2.00	1.000	0	0	09/18/86	99/99/99	
620054-01 590099	PCBA,VME ENET 128K A	4	B EA	1.00	1.000	0	0	10/02/86	99/99/99	
620054	ASSY,COVER DL NOD C	5	X EA	1.00	1.000	0	0	00/00/00	99/99/99	
610054-10	ASSY,E-NET TRANSCV A	6	B EA	1.00	1.000	0	0	00/00/00	99/99/99	
500012-01	H/W MAN,T/ASSY,DL A	7	M EA	1.00	1.000	0	0	08/11/86	99/99/99	
320006	PWR CORD,UL SJT,18 A	8	B EA	1.00	1.000	0	0	00/00/00	99/99/99	
460017	CARTON/FOAM,DL NOD -	9	F EA	1.00	1.000	0	0	00/00/00	99/99/99	
341453-20	MSCR, PH 8-32X1.25 A	10	F EA	4.00	1.000	0	0	00/00/00	99/99/99	
430011	LABEL, SERIAL No.,	11	P EA	1.00	1.000	0	0	00/00/00	99/99/99	
450001-03	LABEL,EXTRACTOR IEN B	12	B EA	1.00	1.000	0	0	08/11/86	99/99/99	INSTALL IN R.H. CAB EXTRACTOR
530005	LICENSE, ISI AGREE B	13	B EA	1.00	1.000	0	0	09/01/86	99/99/99	SHIP WITH MANUALS
540007	MSCR,FLX WREC,N2 B A	14	B EA	1.00	1.000	0	0	10/02/86	99/99/99	ETHERNET BOARD 450007
570008	PCB EXTRACTOR, VME B	15	B EA	1.00	1.000	0	0	10/02/86	99/99/99	

ECN _____
 PAGE 20 of _____
 1083

MFG,RE:210,2 INTEGRATED SOLUTIONS, INC.
11-FEB-1987 08:50

DATABASE: 133 REQUESTER: INTSOL
PAGE NO: 1

BILL OF MATERIALS REPORT

SORTED BY ASSEMBLY PART NUMBER, ITEM NUMBER
AS OF 02/11/87

CLASS CODE: 50
MANUALS, H/W, S/W TOP-ASSEMBLY
PART: 500012-01
DESC: H/W MAN,T/ASSY,DL NODE 68K10

UOM: EA SC: M REV: A

COMPONENT PART	DESCRIPTION	RV	ITEM NUMBER	SC	ST UM	QTY PER ASSEMBLY	YIELD FACTR	ROUTE TO		EFFECTIV DATE	INACTIVE DATE	REFERENCE INFORMATION
								SEQ	OFFSET TIME			
490020	MANUAL,68K10 HARDW	B	1	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	SHIPS WITH MANUAL SET
490024	MANUAL,REF HSNEM	B	2	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	SHIPS WITH MANUAL SET
490062	MAN, OPTIMUH V D.L	A	3	X	EA	1.00	1.000	0	0	00/00/00	99/99/99	SHIPS WITH MANUAL SET
490012 490127	SUMMARY,VME ETHERN	B	4	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	SHIPS WITH MANUAL SET

ECN
PAGE 21 of
BB3

MFG,RE,210,2 INTEGRATED SOLUTIONS, INC.
11-FEB-1987 08:51

DATABASE: 133 REQUESTER: INTSOL
PAGE NO: 1

BILL OF MATERIALS REPORT

SORTED BY ASSEMBLY PART NUMBER, ITEM NUMBER
AS OF 02/11/87

CLASS CODE: 50
MANUALS, H/W, S/W TOP-ASSEMBLY
PART: 500012-02
DESC: H/W MAN,T/ASSY,DL NODE 68K20

UOM: EA SC: X REV: *y*

COMPONENT PART	DESCRIPTION	ITEM RV NUMBR	SC	ST UN	QTY PER ASSEMBLY	YIELD FACTR	ROUTE	OFFSET	EFFECTIV DATE	INACTIVE DATE	REFERENCE INFORMATION	
							TO SEQ	LEAD TIME				
490024	MANUAL,REF HSHEK	B	1	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	SHIPS WITH MANUAL SET
490062	MAN, OPTIMUM V D.L	A	2	X	EA	1.00	1.000	0	0	00/00/00	99/99/99	SHIPS WITH MANUAL SET
490104 490127	SUMMARY,VNE ETHERN	B	3	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	SHIPS WITH MANUAL SET
490103	MANUAL,REF 68K20	A	4	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	SHIPS WITH MANUAL SET

