digital

RH11-Ø

Engineering Drawings

Digital Equipment Corporation

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

DRAWING DIRECTORY

CUSTOMER PRINT SET INDEX

THIS IS PRINT SET

SEQUENCE	
DRAWING DIRECTORY RH11	B-DD-RH11-Ø
RH11 UNIT ASSEMBLY	D-UA-RH11-Ø-Ø
WIRED ASSEMBLY (RH11)	D-AD-7009397-0-0
MODULE UTILIZATION	D-MU-RH11-Ø-Ø1
BUS CONTROL	D-CS-M7295-Ø-1
CONTROL & STATUS REG	D-CS-M7296-Ø-1
DATA BUFFER & CONTROL	D-CS-M7294-Ø-1
PARITY CONTROL	D-CS-M7297-Ø-1
MASSBUS TRANSCEIVER	D-BS-RH11-Ø-Ø2
UNIBUS A CABLE DIAGRAM	D-IC-RH11-Ø-Ø3
UNIBUS B CABLE DIAGRAM	D-IC-RH11-Ø-Ø4
WRITE UNIBUS TIMING DIAGRAM	D-TD-RH11-Ø-Ø5
READ + WRITE CHECK UNIBUS (TIMING DIAGRAM)	D-TD-RH11-Ø-Ø6
WRITE MASSBUS TIMING DIAGRAM	D-TD-RH11-Ø-Ø7
READ + WRITE CHECK MASSBUS (TIMING DIAGRAM)	D-TD-RH11-Ø-Ø8
WRITE COMMAND FLOW DIAGRAM	D-FD-RH11-Ø-Ø9
READ COMMAND FLOW DIAGRAM	D-FD-RH11-Ø-1Ø
WRITE CHECK COMMAND FLOW DIAGRAM	D-FD-RH11-Ø-11
UNIBUS TERMINATOR (BUS B)	D-CS-M93ØØ-Ø-1
CONTROLLER TRANSCEIVER	D-CS-M59Ø4-Ø-1
GRANT CONTINUITY	B-CS-G727-Ø-1
MASSBUS TERMINATOR	D-CS-H87Ø-Ø-1
UNIBUS CONNECTOR	C-CS-M92Ø-Ø-1
POWER FAIL DRIVER	D-CS-M688-Ø-1
CIRCUIT SCHEMATIC	D-CS-5410506-0-1
WIRE LIST	K-WL-RH11-Ø-12
AWT REVISION STATUS	A-WT-7009397-0
RH11 POWER HARNESS (15 PIN)	D-IA-7009570-0-0
POWER HARNESS (15 PIN)	D-IA-7009563-0-0

UNIT VARIATIONS

VAR	TITLE	PRINT SET: RH11-Ø			
RH11-AB	DUAL UNI PORT MASSBUS CONTROL	X			

REVISIONS

REV	CHG. NO.	DATE
A	RH11-1	[illegible]
B	RH11-2	[illegible]
C	RH11-3	[illegible]
D	RH11-4	[illegible]
E	RH11-5	[illegible]
F	RH11-6	[illegible]
H	RH11-7	[illegible]
J	RH11-8	

USED ON OPTION/MODEL

SHEET 1 OF 2

DRN. P.J. [illegible]	DATE 9/11/73	
CHK'D. P.J. [illegible]	DATE 9/17/73	
PROJ ENG. [illegible]	DATE 9-12-73	
PROD. [illegible]	DATE [illegible]	
FIELD SERV. [illegible]	DATE 9/17/7[illegible]	

TITLE MASS BUS CONTROLLER (RH11-Ø)

SIZE	CODE	NUMBER	REV
B	DD	RH11-Ø	J

DIST

DEC 16-(325)-1062-1A-R972

DRB 106

ELECTRICAL

CUSTOMER PRINT SET RH11-Ø	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
X		1	D-UA-RH11-Ø-Ø	B	1	RH11 UNIT ASSEMBLY	
X			D-MU-RH11-Ø-Ø1	B	1	MODULE UTILIZATION	
X			D-BS-RH11-Ø-Ø2	B	3	MASSBUS TRANSCEIVER	
X			D-IC-RH11-Ø-Ø3	*	1	UNIBUS A CABLE DIAGRAM	
X			D-IC-RH11-Ø-Ø4	*	1	UNABUS B CABLE DIAGRAM	
X			D-TD-RH11-Ø-Ø5	A	1	WRITE UNIBUS (TIMING DIAGRAM)	
X			D-TD-RH11-Ø-Ø6	A	1	READ + WRITE CHECK UNIBUS	
						(TIMING DIAGRAM)	
X			D-TD-RH11-Ø-Ø7	*	1	WRITE MASSBUS (TIMING DIAGRAM)	
X			D-TD-RH11-Ø-Ø8	*	1	READ + WRITE CHECK MASSBUS	
						(TIMING DIAGRAM)	
X			D-FD-RH11-Ø-Ø9	A	1	WRITE COMMAND FLOW DIAGRAM	
X			D-FD-RH11-Ø-1Ø	A	1	READ COMMAND FLOW DIAGRAM	
X			D-FD-RH11-Ø-11	A	1	WRITE CHECK COMMAND FLOW DIAGRAM	
X			D-CS-M7295-Ø-1	#	10	BUS CONTROL	
X			D-CS-M7296-Ø-1	#	3	CONTROL & STATUS REG	
X			D-CS-M7294-Ø-1	#	9	DATA BUFFER & CONTROL	
X			D-CS-M7297-Ø-1	#	2	PARITY CONTROL	
X			D-CS-M93ØØ-Ø-1	#	2	UNIBUS TERMINATOR (BUS B)	
X			D-CS-M59Ø4-Ø-1	#	2	CONTROLLER TRANSCEIVER	
X			B-CS-G727-Ø-1	#	1	GRANT CONTINUITY	
X			D-CS-H87Ø-Ø-1	#	2	MASSBUS TERMINATOR	
X			C-CS-M92Ø-Ø-1	#	1	UNIBUS CONNECTOR	
X			D-CS-M688-Ø-1	#	2	POWER FAIL DRIVER	
X		2	D-AD-7009397-0-0	H	1	WIRED ASSEMBLY (RH11)	
X			K-WL-RH11-Ø-12	C	1	WIRE LIST	
X			A-WT-7009397-Ø	E	1	AWT REVISION STATUS	
X		3	D-CS-5410506-0-1	#	1	CIRCUIT SCHEMATIC	

MECHANICAL

CUSTOMER PRINT SET RH11-Ø	MFG SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
X		1	D-UA-RH11-Ø-Ø	A	1	RH11 UNIT ASSEMBLY	
X			D-IA-7009570-0-0	#	1	RH11 POWER HARNESS (15 PIN)	
X			D-IA-7009563-0-0	#	1	POWER HARNESS (15 PIN)	
			A-PL-H85Ø-Ø-Ø		1	HANDLE EXTENDER	
			D-IA-7009571-0-0		1	RH11 POWER HARNESS (9 PIN)	
			D-IA-7009099-0-0		1	POWER HARNESS (9 PIN)	
		2	D-AD-7009397-0-0	F	1	WIRED ASSEMBLY (RH11)	
			D-SC-1210258-0-0		1	CONN. BLOCK 288 PIN	
			A/D-PS-1211425-Ø		3	CONN. BLOCK 72 PIN	
			E-PS-1211439-0		1	11/05 LOGIC FRAME	
			A-SS-7407846-0-0		1	LOGIC SERIAL NO. LABELS	
			A-DC-7411881-0-1		1	DECAL,LOGIC ASSY	
			A-PI-3700040-0-0			PACKAGING INSTRUCTION	
		3	D-CS-5410506-0-1	#	1	CIRCUIT SCHEMATIC	
			K-CO-5410506-0-4		1	X-Y COORDINATE HOLE LOCATION	
			D-AH-5410506-0-5		1	ASSY DRILLING HOLE LAYOUT	
			B-MH-5410506-0-6		1	MODULE ECO HISTORY	
			5010505		1	ETCHED CIRCUIT BOARD	

CUSTOMER PRINT SET CODES

X = PRINT OF DOCUMENT INCLUDED IN PRINT SET
C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT
S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED

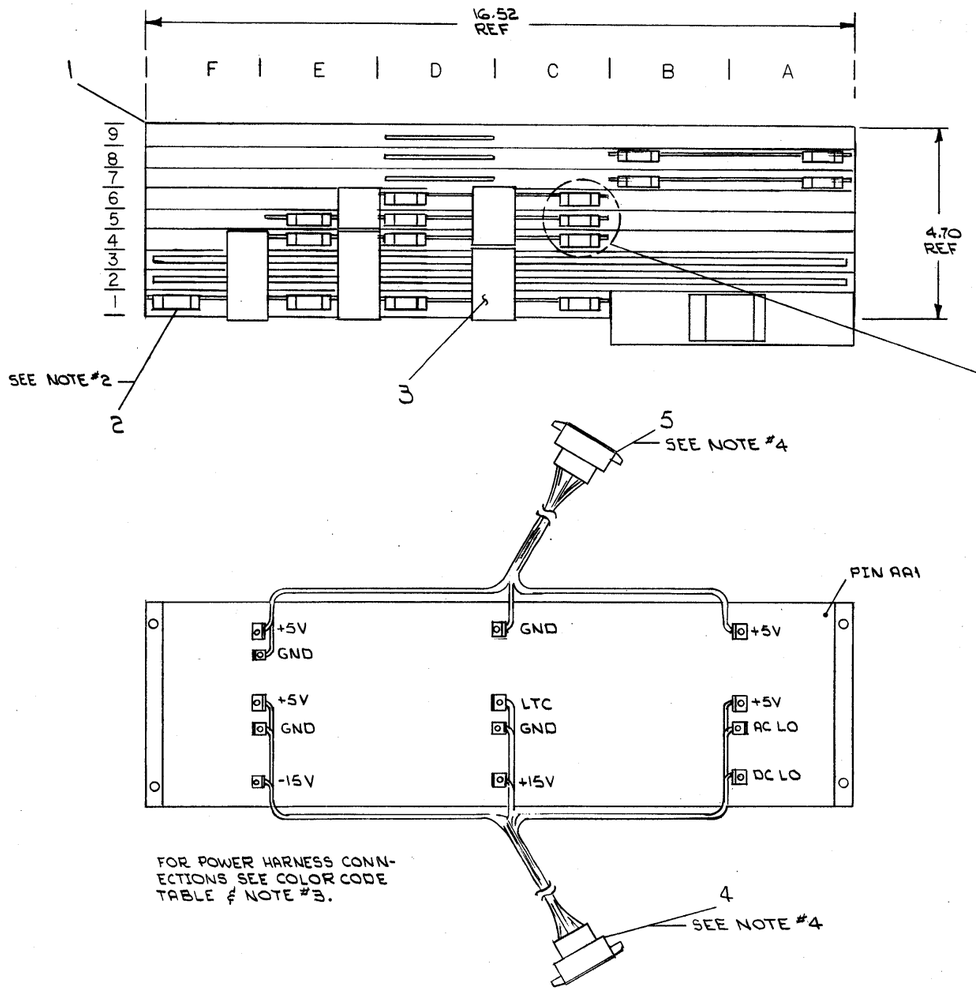
TITLE	SHEET	SIZE	CODE	NUMBER	REV
DRAWING DIRECTORY (RH11)	2 OF 2	B	DD	RH11-Ø	J

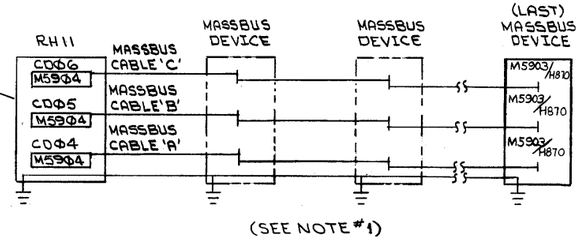
LEGEND	
VARIATION	DESCRIPTION
RH11-AB	DUAL UNIBUS PORT CONTROLLER FOR MASSBUS

POWER HARNESS COLOR CODE TABLE

WIRE COLOR	TAB CONN.
RED	+5V
BLK	GND
BLU	-15V
YEL	AC LO
VIO	DC LO
GRY	+15V
BRN	LTC

NOTES:
1. INSERT ONE H870 MASSBUS TERMINATOR MODULE IN J2 (ETCH SIDE OF H870 TO COMPONENT SIDE OF M5903) OF EACH OF THE M5903 MASSBUS TRANSCEIVER MODULES IN THE LAST MASSBUS DRIVE.
2. FOR MODULE LOCATION REFER TO: D-MU-RH11-0-01.
3. USE CAUTION WHEN ATTACHING POWER HARNESS CABLES AS NOT TO PINCH WIRES ON THE WIRED ASSY. OR SHORT POWER TABS TO WIRE WRAP PINS.
4. FOR 9 PIN POWER DISTRIBUTION SYSTEMS USE POWER HARNESSES D-IA-7009571-0-0 & D-IA-7009099-0-0 IN PLACE OF ITEMS #4 & 5.
5. COLORED EDGE OF MASSBUS CABLES SHOULD BE FACING MODULE HANDLE OF M5904 & M5903-YA.