ECN _____
PAGE 22 of _____
683

SORTED BY ASSEMBLY PART NUMBER, ITEM NUMBER
AS OF 02/10/87

CLASS CODE: 59
PRINTED CIRCUIT BOARD ASSY
PART: 590099
DESC: PCB ASSY, VME ETHERNET

UOM: EA SCI M REV: A

COMPONENT PART	DESCRIPTION	ITEM RV NUMBR	SC	UM	ST QTY PER ASSEMBLY	YIELD FACTR	ROUTE TO SEQ	OFFSET LEAD TIME	EFFECTIV DATE	INACTIVE DATE	REFERENCE INFORMATION
101004	RES FXD MF 1/4W 30 A	1	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	R6,7
101005	RES FXD MF 1/4W 75 A	2	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	R1
105123	RES FXD MF 1/4W 12 A	3	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	R4
105182	RES FXD MF 1/4W 1. A	4	B	EA	1.00	1.000	0	0	01/06/87	99/99/99	R5
105202	RES FXD MF 1/4W 2K A	5	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	R3
120005	RES SIP PAX 4R 22 B	6	B	EA	4.00	1.000	0	0	00/00/00	99/99/99	RN3,5,8,9
120006 120010	RES SIP PAX 4R 40. A	7	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	RN1
120006	RES SIP PAX 7R 220 A	8	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	RN2
120021	RES SIP PAX 9R 3.3 A	9	B	EA	3.00	1.000	0	0	00/00/00	99/99/99	RN6,10,11
120022	RES SIP PAX 7R 3.3 A	10	B	EA	3.00	1.000	0	0	00/00/00	99/99/99	RN4,7,12
130005	CAP CER FXD 470 PF A	11	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	C41
130006	CAP CER FXD 120PF A	12	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	C42
130104-01	CAP CER FXD .1UF 5 A	13	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	C35,43
130103-01	CAP CER FXD .01UFD A	14	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	C5
130334	CAP CER FXD .33UFD A	15	B	EA	59.00	1.000	0	0	00/00/00	99/99/99	C1,3,6-34,36-40,44-66
131001	CAP TANT, 10uFD 20 A	16	P	EA	1.00	1.000	0	0	00/00/00	99/99/99	C4
131006	CAP, TANT 10uFd 10 A	17	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	C2
140005	DIODE 1N4148 A	18	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	CR1
140006	LED RED 3931 A	19	B	EA	6.00	1.000	0	0	00/00/00	99/99/99	DS1-6
170006	OSC 40MHZ TTL OUTP B	20	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	4A
170024	DELAY LINE 250NS 1 A	21	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	7E
170025	DELAY LINE 20NS 3 A	22	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	8B
180003	XFMR ENET ISOLATIO A	23	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	T1
190030	IC RAH UPD41464 64 A	24	B	EA	8.00	1.000	0	0	00/00/00	99/99/99	10H,10J,9H,9J,10K,10L,9K,9L
200037	IC 74S37 4-2 INPUT A	25	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	5D
200038	IC,TTL,QUAD TWO-IN C	26	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	3C,1F
200051	IC 74S51 2-2WIDE/2 A	27	B	EA	4.00	1.000	0	0	00/00/00	99/99/99	2D,7F,6B,6C
200064	IC 74S64 4/2/3/2 I A	28	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	1B
200133	IC 74S133 13 INPUT A	29	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	5P
200244	IC 74S244 8-3ST NO A	30	B	EA	4.00	1.000	0	0	00/00/00	99/99/99	3E,4N,4F,10E
210014	IC 74LS14 HEX INV, C	31	B	EA	3.00	1.000	0	0	00/00/00	99/99/99	1D,5J,5R
210113	IC 74LS113 DUAL J- A	32	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	2C
210148	IC 74LS148 8TO3 OC A	33	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	7J
210244	IC 74LS244 8-3 ST B	34	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	10C,10D
210273	IC 74LS273 8-D F/F A	35	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	10B
210393	IC 74LS393 2-4BIT A	36	B	EA	3.00	1.000	0	0	00/00/00	99/99/99	1E,3F,2F
230024	IC 68000010, 16BIT A1	37	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	4K
230033	IC AH7990DC ENET C A	38	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	1L
230034	IC AH7992ADC ENET A	39	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	3J
240001	IC,TTL,HEX INV,OC, A	40	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	3H
250004	IC 74F04,HEX INVER B	41	B	EA	3.00	1.000	0	0	00/00/00	99/99/99	5E,4E,3D
250008	IC 74F08 B	42	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	2E,3F
250010	IC 74F10 3-3INPUT B	43	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	1C
250011	IC 74F11 3-3 INPUT A	44	B	EA	3.00	1.000	0	0	00/00/00	99/99/99	7B,3N,5H
250153	IC 74F153 2-4TO1 H A	45	B	EA	4.00	1.000	0	0	00/00/00	99/99/99	7N,8K,8M,8N
250032	IC 74F32 QUAD 2 IN B	46	B	EA	3.00	1.000	0	0	00/00/00	99/99/99	4D,4F,6D
250038	IC 74F38 4-2 INPUT A	47	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	4H
250074	IC 74F74 2-D F/F + A	48	B	EA	7.00	1.000	0	0	00/00/00	99/99/99	6E,6F,10A,7A,7C,7D,1A
250113	IC 74F113 DUAL J-K A	49	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	5B,5C
250158	IC 74F158 4-2TO1 H A	50	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	8J
250163	IC, 74F163 BINARY A	51	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	4C

ECN _____
PAGE 23 of _____
683

BILL OF MATERIALS REPORT

SORTED BY ASSEMBLY PART NUMBER, ITEM NUMBER
AS OF 02/10/87

CLASS CODE: 59
PRINTED CIRCUIT BOARD ASSY
PART: 590099
DESC: PCB ASSY, VME ETHERNET

UOM: EA SC: M REV: A

COMPONENT PART	DESCRIPTION	RV	ITEM NUMBR	SC	ST UH	QTY PER ASSEMBLY	YIELD TO FACTR	ROUTE OFFSET		EFFECTIV DATE	INACTIVE DATE	REFERENCE INFORMATION
								LEAD SEQ	TIME			
250174	IC,TTL,HEX D FF W/ C		52	B	EA	4.00	1.000	0	0	00/00/00	99/99/99	6A,6H,6P,7H
250240	IC 74F240 8-3ST IN A		53	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	4J
250244	IC 74F244 8-3ST NO A		54	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	9B,5A
250245-01	IC 74F245 SIGNETIC A1		55	B	EA	10.00	1.000	0	0	00/00/00	99/99/99	9H,9N,9P,9R,10H,10N,10P,10R, 1P,1R 1J,1K
250373	IC,TTL,OCT TRAN LA A		56	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	7R,2R
250521	IC,TTL,8 BIT COMPA B		57	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	P1,P2
260010-96	CONN,MALE RT ANG 9 B		58	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	J2
260004-16	CONN HDR 16PIN R/A A		59	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	E47
260000-01	HDR PIN, .025"SQ, A		60	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	E40-43
260001-02	HDR STRIP STROHT 2 A		61	B	EA	4.00	1.000	0	0	00/00/00	99/99/99	E44-46,E31-39
260001-03	HDR STRIP STROHT 3 A		62	B	EA	4.00	1.000	0	0	00/00/00	99/99/99	E28-30,E48,E5-12
260002-08	HDR STRIP STROHT 8 A		63	B	EA	3.00	1.000	0	0	00/00/00	99/99/99	E13-19
260002-14	HDR STRIP STROHT 1 A		64	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	E21-27
260002-16	HDR STRIP STROHT 1 A		65	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	
349007	HSCR,FLH XREC,M2.5 A		66	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	
370036	PCB EXTRACTOR, VME B		67	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	F1
360008	FUSE,PICO,1.5A @ 1 A		68	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	
520063	SCHEMATIC,VME ETHE A3		70	X	EA	0.00	1.000	0	0	00/00/00	99/99/99	
580055	PCB, VME ETHERNET A		71	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	
680010	SOCKET,IC,24 PIN, B		72	B	EA	3.00	1.000	0	0	00/00/00	99/99/99	1H,5N,5T
680003	SOCKET, IC 18 PIN A		73	B	EA	8.00	1.000	0	0	00/00/00	99/99/99	10H,10J,9H,9J,10K,10L,9K,9L
680006	SOCKET, IC 28 PIN A		74	B	EA	2.00	1.000	0	0	00/00/00	99/99/99	8E,8C
680008	SOCKET, IC 48 PIN A		75	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	1L
680009	SOCKET, IC 64 PIN A		76	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	4K
690446-01	IC 74ALS646-1 8-XC A		77	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	1N
750127-01	IC EPROM EC EN1.0E A1		78	X	EA	1.00	1.000	0	0	00/00/00	99/99/99	8E
750127-02	IC EPROM EC EN1.00 A1		79	X	EA	1.00	1.000	0	0	00/00/00	99/99/99	8C
750124	IC PAL EC RSTLNCE A1		80	X	EA	1.00	1.000	0	0	00/00/00	99/99/99	1H
750125	IC PAL EC SELREF A1		81	X	EA	1.00	1.000	0	0	00/00/00	99/99/99	5N
750126	IC PAL EC UPADR A1		82	X	EA	1.00	1.000	0	0	00/00/00	99/99/99	5T
430061-03	LABEL,XTRACTOR 'EN B		83	B	EA	1.00	1.000	0	0	00/00/00	99/99/99	SEE ASSY DWG
270002-02	JUMPER PLUG, 2 POS A		84	B	EA	10.00	1.000	0	0	00/00/00	99/99/99	E31-32,E35-36,E37-38, E41-1 TO E41-2,E42-1 TO E42-2, E22-1 TO E22-2,E16-1 TO E16-2, E45-44,E29-1 TO E29-2, E30-1 TO E30-2
105332	RES 3.3K 1/4		85		EA	1.00						R2