	POWER HARNESS (9 PIN)	D-IA-7009099-0-0	REF
	RH11 POWER HARN. (9 PIN)	D-IA-7009571-0-0	REF
1	RH11 POWER HARN. (15 PIN)	D-IA-7009570-0-0	5
1	POWER HARNESS (15 PIN)	D-IA-7009563-0-0	4
5	MODULE HOLDER	1209856	3
1	MODULE UTILIZATION	D-MU-RH11-0-01	2
1	WIRED ASSY (RH11)	D-AD-7009397-0-0	1
QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

FIRST USED ON OPTION/MODEL: RH11

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1
ANGLES: 0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ∨

MATERIAL: —
FINISH: —

DRN. — DATE 1/17/73
ENGD. — DATE 1/17/73
ENG. — DATE 1-17-73
PROJ. ENG. — DATE 1-17-73
PROD. — DATE 1-17-73

NEXT HIGHER ASSY. B-DD-RH11-0

SCALE NONE
SHEET 1 OF

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
RH11
UNIT ASSEMBLY

SIZE	CODE	NUMBER	REV.
D	UA	RH11-0-0	B

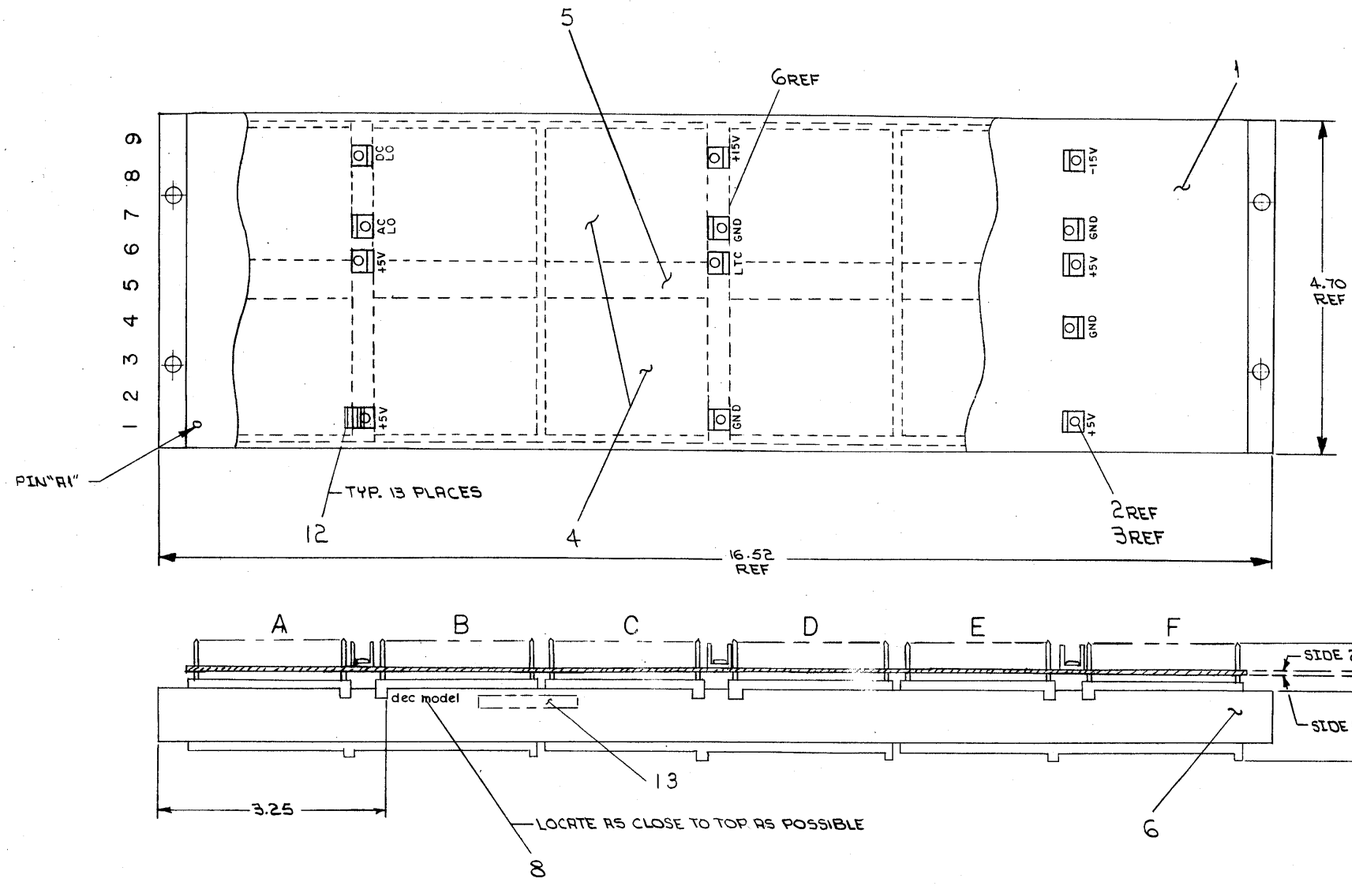
DIST.

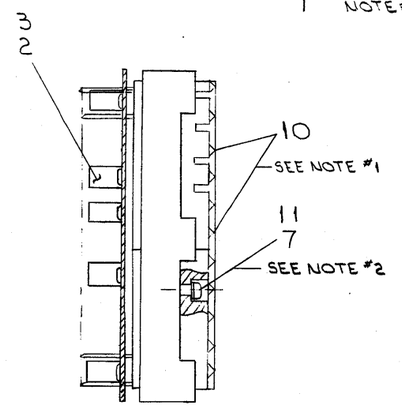
DIVISION	CHANGE NO.	REV.	CHK.	
	RH11-00004	A	RH	S. JENKINS 1-6-75
	RH11-00005	B	RH	S. JENKINS 1-24-75

DEC FORM NO. SRD 1052

SIZE D | CODE UA | NUMBER RH11-0-0 | REV B

NOTES:
1. CUT ITEM #10(CARD GUIDE), ON 6 SLOTS, EDGE TO 3 WITH 4 SLOTS @ 3 WITH 6 SLOTS.
2. AFTER WAVE SOLDER PROCEDURE, REPLACE ITEM #7(SCREWS) WITH ITEM #11 (SPECIAL SCREWS) WHEN INSTALLING ITEM #10(CARD GUIDES) CUT TO SPECIFICATIONS IN NOTE #1.





A/R	WIRE #30 TWP BLK & WHT	9107720-09	16
A/R	COMPRESS-O-CARTON	9905016-4	15
REF	PACKAGING INSTRUCTIONS	A-PI-3700040-0-0	14
1	DECAL LOGIC ASSY	A-DC-7411881-0-1	13
X	AWT REVISION STATUS	A-WT-7009397-0	REF
X	RHII BACK PANEL	D-CS-5410506-0-1	REF
X	WIRE LIST	KWL-RHII-0-12	REF
13	WIRE SHIELD	9009526	12
12	SCR, SELF TAPPING PHL SPECIAL HD. #8-32 x .810 LG	9009070-2	11
6	CARD GUIDE CENTER	1210698	10
A/R	WIRE #30 RWG SOLID KYNAR, YEL	9105740-44	9
1	LOGIC SERIAL NO. LABELS	A-SS7407846-0-0	8
15	SCR. PHL HD POSIDRIVE #8-32 x 5/8 LG	9006120-06	7
1	11/05 FRAME	1211439-0	6
3	CONN. BLOCK 72 PIN	1211425-0	5
6	CONN. BLOCK 288 PIN	D-SG1210258-0-0	4
13	EYELET	9009200	3
13	TAB, RIGHT ANGLE	9008219	2
1	ETCH CKT BOARD	5010505	1
QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

FIRST USED ON OPTION/MODEL	RH11
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES	
TOLERANCES	
DECIMALS	.xxx = .005, .xx = .02, .x = .1
ANGLES	0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	
MATERIAL	
FINISH	
DRN.	DATE 12-13-73
CHK'D.	DATE 12-13-73
ENG.	DATE 12-13-73
PROJ. ENG.	DATE 12-13-73
PROD.	DATE 12-13-73
NEXT HIGHER ASSY.	D UA-RH11-0-0
SCALE	NONE
SHEET	OF

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: WIRED ASSY (RH11)

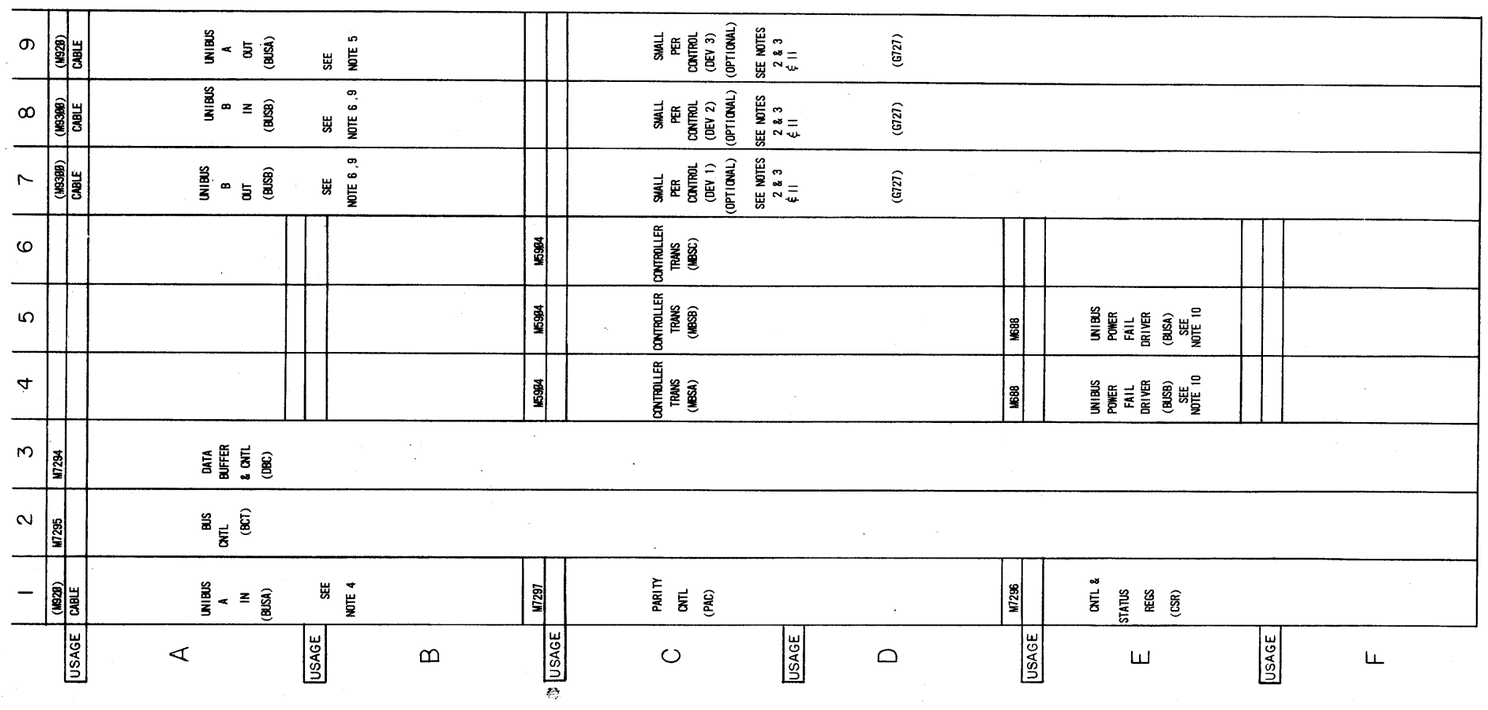
SIZE	CODE	NUMBER	REV.
D	AD	7009397-0-0	H

DISI.

REVISIONS	CHANGE NO	REV
CHK	RH11-00001	A
CHK	RH11-00002	B
CHK	RH11-00003	C
CHK	RH11-00004	D
CHK	RH11-00006	E
CHK	RH11-00007	F
CHK	RH11-00008	H

SIZE CODE DAD 7009397-0-0 REV H

FORM NO 12-C



VIEW FROM WIRING SIDE

NOTES:

1. VIEW OF LOGIC PANEL IS FROM WIRING SIDE.
2. THE SMALL PERIPHERAL CONTROLLER SLOTS MAY CONTAIN A VARIETY OF POP 11 OPTIONS. THE OPTION MAY CONSIST OF A SINGLE QUAD MODULE BOARD (SLOTS C,D,E, & F) OR A DOUBLE HEIGHT CONTROLLER BOARD (SLOTS C & D) WITH AN M105 ADDRESS SELECTOR MODULE (SLOT E) AND AN M7821 INTERRUPT CONTROL MODULE (SLOT F).
3. IF NO OPTION IS PRESENT IN THE SMALL PERIPHERAL CONTROLLER SLOTS, G727 GRANT CONTINUITY MODULE(S) MUST BE INSERTED IN SLOTS D.
4. MAY BE EITHER M920 (CONNECTION FROM ADJACENT DEVICE) OR BC11A CABLE (CONNECTION FROM ANOTHER BOX OR NON-ADJACENT DEVICE).
5. MAY BE M920 (CONNECTION TO ADJACENT DEVICE), M930 (TERMINATION AT END OF UNIBUS A), OR BC11A CABLE (CONNECTION TO NEXT BOX OR NON-ADJACENT DEVICE).
6. MAY BE M9300 (TERMINATION AT BEGINNING OR END OF UNIBUS B) OR BC11A CABLE (CONNECTION TO OTHER BUS B DEVICES).
7. FOR DIAGNOSTIC CHECKOUT AN M9208 CONNECTOR MODULE MAY BE PLACED IN SLOTS A,B Ø8 & Ø9, AN M930 OR BC11A CABLE IS THEN USED IN SLOT A,B Ø7.
8. ONE H870 MODULE WILL BE INSERTED IN J2 OF EACH OF THE M5903 MODULES IN THE LAST DRIVE UNIT ATTACHED TO THE MASSBUS CABLES ORIGINATING FROM THE M5904(S) IN THE RHII CONTROLLER BACKPLANE, WHEN BUILDING A MASSBUS SYSTEM.
9. IF NO UNIBUS B CABLE IS CONNECTED TO THE RHII ONLY ONE M9300 MODULE SHOULD BE USED IN SLOT A8Ø8.
10. IF ANOTHER DEVICE ATTACHED TO THE SAME POWER SUPPLY AS THE RHII HAS UNIBUS POWER FAIL SIGNALS WIRED TO THE UNIBUS REMOVE THE M688 MODULE FOR THAT BUS.
11. SMALL PER CONTROL SLOTS FOR MANUFACTURING USE ONLY
12. ONE H870 MODULE WILL BE INSERTED IN J1(COMPONENT SIDE OUT) OF EACH OF THE 3 M5904 MODULES FOR SHIPMENT ONLY !