ECN
PAGE 23A 19
01
1083

ECN 616
 2 ~~300~~ / 4
 page 1

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IF (VCC) RST = VJMPL * VA17 * CTLSEL * /EXTEND
                * VAM5 * VAM2 * /VIACK
                * VA3 * VA2 * VA1
                * /VAM1 * VAM0
+ VJMPL * VA17 * CTLSEL * /EXTEND
  * VAM5 * VAM2 * /VIACK
  * VA3 * VA2 * VA1
  * VAM1 * /VAM0
+ VJMPH * VJMPL * VA17 * CTLSEL * EXTEND
  * /VAM5 * VAM2 * /VIACK
  * VA3 * VA2 * VA1
  * /VAM1 * VAM0
+ VJMPH * VJMPL * VA17 * CTLSEL * EXTEND
  * /VAM5 * VAM2 * /VIACK
  * VA3 * VA2 * VA1
  * VAM1 * /VAM0

IF (VCC) IRQ = VJMPL * VA17 * CTLSEL * /EXTEND
                * VAM5 * VAM2 * /VIACK
                * VA3 * VA2 * /VA1
                * /VAM1 * VAM0
+ VJMPL * VA17 * CTLSEL * /EXTEND
  * VAM5 * VAM2 * /VIACK
  * VA3 * VA2 * /VA1
  * VAM1 * /VAM0
+ VJMPH * VJMPL * VA17 * CTLSEL * EXTEND
  * /VAM5 * VAM2 * /VIACK
  * VA3 * VA2 * /VA1
  * /VAM1 * VAM0
+ VJMPH * VJMPL * VA17 * CTLSEL * EXTEND
  * /VAM5 * VAM2 * /VIACK
  * VA3 * VA2 * /VA1
  * VAM1 * /VAM0

IF (VCC) VSEL = VJMPL * VAM5 * VAM2 * /VIACK * /EXTEND
                * /VAM1 * VAM0
+ VJMPL * VAM5 * VAM2 * /VIACK * /EXTEND
  * VAM1 * /VAM0
+ VJMPH * VJMPL * /VAM5 * VAM2 * /VIACK * EXTEND
  * /VAM1 * VAM0
+ VJMPH * VJMPL * /VAM5 * VAM2 * /VIACK * EXTEND
  * VAM1 * /VAM0

IF (VCC) IACK = VIACK * /VA3 * /VA2 * VA1
                * /IACK3 * /IACK2 * IACK1
+ VIACK * /VA3 * VA2 * /VA1
  * /IACK3 * IACK2 * /IACK1
+ VIACK * /VA3 * VA2 * VA1
  * /IACK3 * IACK2 * IACK1
+ VIACK * VA3 * /VA2 * /VA1
  * IACK3 * /IACK2 * /IACK1
+ VIACK * VA3 * /VA2 * VA1
  * IACK3 * /IACK2 * IACK1
+ VIACK * VA3 * VA2 * /VA1
  * IACK3 * IACK2 * /IACK1
+ VIACK * VA3 * VA2 * VA1
  * IACK3 * IACK2 * IACK1
  
```

FUNCTION TABLE

/VJMPH /VJMPL /CTLSEL IACK3 IACK2 IACK1 VA3 VA2 VA1 VA17
 VAM5 VAM2 VAM1 VAM0 /EXTEND /VIACK /RST /IRQ /VSEL /IACK

```

; / / / /
; / / C / E /
; V V T I I I X V / /
; J J L A A A V V V V V T I / / V I
  
```



```
;M M S C C C V V V A A A A A E A R I S A
;P P E K K K A A A 1 M M M M N C S R E C
;H L L 3 2 1 3 2 1 7 5 2 1 0 D K T Q L K
```

; Interrupt acknowledge

```
X X X L L H L L H X X X X X X L H H H L
X X X L H L L H L X X X X X X L H H H L
X X X L H H L H H X X X X X X L H H H L
X X X H L L H L L X X X X X X L H H H L
X X X H L H H L H X X X X X X L H H H L
X X X H L H H L X X X X X X L H H H L
X X X H H H H H X X X X X X L H H H L
```

; Soft reset

```
X L L X X X H H H H H H L H H L H L H
X L L X X X H H H H H H L H H H L H L H
L L L X X X H H H H H L H H L L H L H
L L L X X X H H H H L H L H L H L H L H
```

; Interrupt request

```
X L L X X X H H L H H H H L H H H L L H
X L L X X X H H L H H H L H H H H L L H
L L L X X X H H L H L H H L L H H L L H
L L L X X X H H L H L H L H H L L H
```

; Dual port memory access

```
X L L X X X X X X X H H H L H H X X L H
X L L X X X X X X X H H L H H H X X L H
L L L X X X X X X X L H H L L H X X L H
L L L X X X X X X L H L H L H X X L H
```

; Timeout if address size doesn't match jumpered size

```
X X X X X X X X X X L X X X H X H H X
X X X X X X X X X H X X X L X H H H X
```

DESCRIPTION

This PAL decodes the dual port memory select and various control functions from the VME address lines VA1-VA3, VA17-VA23, the VME address modifiers, VAM0-VAM5, and the signal /CTLSEL. It also decodes an interrupt acknowledge from /VIACK and VA1-VA3. A signal dictionary follows.

/CTLSEL This signal is equal to

$$/(VA16 * VA15 * VA14 * VA13 * VA12 * VA11 * VA10 * VA9 * VA8 * VA7 * VA6 * VA5 * VA4).$$

It is used to place control functions at the top of the dual port address space.

/VJMPH This signal indicates a decode of the upper 8 VME address bits jumpered for the board.

/VJMPL This signal indicates a decode of the lower VME address and address modifier bits jumpered for the board. VA23-VA18 and VAM2-VAM3 may be jumpered.

/VIACK This is the VME signal VIACK* which indicates an interrupt acknowledge in progress.

/RST This signal puts the board into reset after access of the reset location in the dual port control space. The board may be taken out of reset by accessing the interrupt request location in the dual port control space.

/IRQ This signal causes an interrupt request to the 68000 after access of the interrupt request location in dual port control space.

/VSEL This signal indicates that the VME bus is accessing the dual port memory, and triggers an arbitration sequence.

/IACK This signal becomes active during a VME interrupt acknowledge sequence for the interrupt level present

on jumpers IACK1-IACK3.

/EXTEND

This signal is connected to a jumper. If the jumper is installed, the board recognizes 32-bit or extended addresses. Otherwise, the board recognizes 24-bit addresses.

440150-01 TAPE SRC EC 1.0
-02

FIRMWARE LISTING ON FILE
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PAL20L8
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SN

PAL DESIGN SPECIFICATION
9/26/86

VME Ethernet Card Select/Refresh PAL P/N 440168 REV A
Integrated Solutions, Incorporated, Boulder, CO
RRDTACK RWDTACK BA23 BA22 BA21 /RF100 BA20 BA19 BRW /RGRANT
/AS GND W3 W2 /SELROM /REFRESH /SELLNCE /CWRB /SELJMP /DTACK
/INTREQ /CWRA ROMDTCK VCC

```

IF (VCC) SELROM      = AS * /BA23 * /BA22 * /BA21 * BRW
IF (VCC) SELNCE      = AS * /BA23 * /BA22 * BA21
IF (VCC) SELJMP      = AS * BA23 * /BA22 * /BA21 * BRW
IF (VCC) CWRA        = AS * /BA23 * BA22 * BA21 * /BA20 * BA19
                      * W2 * /W3 * /BRW
IF (VCC) CWRB        = AS * /BA23 * BA22 * BA21 * BA20 * /BA19
                      * W2 * /W3 * /BRW
IF (VCC) INTREQ      = AS * /BA23 * BA22 * BA21 * BA20 * BA19
                      * W2 * /W3
IF (VCC) REFRESH     = RGRANT * /RF100
IF (/SELLNCE) DTACK  = AS * /BA23 * /BA21 * ROMDTCK ;ROM, DUMMY DMA
                      + AS * /BA23 * BA22 * BA21 * W3 ;CWRA, B, INTREQ
                      + AS * BA23 * /BA22 * W3 ;JUMPER, DUMMY 8530
                      + AS * BA23 * BA22 * /BA21 * W3 ;DUMMY VME
                      + AS * BA23 * BA22 * BA21 * /BRW * RWDTACK ;RAM WR
                      + AS * BA23 * BA22 * BA21 * BRW * RRDTACK ;RAM RD

```

FUNCTION TABLE

```

/AS BA23 BA22 BA21 BA20 BA19 BRW W2 W3 ROMDTCK RRDTACK
RWDTACK /RGRANT /SELROM /SELLNCE /SELJMP /CWRA /CWRB /INTREQ
/DTACK /REFRESH /RF100

```

	R	R	R	/	/	S	/	/	/	/	R
	O	R	W	R	S	E	S		I	/	E
	M	D	D	G	E	L	E	/	/	N	D
	D	T	T	R	L	L	L	C	C	T	T
/	A	A	A	A	R	N	J	W	W	R	A
A	2	2	2	2	1	R	W	W	C	C	C
S	3	2	1	0	9	W	2	3	K	K	K

```

;ROM read
L L L L X X H X X L X X X L H H H H H H X X
L L L L X X H X X H X X X L H H H H H L X X
;LANCE access
L L L H X X X X X X X H L H H H H Z X X
;Jumper read
L H L L X X H X L X X X X H H L H H H H X X
L H L L X X H X H X X X X H H L H H H L X X
;CWRA write
L L H H L H L L X X X X H H H H H H H X X
L L H H L H L L X X X X H H H L H H H X X
L L H H L H L H X X X X H H H H H H L X X
;CWRB write
L L H H H L L L X X X X H H H H H H H X X
L L H H H L L L X X X X H H H H L H H X X
L L H H H L L H H X X X X H H H H H H L X X
;Interrupt request
L L H H H H X L L X X X X H H H H H H H X X
L L H H H H X H L X X X X H H H H H L H X X
L L H H H H X H H X X X X H H H H H H L X X
;RAM read
L H H H X X H X X X L X X H H H H H H H X X
L H H H X X H X X X H X X H H H H H L X X
;RAM write
L H H H X X L X X X X L X H H H H H H H X X
L H H H X X L X X X X H X H H H H H L X X
;Refresh
X X X X X X X X X X X L X X X X X X L H
X X X X X X X X X X X L X X X X X X H L

```