QTY.	DESCRIPTION	PART NO.	ITEM NO.
1	BUS CNTL	D-CS-M7295-Ø-1	1
3	GRANT CONTINUITY	B-CS-G727-Ø-1	2
3	MASS BUS TERMINATOR	D-CS-H87Ø-Ø-1	3
1	PARITY CNTL	D-CS-M7297-Ø-1	4
1	CNTL & STATUS REG	D-CS-M7296-Ø-1	5
1	DATA BUFFER & CONTROL	D-CS-M7294-Ø-4	6
3	CONTROLLER TRANSCEIVER	D-CS-M5904-Ø-1	7
2	UNIBUS TERMINATOR (BUS B)	D-CS-M93ØØ-Ø-1	8
1	UNIBUS CONNECTOR	C-CS-M92Ø-Ø-1	9
2	POWER FAIL DRIVER	D-CS-M688-Ø-1	10
2	HANDLE EXTENDER	A-PL-H85Ø-Ø-Ø	11

PARTS LIST

FIRST USED ON OPTION/MODEL: RHII

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1 — ANGLES: 0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY
MATERIAL —
FINISH —

DRN. [signature] DATE 1/19/73
CHKD. [signature] DATE 1-30-73
ENG. DATE
PROJ. ENG. DATE
PROD. DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: MODULE UTILIZATION

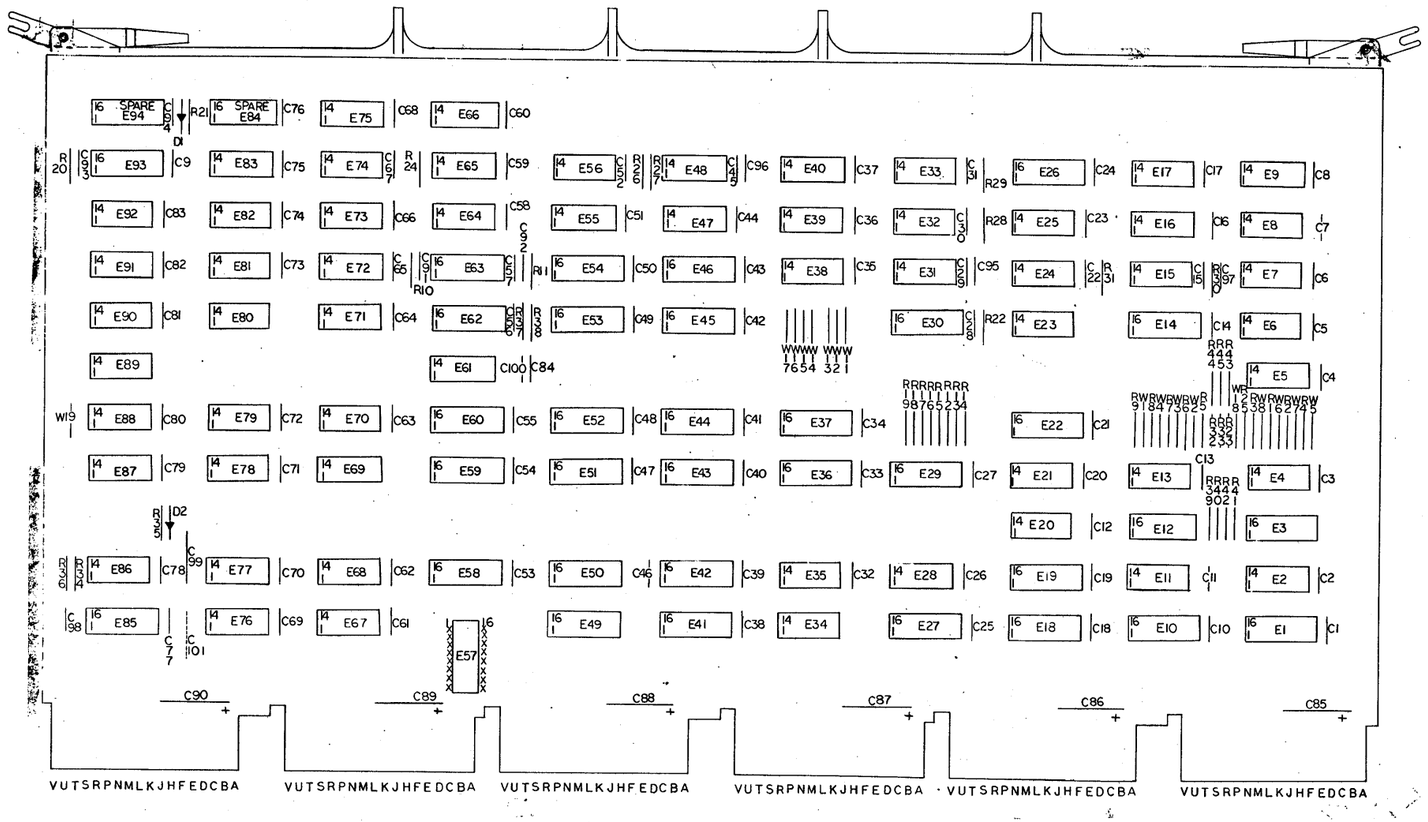
NEXT HIGHER ASSY. B-DD-RHII-Ø
SCALE NONE
SHEET 1 OF 1

SIZE D | CODE MU | NUMBER RHII-Ø-Ø1 | REV. B
DIST.

REVISIONS	CHK	CHANGE NO	REV
	[signature]	RHII-00004	A
	S. JENKINS	1-7-75	
	[signature]	RHII-00005	B
	S. JENKINS	1-28-75	

DEC FORM NO. DRD 102-C

NOTES:



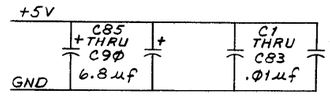
DEC 8223 PROM.	8	16
DEC 8234	8	16
DEC 8641	8	16
DEC 8640	1	8
DEC 745157	8	16
DEC 74123	8	16
DEC 74193	8	16
DEC 7485	8	16
IC TYPE	GND	+ 5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

AA2, BA2, CA2, DA2, EA2, FA2
AV1, BV1, CV1, DV1, EV1, FV1

AC2, BC2, CC2, DC2, EC2, FC2
AN2, BN2, CN2, DN2, EN2, FN2
AT1, BT1, CT1, DT1, ET1, FT1



REF				
REF		X-Y COORDINATE HOLE LOCATION	K-CO-M7295-0-4	1
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-M7295-0-5	2
REF		MODULE ECO HISTORY	B-MH-M7295-0-6	3
1		ETCHED CIRCUIT BOARD	5010428	4
1	C92	CAP 47 PF 5% 100V	1000011	5
2	C93, C95	CAP 100 PF 5% 300V	1000017	6
1	C98	CAP 180 PF 5% 100V	1000020	7
1	C94	CAP 220 PF 5% 100V	1000021	8
2	C96, C97	CAP 330 PF 5% 100V	1000023	9
1	E12	IC DEC 7485	1910224	10
2	C84, C100	CAP .001 UF 20% 250V	1000043	11
1	C99	CAP 39 UF 10% 10V S.TANT	1000076	12
83	C1 THRU C83	CAP .01 UF 20% 50V DISK	1001610-01	13
6	C85 THRU C90	CAP 6.8 UF 10% 35V S.TANT	1005306	14
1	C91	CAP 22 PF 5% 100V	1005820	15
2	D1, D2	DIODE D664	1100114	16
2	R26, R30	RES 47 5% 1/4W	1300202	17
5	R23, R32, R33, R37, R38	RES 390 5% 1/4W	1300309	18
26	R1 THRU R9, R12 THRU R19, R22, R25 R27 R36 R39 THRU R42, R31	RES 1K 5% 1/4W	1300365	19
6	R24, R28, R29 R43, R44, R45	RES 180 5% 1/4W	1301322	20
4	R10, R11, R20, R34	RES 5.6K 5% 1/4W	1301874	21
2	R21, R35	RES 27K 5% 1/4W	1305346	22
3	E66, E74, E86	I.C. DEC 7474	1905547	23
7	E7, E23, E68, E73, E80, E83, E89	I.C. DEC 7410	1905576	24
4	E32, E75, E77, E81	I.C. DEC 7402	1909004	25
5	E5, E17, E47, E82, E87	I.C. DEC 74H00	1909056	26
3	E21, E25, E91	I.C. DEC 74H11	1909287	27
6	E9, E56, E71, E90, E92, E8	I.C. DEC 74H74	1909667	28
10	E2, E11, E24, E28, E33, E34, E35, E40, E55, E85	I.C. DEC 8881	1909705	29
2	E4, E13	I.C. DEC 8242	1909712	30
1	E31	I.C. DEC 74H01	1909849-00	31
1	E38	I.C. DEC 7405	1909930	32
5	E6, E64, E70, E72, E78	I.C. DEC 74H04	1909831	33
13	E14, E22, E30, E36, E37, E42, E43, E45, E46, E50, E51, E53, E54	I.C. DEC 74193	1910019	34
2	E58, E62	I.C. DEC 7442	1910046	35
2	E69, E79	I.C. DEC 7437	1910091	36
3	E15, E48, E88	I.C. DEC 7408	1910155	37
3	E63, E85, E93	I.C. DEC 74123	1910436	38
1	E26	I.C. DEC 745157	1910548	39
2	E2, Q61	I.C. DEC 7427	1910878	40
4	E16, E39, E87, E76	I.C. DEC 8640	1911469	41
5	E1, E10, E19, E49, E27	I.C. DEC 8641	1911579	42
6	E41, E44, E49, E52, E59, E60	I.C. DEC 8234	1911315	43
1	E29	I.C. DEC 8223 PROM	23Ø4ØA1	44
1	(FOR E57)	I.C. SOCKET	1209838	45
1	E3	I.C. COMPONENT CARRIER	1211323	46
1		HANDLE	1210711-2	47
1	E57	PRIORITY JUMPER LEVEL #5	5408778	48
12		EYELET	9006732	49
17	W1-W5, W11-W19	INSULATED JUMPER	90C9185	50

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

ETCH BOARD REV C

FIRST USED ON OPTION MODEL: RH11

REV	CHANGE NO.	CHK
E	M7295-00004	S. JENKINS 6-2-75
D	M7295-00003	2-14-74
C	M7295-00002	S. JENKINS 2-14-74
B		
A	ORIGINATED	

REVISIONS

DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

DEC NO.	EIA NO.
D004	

NEXT HIGHER ASSY

DRN. R. Gault 7/26/73
CHK'D T. Hall 7-26-73
ENG. 7/26/73
PROJ. ENG. 7/26/73
PROD. 7/26/73
SCALE NONE
SHEET 1 OF 10

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: BUS CNTL MODULE (BCT)

SIZE D | CODE CS | NUMBER M7295-0-1 | REV. F
DIST.