```

X X X X X X X X X X X X H X X X X X X X H L
X X X X X X X X X X X X H X X X X X X X H H
-----

```

DESCRIPTION

This PAL generates the various selects needed on the board, generates a local DTACK*, and generates a refresh signal for the dynamic RAM. All signals are described below.

- BAnn These signals are part of the local address bus.
- Wn These signals are copies of the local address strobe delayed 'n' clocks.
- /AS This is the local address strobe.
- /RGRANT This signal indicates that the bus arbiter has just granted the dynamic RAM to the refresh circuit.
- /REFRESH This signal is the 'D' input to the flip flop which signals the dynamic RAM control circuit that a refresh is occurring.
- /RF100 This is a copy of REFRESH delayed 100 nanoseconds.
- RxDTACK These signals become active when a local DTACK to a RAM access is to be issued. One is for read, and, you guessed it, the other is for write.
- ROMDTCK This signal is connected to the ROM speed jumper. It becomes active whenever a local DTACK is to be issued to a ROM access.
- BRW This signal is zero whenever a local write is occurring.

DESCRIPTION

This PAL generates the reset and bus request signals used on board. It also translates the LANCE data strobe protocol to the 68000 protocol, and it contains the set-reset flip-flop which stores the state of the card's VME SYSFAIL* signal.

The dual port arbiter is uncoupled to the local bus request logic except as far as the LANCE is concerned. Because the LANCE's /AS output changes asynchronously with respect to 10MHZCLK, it cannot be efficiently observed and used in the dual port arbitration logic. Therefore, the dual port arbiter is designed to simply become inactive whenever the HOLDSYN signal is active.

Should the dual port arbiter be granting the memory to a refresh or the VME bus, the local bus request logic cannot be allowed to acknowledge a HOLDSYN until the dual port arbiter has released the memory. For this reason the signals /VGRANT and /RGRANT are fed into the local bus request logic.

- VRESET This signal is a copy of the VME signal, SYSRESET*.
- /RSTSOFT This signal indicates that another VME master has put the board in soft reset.
- /AS This is the on-card address strobe.
- /INTREQ This signal is a 100-nanosecond pulse requesting a VME interrupt. It is used to set VIPEND.
- /IACKEN This signal drives the VME interrupt vector onto the VME bus. It is used to reset VIPEND.
- VIPEND This is the output of a set-reset flip flop indicating that a VME interrupt is pending.
- /BM0, /BM1, These are signals to and from the LANCE.
/DASLNCE
- /HLDAD This is the 'D' input to the flip flop which drives the LANCE /HLDA signal.
- /HOLDSYN This signal is a synchronized version of the LANCE /HOLD signal.
- /ASSYN This signal is a synchronized version of the 68000 address signal. (The trailing edge of the 68000 address strobe is not synchronous with 10MHZCLK.)
- /RGRANT This signal becomes active when the local arbiter has granted the RAM to the refresh logic.
- /VGRANT This signal becomes active when the local arbiter has granted the RAM to a VME bus master.
- /UDS, /LDS These are bidirectional data strobes translated from the LANCE strobe protocol.
- CWRA1, 9 These are bits in control write register A.
- RSTMAIN This signal resets the entire board during a VME reset or a soft reset requested by another VME bus master.
- /VPA This signal is the response to 68000 interrupt acknowledge cycles, causing the 68000 to do internal vectoring.
- /SYSFAIL This is a set-reset flip-flop, set on VME reset, and either set or reset using CWRA1 and CWRA9.
- /BG68K This is the bus grant signal from the 68000.

DESCRIPTION

This PAL generates the reset and bus request signals used on board. It also translates the LANCE data strobe protocol to the 68000 protocol, and it contains the set-reset flip-flop which stores the state of the card's VME SYSFAIL* signal.

The dual port arbiter is uncoupled to the local bus request logic except as far as the LANCE is concerned. Because the LANCE's /AS output changes asynchronously with respect to 10MHZCLK, it cannot be efficiently observed and used in the dual port arbitration logic. Therefore, the dual port arbiter is designed to simply become inactive whenever the HOLDSYN signal is active.

Should the dual port arbiter be granting the memory to a refresh or the VME bus, the local bus request logic cannot be allowed to acknowledge a HOLDSYN until the dual port arbiter has released the memory. For this reason the signals /VGRANT and /RGRANT are fed into the local bus request logic.

- VRESET This signal is a copy of the VME signal, SYSRESET*.
- /RSTSOFT This signal indicates that another VME master has put the board in soft reset.
- /AS This is the on-card address strobe.
- /INTREQ This signal is a 100-nanosecond pulse requesting a VME interrupt. It is used to set VIPEND.
- /IACKEN This signal drives the VME interrupt vector onto the VME bus. It is used to reset VIPEND.
- VIPEND This is the output of a set-reset flip flop indicating that a VME interrupt is pending.
- /BM0, /BM1, These are signals to and from the LANCE.
/DASLNCE
- /HLDAD This is the 'D' input to the flip flop which drives the LANCE /HLDA signal.
- /HOLDSYN This signal is a synchronized version of the LANCE /HOLD signal.
- /ASSYN This signal is a synchronized version of the 68000 address signal. (The trailing edge of the 68000 address strobe is not synchronous with 10MHZCLK.)
- /RGRANT This signal becomes active when the local arbiter has granted the RAM to the refresh logic.
- /VGRANT This signal becomes active when the local arbiter has granted the RAM to a VME bus master.
- /UDS, /LDS These are bidirectional data strobes translated from the LANCE strobe protocol.
- CWRA1, 9 These are bits in control write register A.
- RSTMAIN This signal resets the entire board during a VME reset or a soft reset requested by another VME bus master.
- /VPA This signal is the response to 68000 interrupt acknowledge cycles, causing the 68000 to do internal vectoring.
- /SYSFAIL This is a set-reset flip-flop, set on VME reset, and either set or reset using CWRA1 and CWRA9.
- /BG68K This is the bus grant signal from the 68000.

PAL20L8

PAL DESIGN SPECIFICATION

PAT000

9/11/86

VME Ethernet Card Upper Address PAL

P/N 440149 REV A

(5T) 750126

Integrated Solutions, Incorporated, Boulder, CO

VAM0 VAM2 VAM1 /VJMPL /CTLSEL VAM5 IACK3 IACK2 IACK1 /EXTEND

/VJMPH GND VA2 VA1 /IACK VA3 NC NC VA17 /IRQ /RST /VSEL

/VIACK VCC

```

IF (VCC) RST = VJMPL * VA17 * CTLSEL * /EXTEND
                * VAM5 * VAM2 * /VIACK
                * VA3 * VA2 * VA1
                * /VAM1 * VAM0
+ VJMPL * VA17 * CTLSEL * /EXTEND
                * VAM5 * VAM2 * /VIACK
                * VA3 * VA2 * VA1
                * VAM1 * /VAM0
+ VJMPH * VJMPL * VA17 * CTLSEL * EXTEND
                * /VAM5 * VAM2 * /VIACK
                * VA3 * VA2 * VA1
                * /VAM1 * VAM0
+ VJMPH * VJMPL * VA17 * CTLSEL * EXTEND
                * /VAM5 * VAM2 * /VIACK
                * VA3 * VA2 * VA1
                * VAM1 * /VAM0

```

```

IF (VCC) IRQ = VJMPL * VA17 * CTLSEL * /EXTEND
                * VAM5 * VAM2 * /VIACK
                * VA3 * VA2 * /VA1
                * /VAM1 * VAM0
+ VJMPL * VA17 * CTLSEL * /EXTEND
                * VAM5 * VAM2 * /VIACK
                * VA3 * VA2 * /VA1
                * VAM1 * /VAM0
+ VJMPH * VJMPL * VA17 * CTLSEL * EXTEND
                * /VAM5 * VAM2 * /VIACK
                * VA3 * VA2 * /VA1
                * /VAM1 * VAM0
+ VJMPH * VJMPL * VA17 * CTLSEL * EXTEND
                * /VAM5 * VAM2 * /VIACK
                * VA3 * VA2 * /VA1
                * VAM1 * /VAM0

```

```

IF (VCC) VSEL = VJMPL * VAM5 * VAM2 * /VIACK * /EXTEND
                * /VAM1 * VAM0
+ VJMPL * VAM5 * VAM2 * /VIACK * /EXTEND
                * VAM1 * /VAM0
+ VJMPH * VJMPL * /VAM5 * VAM2 * /VIACK * EXTEND
                * /VAM1 * VAM0
+ VJMPH * VJMPL * /VAM5 * VAM2 * /VIACK * EXTEND
                * VAM1 * /VAM0

```