NUMBER M7295-0-4 | REV. F | SIZE D | CODE CS

BRUNING 40-522 16699
DEC FORM NO. DRD-135A

SIZE D | CODE CS | NUMBER M7295-Ø-1 | REV F

BUSA MSYN L → 8640 E67 → BCTA MSYN H
BCTA LEGAL REG L →
BUSA A17 L → 8641 E18 → 74H11 E21
BUSA A16 L → 8641 E18 →
BUSA A15 L → 8641 E27 →
BUSA A14 L → 8641 E27 → 74H11 E21 → 741Ø E23
BUSA A13 L → 8641 E27 →
BUSA A12 L → 8641 E27 →
BUSA A11 L → 8641 E1Ø →
BUSA A1Ø L → 8641 E1Ø →
BUSA A09 L → 8641 E1Ø →
BUSA A08 L → 8641 E1Ø →
BUSA A07 L → 8641 E1 →
BUSA A06 L → 8641 E1 →
BUSA A05 L → 8641 E1 →
BUSA A04 L → 8641 E1 →
BUSA A03 L → 8641 E19 →
BUSA A02 L → 8641 E19 →
BUSA A01 L → 8641 E19 →

JUMPER = Ø
W1 A12 · W2 A11 · W3 A1Ø · W4 A09 · W5 A08 · W6 A07 · W7 A06 · W8 A05
→ 8242 E13 / 8242 E4
E3

+5V
R5 1K · R9 1K · R6 1K · R7 1K · R8 1K · R4 1K · R1 1K · R2 1K · R3 1K

BCTA DEV SEL L
BCTD +3V H
R1Ø 5.6K · C91 22pf · +5V
74123 EG3 85nS
BCTD +3V H
74H04 E78 → BCTA +3V H

BCTA DESK DEM (1) H
R11 5.6K · C92 47pf · +5V
74123 EG3 135nS
BCTA REG STR H
BCTA DESK DEM (Ø) H

BCTB DEV SEL H · BCTA DIR TRANS H → 7437 E79 → BCTA GATE CNTL H

BUSA C1 L → 8640 EG7
BUSA CØ L → 8640 EG7
BUSA AØ L → 8640 EG7 → 74H04 E7Ø → BCTA ODD BYTE L

BCTA ODD BYTE L → 741Ø EG8 → 7437 EG9 → BCTA HI BYTE H
→ 741Ø EG8 → 7437 EG9 → BCTA LO BYTE H
BCTA DEV SEL L → 74H02 E7Ø

BCTA LOC/REM H → 74H04 E78 → BCTA LOC/REM L
BCTA CØ L ← 74H04 E7Ø
BCTB DEV SEL H → 741Ø E83 → BCTA CNTL OUT L
BCTA DIR TRANS H
BCTA DIR TRANS L

7442 EG2 — BCD TO DECIMAL DECODER
D3 D2 D1 DØ → f9 f8 f7 f6 f5 f4 f3 f2 f1 fØ
BCTA WC OUT L · BCTA AS OUT L · BCTA CS1 OUT L · BCTA WC IN L · BCTA AS IN L · BCTA CS1 IN L

7442 E58 — BCD TO DECIMAL DECODER
BCTA CS2 OUT L · BCTA DB OUT L · BCTA BA OUT L · BCTA CS2 IN L · BCTA DB IN L · BCTA BA IN L

8223 E29 — 23Ø4ØA1 PROM
A4 A3 A2 A1 AØ → M7 M6 M5 M4 M3 M2 M1 MØ
R13 R14 R12 R15 1K +5V
R19 R18 R17 R16 1K +5V
BCTA LOC/REM H
BE2 BCTA RSEL 4 H
BD2 BCTA RSEL 3 H
BR1 BCTA RSEL 2 H
BCTB DEV SEL H · BS1 BCTA RSEL1 H · BU1 BCTA RSELØ H

7485 E12
B3 B2 B1 BØ · A<B A=B A>B
BCTF +3V H
74H04 E7Ø → BCTA LEGAL REG L
BCTA LEGAL REG H

E3
-16- -8- -4- -2-
R39 1K · R40 1K · R41 1K · R42 1K +5V

JUMPERS	SELECTS UP TO 16 REGS	SELECTS UP TO 32 REGS
E3(1-16) E3(2-15)	IN	OUT
E3(4-13) E3(3-14)	OUT	IN (W8 IN)
E3(8-9) E3(5-12) E3(7-10) E3(6-11)	EACH JUMPER OUT INDICATES THE NUMBER OF REGISTERS THAT CAN BE SELECTED	

FIRST USED ON OPTION/MODEL: RH11

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES: DECIMALS .xxx = .005, .xx = .02, .x = .1; ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ∨
MATERIAL — FINISH —

DRN. J. Vincent DATE 1-16-72 · CHK'D. DATE · ENG. DATE · PROJ. ENG. DATE · PROD. DATE
NEXT HIGHER ASSY.
SCALE — SHEET 2 OF 15

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

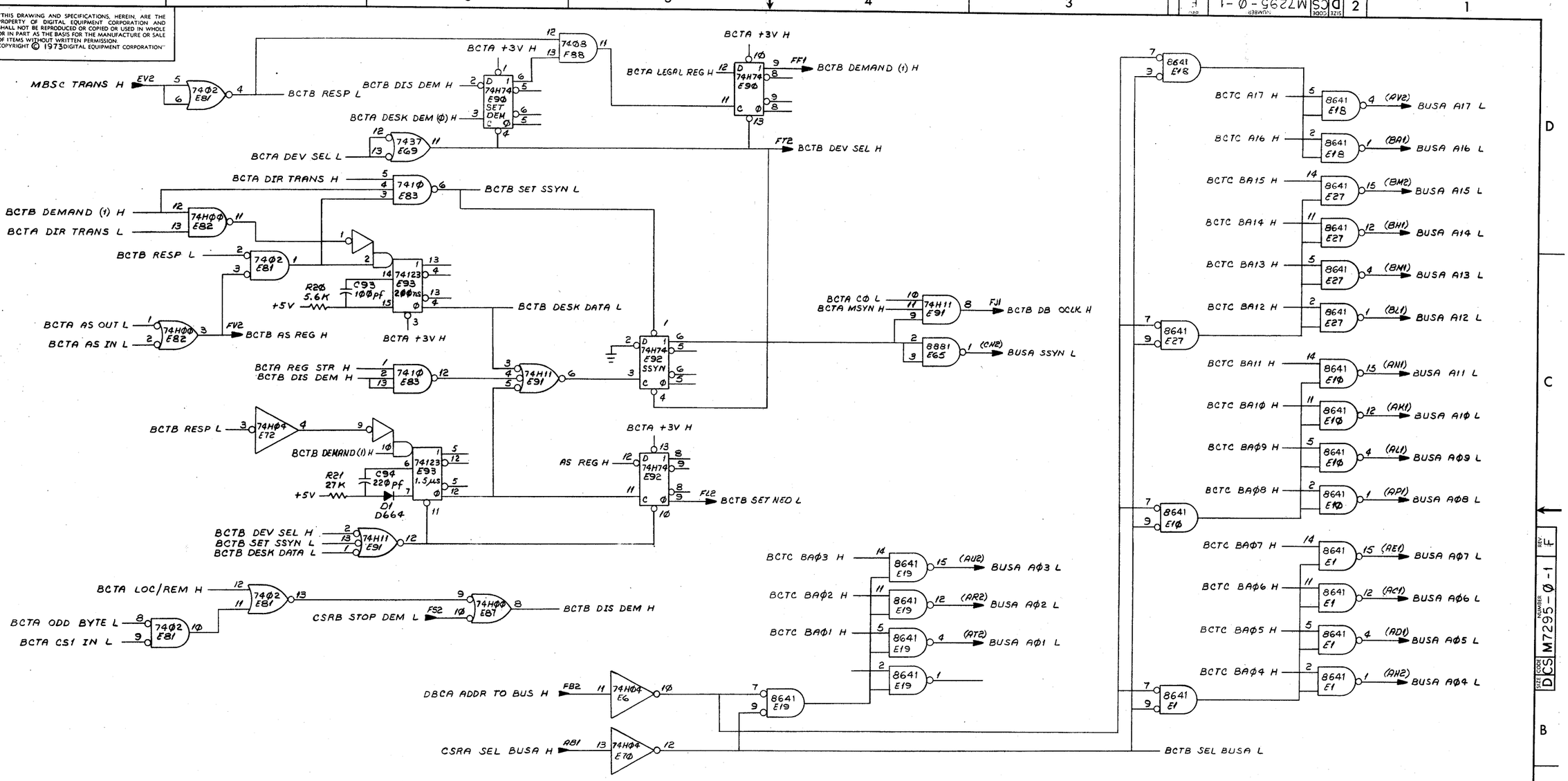
TITLE: BUS CNTL MODULE (BCTA)

SIZE D | CODE CS | NUMBER M7295-Ø-1 | REV F
DIST.

SLOT Ø2
REGISTER SELECTION

REVISIONS: REV | CHANGE NO | CHK

DEC FORM NO DRD 102-C



SLOT Ø2

UNIBUS A ADDR DRIVERS & SSYN;DEMAND

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS .xxx = .005 .xx = .02 .x = .1
ANGLES ±0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ▽
MATERIAL
FINISH

DRN. J. Weiss DATE 1-17-73
CHK'D. DATE
ENG. DATE
PROJ. ENG. DATE
PROD. DATE
NEXT HIGHER ASSY.
SCALE
SHEET 3 OF 10

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

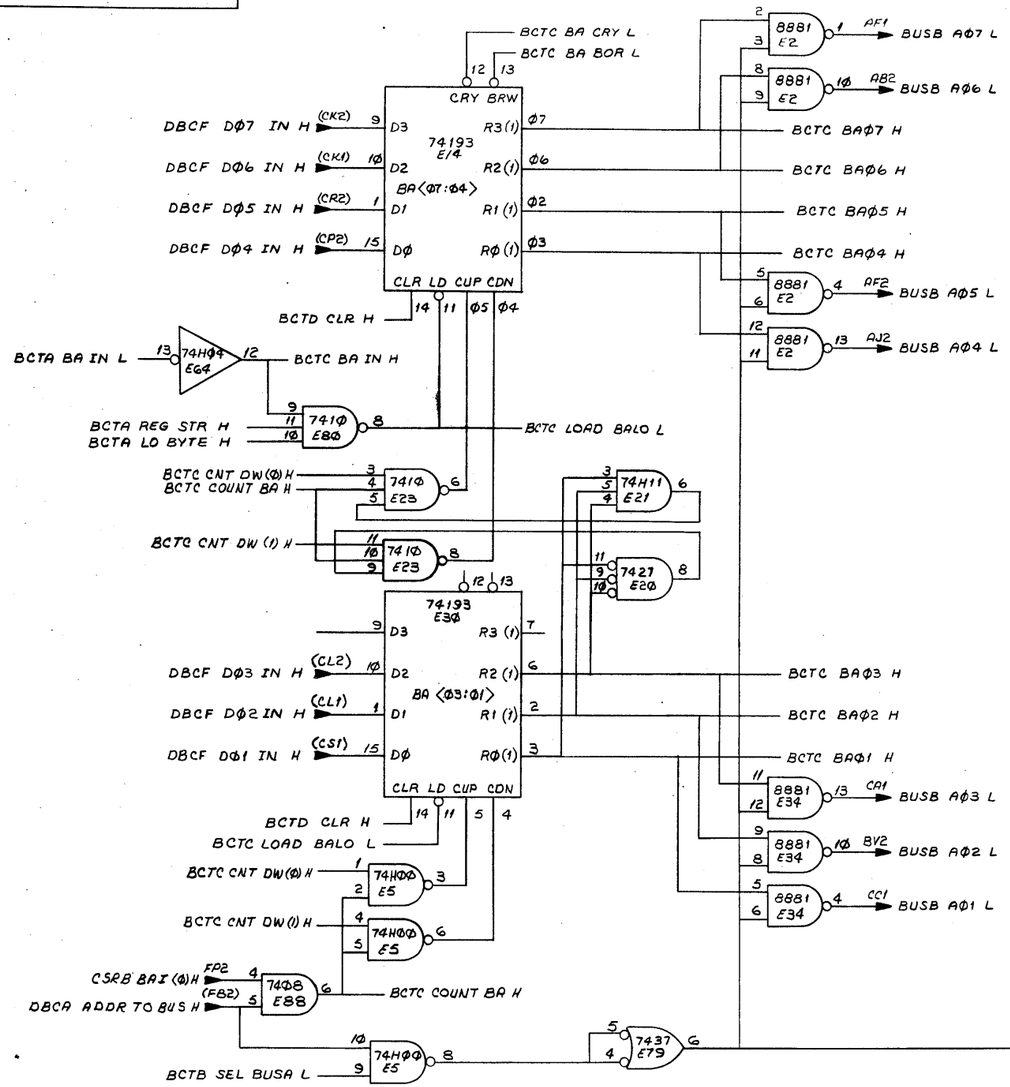
TITLE: BUS CNTL MODULE (BCTB)

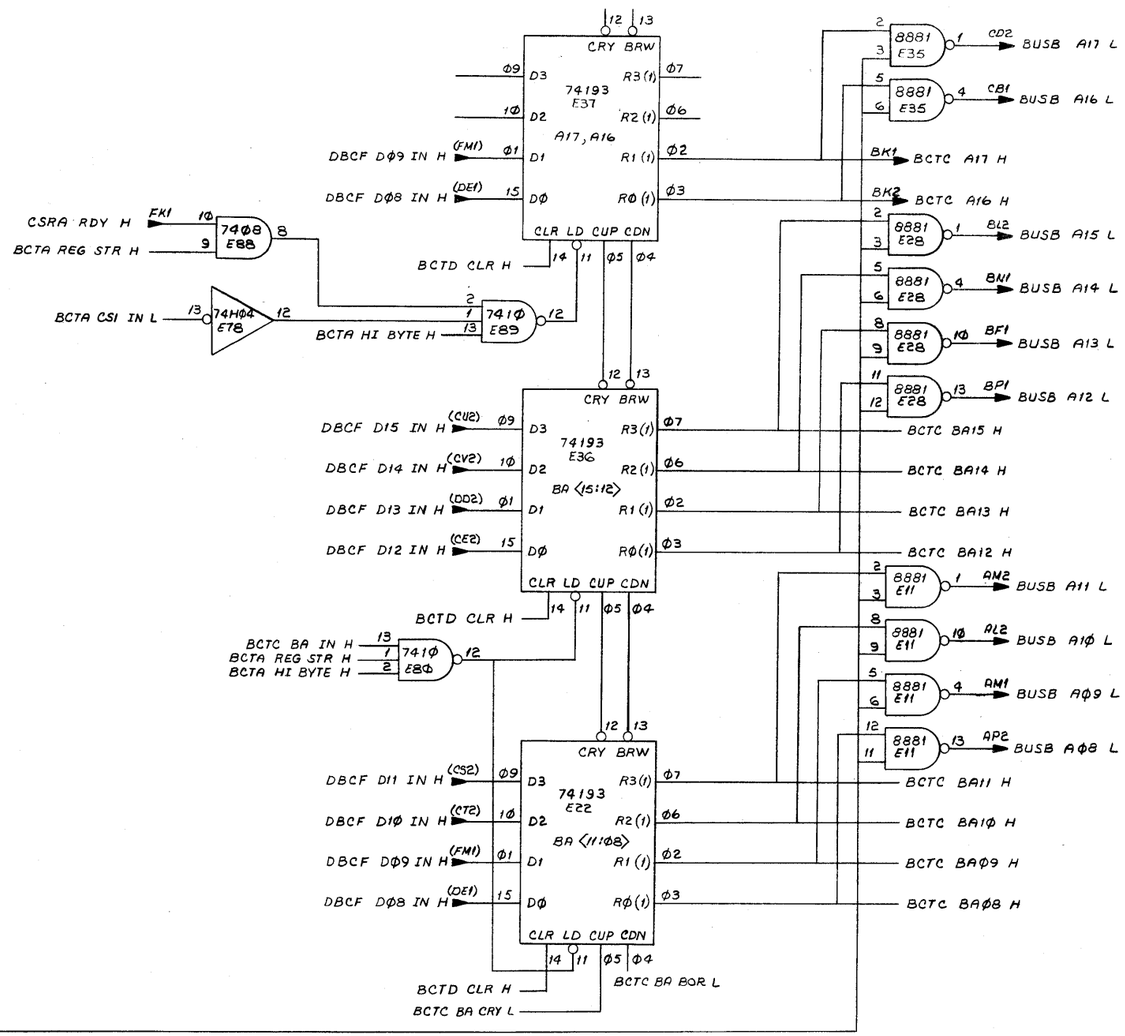
SIZE D | CODE CS | NUMBER M7295-Ø-1 | REV. F

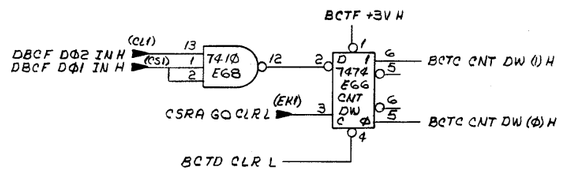
DIST.

REVISIONS: REV | CHANGE NO | CHK

DEC FORM NO DRD 102-C







SLOT Ø2
BUS ADDR REG

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES: DECIMALS .xxx = .005, .xx = .02, .x = .1; ANGLES ±0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ▽

DRN. J. Vincent	DATE 1-19-73	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHK'D.	DATE	
ENG.	DATE	
PROJ. ENG.	DATE	
PROD.	DATE	

TITLE: BUS CNTL MODULE (BCTC)

MATERIAL —"—
FINISH —"—
NEXT HIGHER ASSY. —"—
SCALE —"—
SHEET 4 OF 15

SIZE	CODE	NUMBER	REV.
D	CS	M7295-Ø-1	F

DIST.

REVISIONS	REV	CHANGE NO	CHK

DEC FORM NO. ORD 102-C

SIZE	CODE	NUMBER	REV
D	CS	M7295-Ø-1	F

SIZE D | CODE CS | NUMBER M7295-Ø-1 | REV F

DBCF DØ7 IN H
DBCF DØ6 IN H
DBCF DØ5 IN H
DBCF DØ4 IN H
DBCF DØ3 IN H
DBCF DØ2 IN H
DBCF DØ1 IN H
DBCF DØØ IN H
BCTD DRWC CRY L
BCTD WC CRY L
BCTA WC IN L
BCTD WC IN H
BCTA REG STR H
BCTA LO BYTE H
BCTD LOAD WC LO L
BCTD +3V H
BCTD +3V H
BCTD LOAD WCLO L
DBCB DRIVE CLK H
DBCB INC WC L
BUSA INIT L
BUSA DC LO L
BUSB DC LO L
CSRA SEL BUSA H
BUSB INIT L
BCTD INIT + DC LO L
CSRA GO CLR L
BCTD CLR + GO CLR H
CSRB PG CLR L
BCTD CLR H
BCTD B DC LO H
BCTD CLR L
BCTD CLRB H
BCTC BAØ7 H
BCTC BAØ6 H
BCTC BAØ5 H
BCTC BAØ4 H
BCTC BAØ3 H
BCTC BAØ2 H
BCTC BAØ1 H
BCTA WC OUT L
BCTA BA OUT L
BUSI DØ7 OUT L
BUSI DØ6 OUT L
BUSI DØ5 OUT L
BUSI DØ4 OUT L
BUSI DØ3 OUT L
BUSI DØ2 OUT L
BUSI DØ1 OUT L
BUSI DØØ OUT L

8234
OPEN COLLECTOR
MULTIPLEXOR

SØ	S1	OUTPUT
L	L	B→F (NOT USED)
L	H	B→F
H	L	A→F
H	H	OFF

SLOT Ø2
WORD COUNT REGS. <Ø8:ØØ> & CLR LOGIC

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1
ANGLES: ±0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY Y
MATERIAL
FINISH

		DATE
DRN.	J. Vincent	1-22-73
CHK'D.		
ENG.		
PROJ. ENG.		
PROD.		
NEXT HIGHER ASSY.		
SCALE		
SHEET	5 OF 10	

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: BUS CNTL MODULE (BCTD)

SIZE D | CODE CS | NUMBER M7295-Ø-1 | REV F | DIST.

REV	CHANGE NO	CHK

DEC FORM NO. DRD 102-C

SIZE D CODE CS NUMBER M7295-0-1 REV F

BCTD +3V H

BCTE DRWC OFLO (1) H

BCTE DRWC OFLO (Ø) H

BCTD CLR + GO CLR H

74H04 E72

DBCF DI5 IN H CU2
DBCF DI4 IN H CV2
DBCF DI3 IN H DD2
DBCF DI2 IN H CEE

74193 E51 — DRWC <15:12>

DBCF DI1 IN H CS2
DBCF DI0 IN H CT2
DBCF DØ9 IN H EM1
DBCF DØ8 IN H DE1

74193 E54 — DRWC <11:08>

BCTD WC IN H
BCTA REG STR H
BCTA HI BYTE H
74ID E73

BCTD DRWC CRY L

BCTD +3V H

BCTE WC OFLO (1) H

BCTE WC OFLO (Ø) H

74H04 E70 — ER2 BCTE LWRD H

74193 E50 — WC <15:12>

74193 E53 — WC <11:08>

BCTD WC CRY L

BCTD +3V H

DBCB DATA REQ L EU1

7474 E74

74Ø9 E48 — ES2 BCTE DONE (1) L

BCTJ TRE H

74H1Ø E89

BCTC BA15 H — 8234 E49 — f3 CU1 BUSI D15 OUT L
BCTC BA14 H — f2 DA1 BUSI D14 OUT L
BCTC BA13 H — f1 DC1 BUSI D13 OUT L
BCTC BA12 H — fØ DB1 BUSI D12 OUT L

S1 SØ Ø7 Ø9

BCTC BA11 H — 8234 E52 — f3 FU2 BUSI D11 OUT L
BCTC BAIØ H — f2 BF2 BUSI DIØ OUT L
BCTC BAØ9 H — f1 DD1 BUSI DØ9 OUT L
BCTC BAØ8 H — fØ CF1 BUSI DØ8 OUT L

BCTA WC OUT L
BCTA BA OUT L

SLOT Ø2
WORD COUNT REGS. <15:Ø8>

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1 — ANGLES: ±0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY √

DRN. J. Vincent	DATE 1-23-73	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHK'D.	DATE	
ENG.	DATE	
PROJ. ENG.	DATE	
PROD.	DATE	

MATERIAL
FINISH
NEXT HIGHER ASSY.
SCALE
SHEET 6 OF 10

TITLE: BUS CNTL MODULE (BCTE)

SIZE D | CODE CS | NUMBER M7295-Ø-1 | REV. F
DIST.

REVISIONS: REV | CHANGE NO | CHK

DEC FORM NO DRD 102-C

BUSA BG OUT H
BUSA BG7 IN H
BUSA BG6 IN H
BUSA BG5 IN H
BUSA BG4 IN H
BUSA BR L
PRIORITY JUMPER PLUG E57
DR1 DM2 DS2 DT2
DL2 DK2 DS1 DV2 ED1 ED2 EJ2 EA1
BCTF BG7 H
BCTF BG6 H
BCTF BG5 H
BCTF BG4 H
BUSA BG IN H
BUSA BR7 L
BUSA BR6 L
BUSA BR5 L
BUSA BR4 L

+5V R22 1K
74Ø5 E38
8881 E24
C95 100 pf
BE1
BUSA INTR L

BUSA NPR L (BD1)
+5V R25 1K
W18
8640 E16
74HØ4 E64

BCTF INTR MASTER L
74HØ4 E64
VECTOR ADDRESS JUMPER = "1"
74HØ1 E31
W11 V2 (CN1) BUSI DØ2 OUT L
W12 V3 (CM1) BUSI DØ3 OUT L
W13 V4 (BR2) BUSI DØ4 OUT L
W14 V5 (CD1) BUSI DØ5 OUT L
W15 V6 (CE1) BUSI DØ6 OUT L
W16 V7 (CF2) BUSI DØ7 OUT L
W17 V8 (CF1) BUSI DØ8 OUT L

CSRA INTR REQ H
CSRA IE (1) H
AS2
AU1
74HØØ E17
74Ø2 E75
R43 180
BCTF INTR DONE H
BUSA BG IN H
R23 39Ø
74HØØ E47
74Ø2 E32
74Ø8 E48
74H74 E56 GRANT
74H74 E56 SACK
74H74 E74 BBSY
BCTF +3V H
8881 E65
R24 180
BUSA BG OUT H
74Ø2 E75
8881 E55
R27 1K
R26 47
C96 330 pf
(DE2) BUSA SACK L
74HØØ E97
74Ø8 E98
(BS2) BUSA BBSY L
BCTH SSYN IN H
BCTH BBSY IN H
BCTF INTR MASTER L

BCTH SSYN IN H
74Ø8 E15
AD2 BCTF INTR DONE H

SLOT Ø2
INTERRUPT CNTL

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11	PARTS LIST			

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1
ANGLES: ·0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

		DATE
DRN. J. Vincent		1-24-73
CHK'D.		DATE
ENG.		DATE
PROJ. ENG.		DATE
PROD.		DATE

MATERIAL —"—
FINISH —"—
NEXT HIGHER ASSY.
SCALE —"—
SHEET 7 OF 10

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
BUS CNTL MODULE (BCTF)

SIZE	CODE	NUMBER	REV.
D	CS	M7295-Ø-1	F

DIST.

REVISIONS | REV | CHANGE TO | CHK

DEC FORM NO ORD 102-C

DBCB DATA REQ L (EU1) → 74HØ4 E6 → 74ØB E15 → DBCB CLR DREQ L AR1

CSRA SEL BUSA H (RB1) → 8881 E33 → BØ1 BUSA NPR L

BCTH SEL BUSB H → 8881 E33 → BØ2 BUSB NPR L

CSRA SEL BUSA H (RB1), BCTH NPC MASTER L → 741Ø E7 → 74H74 E9 GRANT A → BCTH GRANT A (1) L

+5V → R44 18Ø → BUSA NPG IN H AJ1 → R32 39Ø → 8641Ø E16 → 8881 E33 → R28 18Ø → BC1 BUSA NPG OUT H

BCTH SEL BUSB H → 741Ø E7 → 74H74 E9 GRANT B → BCTH GRANT B (1) L

+5V → R45 18Ø → BUSB NPG IN H AH1 → R33 39Ø → 8641Ø E16 → 8881 E33 → R29 18Ø → BB1 BUSB NPG OUT H

BCTH GRANT L → 741Ø E7 → 74H74 E8 SACK → BCTH SACK (1) H

74S157 E26 → f3 Ø9, f2, f1 Ø7, fØ Ø4

+5V → R31 1K → R3Ø 47 → C97 33Øpf → 74ØB E15 → BCTH GRANT L

BCTH GRANT B (1) L → B3
BCTH GRANT A (1) L → B2
BUSB BBSY L (CJ2) → B1
BUSA BBSY L (BS2) → A1
BUSB SSYN L BU2 → BØ
BUSA SSYN L CH2 → AØ
STB, SØ

BCTH BBSY IN H
CH1 BCTH SSYN IN H

BCTH BBSY (1) H, DBCA SACK ENB H ASI → 74HØØ E17 → 74H11 E25 → 74H11 E25 → BCTH BBSY (1) H

BCTF +3V H, BCTH SACK (1) H → 74H74 E8 BBSY → API BCTH NPC MASTER L

BCTH NPC SSYN H AE2 → 74Ø2 E32 → 74ØB E15

CSRA SEL BUSA H (RB1) → 74HØ4 E6 → BCTH SEL BUSB H

74S157 QUAD MULTIPLEXOR	
SØ	OUTPUT
L	A → F
H	B → F

SLOT Ø2
NPR CNTL

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1 — ANGLES: ·0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ϟ
MATERIAL —//—
FINISH ——//——