```

IF (VCC) IACK = VIACK * /VA3 * /VA2 * VA1
                 * /IACK3 * /IACK2 * IACK1
+ VIACK * /VA3 * VA2 * /VA1
                 * /IACK3 * IACK2 * /IACK1
+ VIACK * /VA3 * VA2 * VA1
                 * /IACK3 * IACK2 * IACK1
+ VIACK * VA3 * /VA2 * /VA1
                 * IACK3 * /IACK2 * /IACK1
+ VIACK * VA3 * /VA2 * VA1
                 * IACK3 * /IACK2 * IACK1
+ VIACK * VA3 * VA2 * /VA1
                 * IACK3 * IACK2 * /IACK1
+ VIACK * VA3 * VA2 * VA1
                 * IACK3 * IACK2 * IACK1

```

FUNCTION TABLE

/VJMPH /VJMPL /CTLSEL IACK3 IACK2 IACK1 VA3 VA2 VA1 VA17
VAM5 VAM2 VAM1 VAM0 /EXTEND /VIACK /RST /IRQ /VSEL /IACK

```

;      /
;/     /  C      /
;V    V  T  I  I  I      X  V      /  /
;J    J  L  A  A  A      V  V  V  V  V  T  I  /  /  V  I

```

```

;M M S C C C V V V A A A A A E A R I S A
;P P E K K K A A A 1 M M M M N C S R E C
;H L L 3 2 1 3 2 1 7 5 2 1 0 D K T Q L K
-----
; Interrupt acknowledge
X X X L L H L L H X X X X X X L H H H L
X X X L H L L H L X X X X X X L H H H L
X X X L H H L H H X X X X X X L H H H L
X X X H L L H L L X X X X X X L H H H L
X X X H L H H L H X X X X X X L H H H L
X X X H H L H H L X X X X X X L H H H L
X X X H H H H H X X X X X X L H H H L
; Soft reset
X L L X X X H H H H H H L H H L H L H
X L L X X X H H H H H L H H L H L H
L L L X X X H H H H L H L L H L H L H
L L L X X X H H H L H L H L H L H L H
; Interrupt request
X L L X X X H H L H H H L H H H L L H
X L L X X X H H L H H H L H H H L L H
L L L X X X H H L H L H L L H H L L H
L L L X X X H H L H L H L H H L L H
; Dual port memory access
X L L X X X X X X X H H H L H H X X L H
X L L X X X X X X X H H L H H H X X L H
L L L X X X X X X X L H H L L H X X L H
L L L X X X X X X L H L H L H X X L H
; Timeout if address size doesn't match jumpered size
X X X X X X X X X X L X X X H X H H H X
X X X X X X X X X X H X X X L X H H H X
-----

```

DESCRIPTION

This PAL decodes the dual port memory select and various control functions from the VME address lines VA1-VA3, VA17-VA23, the VME address modifiers, VAM0-VAM5, and the signal /CTLSEL. It also decodes an interrupt acknowledge from /VIACK and VA1-VA3. A signal dictionary follows.

- /CTLSEL This signal is equal to

$$/(VA16 * VA15 * VA14 * VA13 * VA12 * VA11 * VA10 * VA9 * VA8 * VA7 * VA6 * VA5 * VA4).$$
 It is used to place control functions at the top of the dual port address space.
- /VJMPH This signal indicates a decode of the upper 8 VME address bits jumpered for the board.
- /VJMPL This signal indicates a decode of the lower VME address and address modifier bits jumpered for the board. VA23-VA18 and VAM2-VAM3 may be jumpered.
- /VIACK This is the VME signal VIACK* which indicates an interrupt acknowledge in progress.
- /RST This signal puts the board into reset after access of the reset location in the dual port control space. The board may be taken out of reset by accessing the interrupt request location in the dual port control space.
- /IRQ This signal causes an interrupt request to the 68000 after access of the interrupt request location in dual port control space.
- /VSEL This signal indicates that the VME bus is accessing the dual port memory, and triggers an arbitration sequence.
- /IACK This signal becomes active during a VME interrupt acknowledge sequence for the interrupt level present

on jumpers IACK1-IACK3.

/EXTEND

This signal is connected to a jumper. If the jumper is installed, the board recognizes 32-bit or extended addresses. Otherwise, the board recognizes 24-bit addresses.

X X X X X X X X X X X X H X X X X X X X H L
X X X X X X X X X X X X H X X X X X X X H H

DESCRIPTION

This PAL generates the various selects needed on the board, generates a local DTACK*, and generates a refresh signal for the dynamic RAM. All signals are described below.

- BAnn These signals are part of the local address bus.
- Wn These signals are copies of the local address strobe delayed 'n' clocks.
- /AS This is the local address strobe.
- /RGRANT This signal indicates that the bus arbiter has just granted the dynamic RAM to the refresh circuit.
- /REFRESH This signal is the 'D' input to the flip flop which signals the dynamic RAM control circuit that a refresh is occurring.
- /RF100 This is a copy of REFRESH delayed 100 nanoseconds.
- RxDTACK These signals become active when a local DTACK to a RAM access is to be issued. One is for read, and, you guessed it, the other is for write.
- ROMDTCK This signal is connected to the ROM speed jumper. It becomes active whenever a local DTACK is to be issued to a ROM access.
- BRW This signal is zero whenever a local write is occurring.