DRN. J. Vincent DATE 1-29-73
CHK'D. DATE
ENG. DATE
PROJ. ENG. DATE
PROD. DATE
NEXT HIGHER ASSY.
SCALE —//—
SHEET 3 OF 10

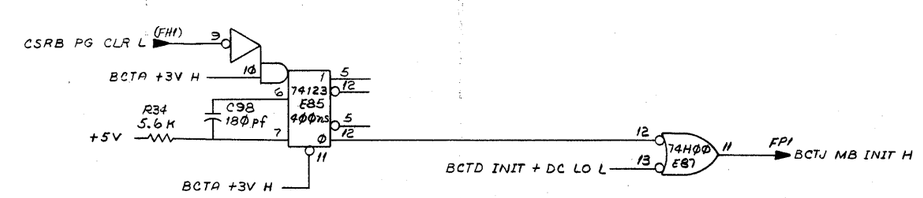
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

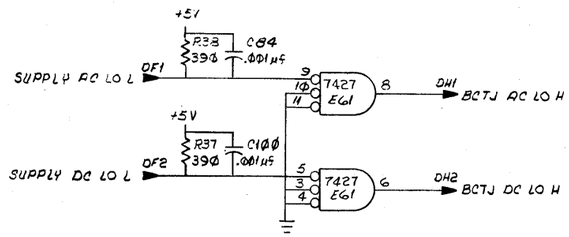
TITLE
BUS CNTL MODULE (BCTH)

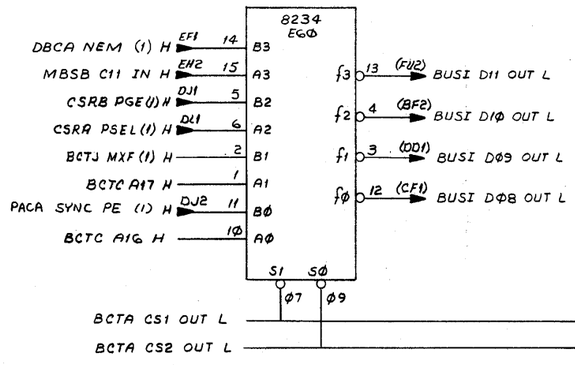
SIZE D | CODE CS | NUMBER M7295-Ø-1 | REV. F
DIST.

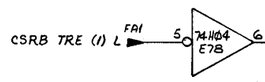
REVISIONS: REV | CHANGE NO | CHK

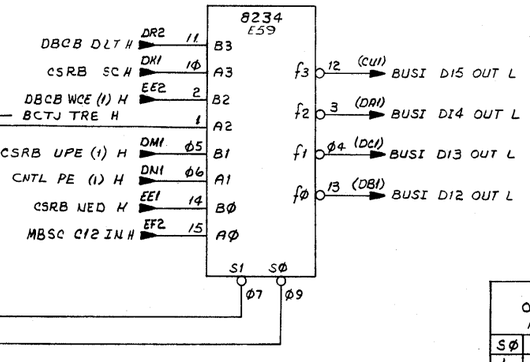
DEC FORM 10
DRD 102-C



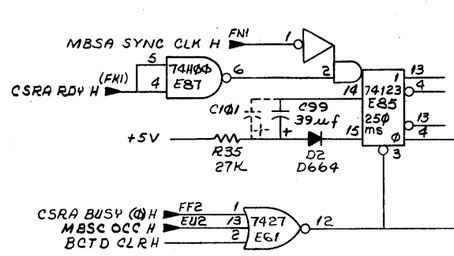


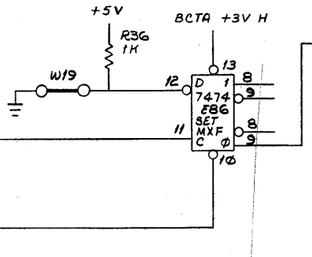


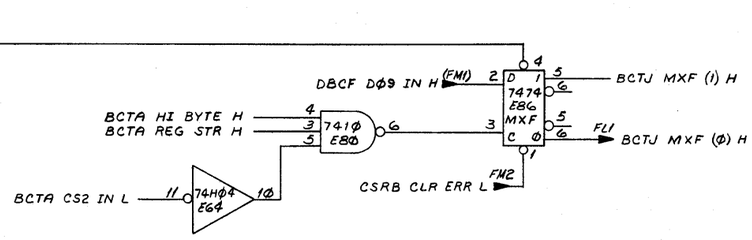




8234 OPEN COLLECTOR MULTIPLEXOR		
SØ	S1	OUTPUT
L	L	B → $ (NOT USED)
L	H	B → $
H	L	A → $
H	H	OFF







SLOT Ø2
MXF; DATA OUT MPX; MB INIT

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1 | ANGLES: ±0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ▽

MATERIAL —//—
FINISH —//—

DRN. J. Vincent 1-30-73 | DATE
CHK'D. | DATE
ENG. | DATE
PROJ. ENG. | DATE
PROD. | DATE
NEXT HIGHER ASSY.
SCALE —//—
SHEET 9 OF 10

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: BUS CNTL MODULE (BCTJ)

SIZE D | CODE CS | NUMBER M7295-Ø-1 | REV F
DIST.

REGISTER SELECT PROM – 23Φ4ΦA1 (8223)

OCTAL ADDR	M7	M6	LOC/REM M5	RSEL4 M4	RSEL3 M3	RSEL2 M2	RSEL1 M1	RSEL Φ MΦ	REGISTER SELECTED
ΦΦ	L	L	L	L	L	L	L	L	RHCS1 & MASSBUS (ΦΦ)
Φ1	H	L	H	L	L	L	H	H	RHWC
Φ2	H	H	H	L	L	L	L	L	RHBA
Φ3	H	H	L	L	L	H	L	H	MASSBUS (Φ5)
Φ4	H	H	H	L	L	L	H	L	RHCS2
Φ5	H	H	L	L	L	L	L	H	MASSBUS (Φ1)
Φ6	H	H	L	L	L	L	H	L	MASSBUS (Φ2)
Φ7	L	H	L	L	L	H	L	L	MASSBUS (Φ4)
1Φ	H	H	L	L	L	H	H	H	MASSBUS (Φ7)
11	H	H	H	L	L	L	L	H	RHDB
12	H	H	L	L	L	L	H	H	MASSBUS (Φ3)
13	H	H	L	L	L	H	H	L	MASSBUS (Φ6)
14	H	H	L	L	H	L	L	L	MASSBUS (1Φ)
15	H	H	L	L	H	L	L	H	MASSBUS (11)
16	H	H	L	L	H	L	H	L	MASSBUS (12)
17	H	H	L	L	H	L	H	H	MASSBUS (13)
2Φ	H	H	L	L	H	H	L	L	MASSBUS (14)
21	H	H	L	L	H	H	L	H	MASSBUS (15)
22	H	H	L	L	H	H	H	L	MASSBUS (16)
23	H	H	L	L	H	H	H	H	MASSBUS (17)
24	H	H	L	H	L	L	L	L	MASSBUS (2Φ)
25	H	H	L	H	L	L	L	H	MASSBUS (21)
26	H	H	L	H	L	L	H	L	MASSBUS (22)
27	H	H	L	H	L	L	H	H	MASSBUS (23)
3Φ	H	H	L	H	L	H	L	L	MASSBUS (24)
31	H	H	L	H	L	H	L	H	MASSBUS (25)
32	H	H	L	H	L	H	H	L	MASSBUS (26)
33	H	H	L	H	L	H	H	H	MASSBUS (27)
34	H	H	L	H	H	L	L	L	MASSBUS (3Φ)
35	H	H	L	H	H	L	L	H	MASSBUS (31)
36	H	H	L	H	H	L	H	L	MASSBUS (32)
37	H	H	L	H	H	L	H	H	MASSBUS (33)

PROM TRUTH TABLE

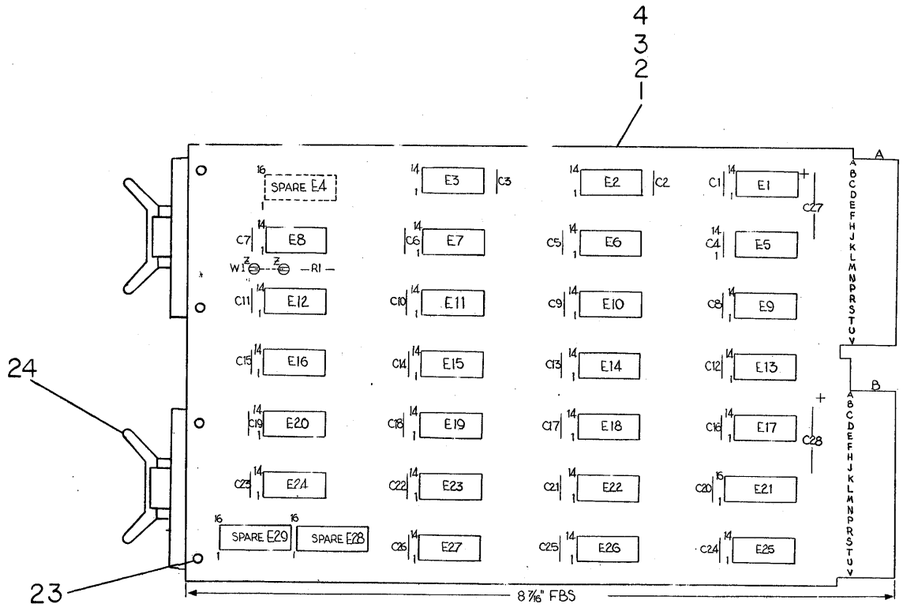
REVISIONS	REV	CHANGE NO	CHK

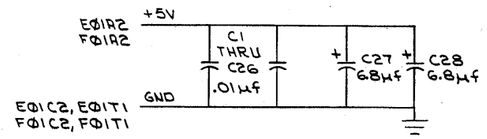
FIRST USED ON OPTION/MODEL: RH11	QTY.	DESCRIPTION	PART NO. / ITEM NO.
		PARTS LIST	
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES: DECIMALS .xxx = .005, .xx = .02, .x = .1; ANGLES ±0° 30'. REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ∨	DRN P.J. LEBLANC	DATE 20 JUNE 73	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
	CHK'D.	DATE	
	ENG.	DATE	TITLE: BUS CNTL MODULE (BCTK)
	PROJ. ENG.	DATE	
	PROD.	DATE	
MATERIAL	NEXT HIGHER ASSY.		SIZE D | CODE CS | NUMBER M7295-0-1 | REV. F
FINISH	SCALE NONE	SHEET 10 OF 10	DIST.

DIGITAL EQUIP CORP

NOTES:

1. PIN NOTATION THROUGHOUT IS ORDERED UPON MODULE PLACEMENT IN THE RH11. MODULE PIN REFERENCE ALONE IS OBTAINED BY DELETING THE NUMBER (SLOT LOCATION) AFTER THE FIRST LETTER AND CONVERTING THE FIRST LETTER ACCORDING TO THE PIN NOMENCLATURE CHART AT RIGHT.





PIN NOMENCLATURE

MODULE	RH11
A	E
B	F

ITEM NO.	QTY	REF DESIGNATION	DESCRIPTION	PART NO.
24	2		HANDLE, FLIP CHIP	9008387-6
23	4		EYELET	9006732
22	2		SPLIT LUG	9006735
21	1	E21	IC DEC 74175	1910651
20	2	E8, E11	IC DEC 7408	1910155
19	1	E5	IC DEC 7437	1910091
18	3	E10, E13, E26	IC DEC 74H04	1909931
17	3	E3, E24, E25	IC DEC 74H74	1909667
16	3	E16, E23, E27	IC DEC 74H11	1909267
15	1	E22	IC DEC 74H30	1909059
14	1	E6	IC DEC 74H10	1909057
13	1	E9	IC DEC 74H00	1909056
12	1	E20	IC DEC 7402	1909004
11	1	E19	IC DEC 7420	1905577
10	1	E14	IC DEC 7410	1905576
9	3	E1, E2, E17	IC DEC 7400	1905575
8	4	E12, E15, E7, E18	IC DEC 7474	1905547
7	1	R1	RESISTOR 1K 1/4 W 5%	1300365
6	2	C27, C28	CAP 6.8μf 35V 10% TANT	1005306
5	26	C1 THRU C26	CAP .01 μf 50V 20% AXIAL CER	1001610
4	1		ETCHED CIRCUIT BOARD	50104-29
3	REF.		MODULE ECO HISTORY	B-MH-M7296-0-6
2	REF.		ASSY/DRILLING HOLE LAYOUT	D-AH-M7296-0-5
1	REF.		X-Y COORDINATE HOLE LOCATION	X-CO-M7296-0-4

PARTS LIST

FIRST USED ON OPTION MODEL: RH11

ETCH BOARD REV: C

IC TYPE	GND	+ 5V
DEC 74175	8	16

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

DEC NO.	EIA NO.	DEC. NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

REV	CHANGE NO.	CHK
B	M7296-00001+1A	JENKINS 2-21-73

REVISIONS

DRN. Counter, D 3-15-73
CHK'D. [illegible] 7/20/73
ENG. 7/24/73
PROJ. ENG. 7/25/73
PROD. 7/26/73
NEXT HIGHER ASSY —//—
SCALE NONE
SHEET 1 OF 3

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: CONTROL & STATUS REGS (CSR)

SIZE D | CODE DCS | NUMBER M7296-0-1 | REV. B

DIST.

DEC FORM NO. DRD-135A

BRUNING 40-522 16699

CSRA WRITE L — 74HØ4 E26 — CSRA WRITE H

DBCJ START H (EØIT2) + DBCB ØBUF FULL (I) H (FØLI) — 7420 E19

CSRA READ (I) L
CSRA WR CHK (I) L
CSRB TRE (I) L
— 7420 E19 — CSRA RUN (Ø) H

CSRB +3V H — 74H74 E24 RUN

CSRA RUN (Ø) H — 74HØ4 E26 — FØIRI — CSRA RUN (I) H

BCTE DRWC OFLO (I) L (EØIV2)
CSRA BUSY (Ø) L
— 74H11 E16

DBCB ERROR (I) H (EØIK2) — 74HØØ E9
CSRB EXCP L
— 74H11 E27

CSRB FCTN LOAD (I) H
CSRB NED H
— 74HØØ E9

CSRA GO CLR L

BCTD CLR L (FØIN2) + BCTJ MXF (Ø) L (FØIRI) — 74Ø8 E8

— 74H74 E24 BUSY — CSRA BUSY (I) H
— CSRA BUSY (Ø) H (EØIR2)

CSRB EOS (I) H — 74ØØ E1
BCTE DONE (I) L (EØID1) — 74ØØ E1
— 74Ø8 E8

CSRB +3V H
DBCF DIØ IN H (EØIJI) — 7474 E12 PSEL
CSRA RDY H — 74Ø8 E11
BCTD CLR L (FØIN2)
— CSRA PSEL (I) H (EØIE2)

BUSA SELECT — W1 — R1 1K — +5V — 7437 E5 — EØID2 — CSRA SEL BUSA H

BCTA HI BYTE H (FØIVI) + BCTA REG STR H (FØIMI) — 74H11 E23 — CSRA CLK CSI HI H
BCTA LO BYTE H (FØIJI) — 74H11 E23 — CSRA CLK CSI LO H

BCTA CSI IN L (EØIP2) — 74H04 E13 — CSRA CSI IN H

CSRB +3V H — CSRA READ+WR CHK H (5) — 74Ø2 E2Ø — FØICI — CSRA RDY H

CSRB DØ3 IN L (EØIRI) + DBCF DØ4 IN H — 74H1Ø E6

CSRB FCTN LOAD (I) L — 74ØØ E1 — EØIBI — CSRA WRITE L

DBCF DØ3 IN H (FØIE2) — 7410 E14

CSRA BUSY (Ø) H
BCTA DEV SEL L (EØIHI) — 74ØØ E1 — 74Ø8 E8
BCTD CLR L (FØIN2)

DBCF DØ5 IN H (FØIEI) + DBCF DØ3 IN H (FØIE2) + CSRB DØ4 IN L — 7410 E14

CSRA GO CLR L

— 74H74 E3 WRITE
— 7474 E15 READ — 74H04 E13 — ØØ EØIM2 — CSRA READ L
— 7437 E5 — EØIF2 — CSRA READ + WR CHK H
CSRA READ (Ø) H
CSRA WR CHK (Ø) H
— 7474 E15 WR CHK — 74H04 E13 — EØIN2 — CSRA WR CHK H

— 74H1Ø E6

DBCF DØØ IN H (FØIL2) + CSRA CLK CSI LO H — 74H11 E16
CSRA GO H
CSRA RDY H — 74ØØ E17 — FØIHI — CSRA GO CLR L

DBCF DØ7 IN H (EØIVI) + DBCF DØ6 IN H (EØIUI) — 7410 E14

CSRA IE (I) H — 7474 E18 INTR
CSRA RDY H — 74ØØ E17
CSRB SC H
— 74ØØ E17 — FØIBI — CSRA INTR REQ H

CSRB +3V H — 7474 E18 IE — EØIS2 — CSRA IE (I) H

CSRA CLK CSI LO H

BCTF INTR DONE H (EØIU2) — 74Ø2 E2Ø
BCTD CLR L (FØIN2) — 74H04 E1Ø

CSI REG

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
CONTROL & STATUS REGS (CSRA)	D	CS	M7296-Ø-1	B
SCALE NONE	SHEET 2 OF 3		DIST.	

DEC FORM NO. DRD 138

DBCF D04 IN H (E01R1) — 74H04 E10 — CSRB D04 IN L

DBCF D03 IN H (F01E2) — 74H04 E10 — CSRB D03 IN L

DBCH SET UPE L F01R2

DBCF D13 IN H F01P2 — 74H74 E25 UPE — F01S2 CSRB UPE (1) H; F01T2 CSRB UPE (0) H

CSRB CLK CS2 HI H

CSRB CLR ERR L

BCTB SET NED L E01J2 — 74H00 E9 — E01H2 CSRB NED H

CSRB CLR ERR L — 74H00 E9 — CSRB NED L

CSRB +3V H — 7474 E7 — CSRB FCTN LOAD (1) H; CSRB FCTN LOAD (0) H

CSRA GO CLR L — 74H04 E10

BCTA DEV SEL L E01H1 — 74H04 E10

7437 E5 — CSRB +3V H

CSRA RUN (0) L — 7474 E7 — CSRB EOS (1) H

MBSB EBL H (E01L2) — 74H04 E13

CSRB CLR +GO CLR L

CSRA RDY H — 74H74 E25 PGE — E01N1 CSRB PGE (1) H; CSRB PGE (0) H

CSRA GO H

CSRB +3V H

74H10 E6 — E01L1 CSRB STOP DEM L

CSRB CLR TRE L — 7408 E11

BCTD CLR L (F01N2)

MBSA ATTN H (E01P1) — 7402 E20

PACA CNTL PE (1) H F01V2

CSRB +3V H — 74H74 E3 TRE — CSRB TRE (1) H

7408 E2 — F01D1 CSRB SC H; E01C1 CSRB TRE (0) H

DBCB EXCP ERR L F01U2

DBCD WCE(1) L F01N1

CSRB UPE (1) L

CSRB NED L F01K1 — 74H30 E22

DBCA NEM (1) L

CSRB PGE (1) L

BCTJ MXF (1) L F01P1

DBCF D14 IN H E01F1 — 7400 E2

CSRA CLK CS1 HI H — 7400 E2 — 7437 E5 — E01K1 CSRB CLR ERR L

BCTD CLR L (F01N2) — 7408 E11 — CSRB CLR +GO CLR L

CSRA GO CLR L

MBSB EXCP H E01S1 — 7400 E2 — E01M1 CSRB EXCP L

MBSB EBL H E01L2

MBSA ATTN H E01P1 — 74H04 E10 — CSRB ATTN L

74175 E21

DBCF D04 IN H (E01R1) — D3 — R3(1) F01D2 CSRB PAT H; R3(0)

DBCF D02 IN H F01F2 — D2 — R2(1) F01H2 CSRB U02 H; R2(0)

DBCF D01 IN H F01K2 — D1 — R1(1) F01J2 CSRB U01 H; R1(0)

DBCF D00 IN H F01L2 — D0 — R0(1) F01M2 CSRB U00 H; R0(0)

CLK CLR

CSRB CLK CS2 LO H

BCTD CLR L F01N2

DBCF D03 IN H F01E2 — 7474 E12 BAI — CSRB BAI (1) H; E01E1 CSRB BAI (0) H

CSRA RDY H — 7408 E8

CSRB +3V H

BCTA CS2 IN L F01U1 — 74H04 E26

BCTA REG STA H (F01M1) — 74H11 E27 — CSRB CLK CS2 HI H

BCTA HI BYTE H (F01V1)

BCTA LO BYTE H (F01J1) — 74H11 E27 — CSRB CLK CS2 LO H

DBCF D05 IN H F01E1 — 7400 E17 — F01F1 CSRB PG CLR L

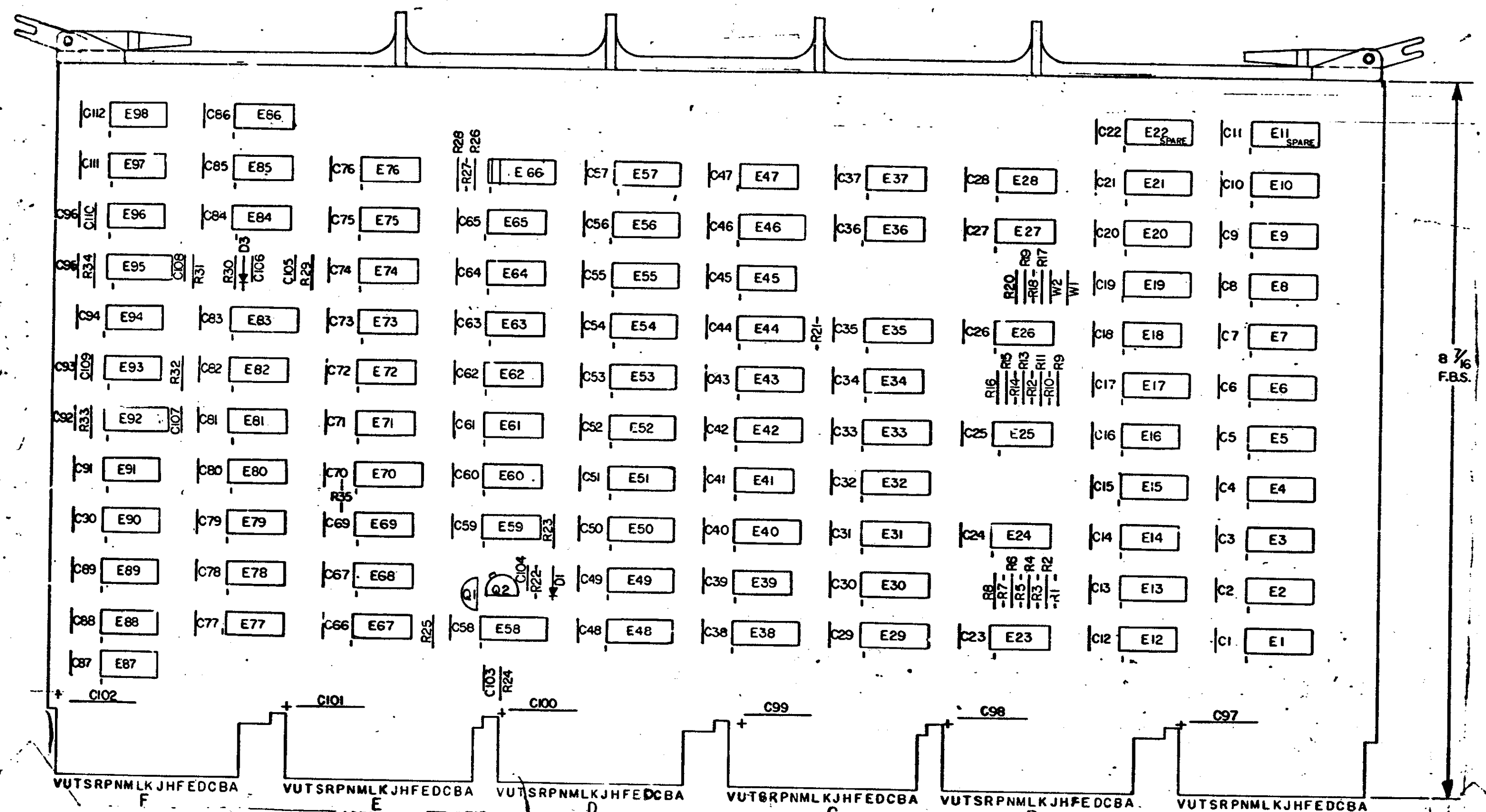
ERROR STATUS & CS2 REG

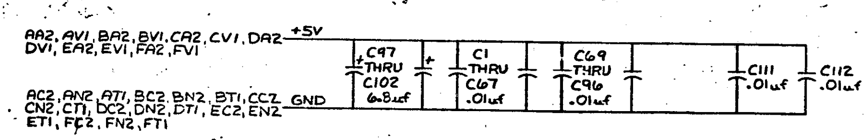
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
CONTROL & STATUS REGS (CSRB)	D	CS	M7296-0-1	B
SCALE —H—	SHEET 3 OF 3		DIST.	

DEC FORM NO. DRD 136

NOTES:





QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
REF		X-Y COORDINATE HOLE LOCATION	K-CO-M7294-0-4	1
REF		ASSY-DRILLING HOLE LAYOUT	D-AH-M7294-0-5	2
REF		MODULE ECO HISTORY	B-MH-M7294-0-6	3
1		ETCHED CIRCUIT BOARD	5010427	4
1	C105	CAP 39 PF 5% 100V DM	1000010	5
1	C103	CAP 56 PF 5% 100V DM	1000012	6
2	C108,C109	CAP 62 PF 5% 100V DM	1000013	7
1	C107	CAP 220 PF 5% 100V DM	1000021	8
98	C1 THRU C67,C69 THRU [illegible]C104 C111 C112	CAP .01 UF 20% 100V DISC	1001610-00	9
1	C106	CAP 2400 PF 5% 100V DM	1001636	10
1	C110	CAP 15 PF 5% 100V DM	1002427	11
6	C97 THRU C102	CAP 6.8 UF 10% 35V TANT	1005308	12
1	D3	DIODE D664	1100114	13
1	D1	DIODE ZENER IN964B	1100938	14
23	R1 THRU R17,R20,R21,R23,R26,R27,R28	RES 1K 5% 1/4W	1300365	15
2	R22,R30	RES 15K 5% 1/4W	1300436	16
2	R18,R19	RES 750 5% 1/4W	1301401	17
8	R24,R25,R29,R31, THRU R35	RES 5.6K 5% 1/4W	1301874	18
1	Q2	TRANS 2N3906	1509525	19
1	R36	TRANS 2N5459	1509374	20
1	E66	I.C. COMPONENT CARRIER	1211323	21
1	E73	I.C. DEC 7474	1905547	22
1	E79	I.C. DEC 7410	1905576	23
2	E76,E77	I.C. DEC 74H50	1909060	24
2	E67, E86	I.C. DEC 74H53	1909062	25
3	E71,E78,E89	I.C. DEC 7402	1909004	26
4	E27,E75,E96,E98	I.C. DEC 74H00	1909056	27
2	E94 E97	I.C. DEC 74H10	1909057	28
2	E59,E62	I.C. DEC 74H30	1909059	29
3	E68,E23,E88	I.C. DEC 74H11	1909267	30
6	E36,E37,E[illegible],E84,E85,E87	I.C. DEC 74H74	1909667	31
5	E12,E14,E16,E18,E68	I.C. DEC 8881	1909705	32
5	E34,E39,E41,E45,E47	I.C. DEC 8242	1909712	33
8	E23 THRU E26,E61,E74,E82,E91	I.C. DEC 74H04	1909931	34
2	E64,E65	I.C. DEC 74197	1910035	35
1	E63	I.C. DEC 7437	1910091	36
2	E[illegible],E[illegible]	I.C. DEC 7408	1910155	37
5	E58,E[illegible]E83E92 E95	I.C. DEC 74123	1910436	38
6	E38,E42,E44,E50,E53,E56	I.C. DEC 74174	1910652	39
11	E2,E4,E6,E8,E10,E21,E43,E49,E51,E55,E57	I.C. DEC 74157	1910655	40
10	E1,E3,E5,E7,E9,E13,E15,E17,E19,E20	I.C. DEC 8641	1911579	41
6	E29, THRU E33,E35	I.C. DEC 8234	1911315	42
5	E40,E46,E48,E52,E54	I.C. DEC 3341	2111189	43
1		HANDLE MODULE	1210711-2	44
12		EYELET	9008732	45
1	E72	IC DEC 74S00	1910532	46
1	E69	IC DEC 74S64	1910542	47
1	E93	IC DEC 74S74	1910544	48
~~1~~		~~TRANSISTOR CAP~~	~~[illegible]~~	49
~~[illegible]~~		~~[illegible] BOND CEMENT~~	~~[illegible]~~	50
2	W1, W2	JUMPER,INSULATED	9009185	51
2	(SEE E66)	JUMPER WIRE	9107560-01	52

PARTS LIST

FIRST USED ON OPTION MODEL: RH11

ETCH BOARD REV: C

IC TYPE	GND	+ 5V
DEC 8234	8	16
DEC 3341	8	16
DEC 8641	8	16
DEC 74157	8	16
DEC 74174	8	16
DEC 74123	8	16

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

DEC NO.	EIA NO.	DEC NO.	EIA NO.
		2N5639	NONE
		2N2904A	NONE
		IN752A	NONE
		D664	IN[illegible]

SEMICONDUCTOR CONVERSION CHART

REV	CHANGE NO.	ORIGINATED	DATE
H	[illegible]	D. Schwartz	13 JUN 77
F	[illegible]	[illegible]	[illegible]
F	[illegible]	[illegible]	[illegible]
D	[illegible]-00003	[illegible]	11-14-74
C	[illegible]	[illegible]	10-4-74
B	[illegible]	[illegible]	[illegible]
A	[illegible]	[illegible]	[illegible]

R. Counter 7/27/73

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: DATA BUFFER & CONTROL (DBC)

SIZE: D CODE: CS NUMBER: M7294-0-1 REV: H

SHEET 1 OF 9

DEC FORM NO. DRD 1:5A

CSRA READ L (FM1) — 74H04 E91 — DBCA READ H
DBCA NPC MASTER H
74H11 E84 — DBCA DATA TO BUS H
74H00 E96 — DBCA DATA TO BUS L
74H04 E74
FP2 — DBCA ADDR TO BUS H
BCTH NPC MASTER L (FT2)
DBCA END CYCLE (1) H — 74H02 E89

BUS HOG DISABLE — E66 — R28 1K +5V
CSRA SEL BUSA H (FRI) — 74H04 E91 — 74H00 E98 — DBCA BUS HOG L
74H04 E91 — 74H02 E89 — 74H08 E90
8881 E88 — FR2 — BUSA CI L
8881 E88 — FSI — BUSA MSYN L
DBCA +3V H
DBCA MSYN (1) H
8881 E88 — FS2 — BUSB MSYN L
DBCA READ H — 8881 E88 — FPI — BUSB CI L

DBCA READ H — 74H08 E80
DBCB OBUF FULL (0) H
74123 E92 200NS — C109 62PF — +5V R33 2.6K — DBCA +3V H
7437 E63 — DBCA DESK MSYN H
74S74 E93 DESK COMPL — 74S64 E69 — BCTH NPC SSYN H (FC2) — DBCB OBUF FULL (0) L — DBCB OBUF FULL (1) L — CSRA WRITE L (EP1)
74S74 E93 MSYN — DBCA NPC MASTER H — 74H00 E89

CSRA READ +WR CHK H (ET2) — 74H04 E61

BCTH NPC SSYN H (FC1) — 74H00 E75 — DBCA NPC SSYN L
DBCA NPC MASTER H
74H00 E96 — DBCA NEM (1) L — 74H04 E74
CSRA READ L (FM11) — 74H10 E94 — DBCA MSYN (1) H
CSRA WRITE L (EP1) — 74H04 E74 — DBCA WRITE H
DBCA +3V H — 74123 E83 DATA WAIT 125NS — C105 390PF — +5V R29 5.6K
DBCA READ H — 74H10 E94
DBCA MSYN (1) H
74123 E95 MSYN WAIT 75NS — C110 150PF — +5V R34 5.6K

74H04 E91 — 74H24 E97 — FF2 — DBCA DATA STR H
74123 E19 END CYCLE 200NS — C108 62PF — +5V R31 5.6K — DBCA END CYCLE (1) H
74H00 E96 — FNI — DBCA SACK ENB H
74H00 E96 — DBCA CLR BBSY L
CSRB UPE (1) L — DBCD WCE (1) L — 74H10 E97 (FV2)

DBCA MSYN (1) H — 74123 E83 1.3 MSEC — C106 2480PF — +5V R30 15K — D3 DG64
74H74 E86 NEM — DBCA NPC SSYN L — 7408 E80 (FK1) — CSRB CLR ERR L
DBCA NPC MASTER H — 74H11 E84
CSRB TRE (1) L (FM2) — 74H10 E97
DBCA BUS HOG L — 74H28 E98
74H74 E86 CYCLE COUNT — DBCA +3V H
DBCA BUS HOG L — DBCA CYCLE COUNT (1) H
DBCB NEXT L — 74H74 E26 NEXT CYCLE — DBCA CYCLE COUNT (1) H — 74S02 E71 — DBCJ +3V H

DBCB EXCP STOP L — 7408 E90
BCTE WC OFLO (1) L (EU2) — 74H04 E52 — FEI — DBCA NEM (1) H
FDI — DBCA NEM (0) H

"1 CYCLE" — E66

SLOT 03
NPR CNTL LOGIC

REVISIONS		
CHK	CHANGE NO.	REV

TITLE	SIZE	CODE	NUMBER	REV.
DATA BUFFER & CONTROL (DBCA)	D	CS	M7294-0-1	H
SCALE NONE — SHEET 2 OF 9 — DIST.				

DEC FORM NO 8RD 137

CSRA RDY H FL1 — 74H04 E61 — DBCB RDY L
BCTD CLR B H FH2 — DBCH SEL BUSA L — 7410 E79
DBCB DRIVE CLK H
CSRB EXCP L FU2 — C103 560pF — 74123 E56 150Ω 74LS — +5V R24 5.6K — DBCA +3V H
DBCB IBUF FULL (1) H — 7474 E73 DLT IN
BCTB DB OCLK H (FD2) — DBCB DB OUT H — DBCB OBUF FULL (Ø) H — 74H10 E97
DBCB ORDY H — BCTE LWRD H ER1 — 7402 E71
DBCB OUT CLK L — 7474 E73 DLT OUT
CSRB CLR ERR L (FK1)
CSRA READ +WR CHK H ET2 — BCTA REG STR H FK2 — 74H50 E77 — 74H04 E34
7450 E72 — FB1 — DBCB DLT H
BCTA DB IN L FL2 — 74H04 E86 — DBCB DB IN H
DBCB CLK IBUF H
FE2 — DBCB IBUF FULL (Ø) H — DBCB IBUF FULL (1) H
DBCA MSYN WAIT (1) H — DBCA WRITE H — 7450 E72 — 74H04 E82
DBCA +3V H
BCTD CLR + GO CLR H EJ2 — 74123 E92 400Ω 74LS — R32 5.6K +5V — C107 220pF — DBCA +3V H
7437 E63 — DBCB SILO CLR L
74H74 E81 IBUF FULL — 74H74 E81 BUBBLE IN
7402 E78 — DBCB SHIFT IN H
DBCA CLR BBSY L — DBCB RDY L — 7408 E89 — EV2 — DBCB CLR DREQ L
DBCB IBUF FULL (Ø) H — DBCB OBUF FULL (1) H — 74H53 E67 — 74H04 E82 — DBCB DATA REQ H
ES2 — DBCB DATA REQ L
DBCA WRITE H — BCTE WC OFLO (1) L (EU2) — 74H11 E68
CSRB TRE (1) L (FM2) — CSRA READ +WR CHK H (ET2) — 74H11 E68 — DBCB SHIFT IN H
DBCD IR5 H — DBCD IR4 H — DBCC IR3 H — DBCC IR2 H — DBCC IR1 H — DBCA +3V H — 74H30 E62
74H04 E61 — DBCB IRDY H
DBCB INH CLK L — BCTE DRWC OFLO (Ø) H FJ2 FA1 — MBSA SYNC CLK H — 74H11 E68 — EU1 — DBCB DRIVE CLK H
DBCA WRITE H — 7408 E90 — FU1 — DBCB WRITE CLK H
DBCD OR5 H — DBCD OR4 H — DBCC OR3 H — DBCC OR2 H — DBCC OR1 H — DBCA +3V H — 74H30 E59
TEST INPUT L — EH1 — R23 1K — +5V
74H04 E61 — EF2 — DBCB ORDY H
74H50 E76 — DBCB NEXT L
DBCA DESK MSYN H — DBCA WRITE H — (ET2) — 74H50 E77 — FH1 — DBCB INC NC L
CSRA READ + WR CHK H
DBCB SET OFULL L
FJ1 — DBCB OBUF FULL (1) H
DBCB SHIFT OUT H
BCTA DB OUT L CM2 — 74H04 E74 — DBCB DB OUT H
BCTB DB OCLK H FD2 — 74H08 E75 — DBCB OUT CLK L
DBCB DRIVE CLK H — DBCA WRITE H — 74H08 E75
DBCA DATA STR H — CSRA READ+WR CHK H (ET2) — 74H50 E76 — 74H11 E84
DBCD WCE (1) H — DBCB DLT H — 7402 E71 — DBCB INH CLK L
74H74 E87 OBUF FULL
DBCB SILO CLR L
74H74 E87 BUBBLE OUT
BCTE WC OFLO (1) L (EU2) — 74H04 E82 — DBCD EXCP SAVE (1) H — DBCA WRITE H — 74H04 E25 — 74H53 E86 — FB2 — DBCB EXCP ERR L
DBCD EXCP STOP L
DBCB +3V H — 7402 E89
DBCB SHIFT OUT H — 74123 E58 45ns — R25 5.6K +5V — DBCB SILO CLR L
74H04 E82 — 74H08 E75 — DBCB SET OFULL L
74123 E79 45ns — 5.6K R35 +5V — DBCA +3V H — 74H32 E82 — DBCB CLK OBUF H
CSRB TRE (1) L (FM2) — DBCB ERROR (1) H
MBSA SYNC CLK H FA1 — 74H04 E91 — DBCB ERROR (Ø) H
DBCB SILO CLR L
DBCA WRITE H — BCTE DRWC OFLO (Ø) H (FJ2) — 7410 E79 — 7437 E63 — EJ1 — DBCB GATE SYNCD H

SLOT Ø3
SILO TIMING CNTL

REVISIONS		
CHK	CHANGE NO	REV.

TITLE	DATA BUFFER & CONTROL (DBCB)	SIZE	CODE	NUMBER / REV.
		D	CS	M7294-Ø-1 H
SCALE NONE	SHEET 3 OF 9	DIST.		

DEC FORM 140 DEC 137

DBCE UNIB D11 H
DBCF D11 IN H
DBCE UNIB D10 H
DBCF D10 IN H
DBCE UNIB D09 H
DBCF D09 IN H
DBCE UNIB D08 H
DBCF D08 IN H

74157 E6 — DMX (11:08) — DBCC DMX 11 H, DBCC DMX 10 H, DBCC DMX 09 H, DBCC DMX 08 H

MBSB SYNC D11 H, MBSB SYNC D10 H, MBSB SYNC D09 H, MBSB SYNC D08 H

74157 E43 — IMX (11:09)

74174 E53 — IBUF (11:06)

DBCE UNIB D07 H
DBCF D07 IN H
DBCE UNIB D06 H
DBCF D06 IN H
DBCE UNIB D05 H
DBCF D05 IN H
DBCE UNIB D04 H
DBCF D04 IN H

74157 E4 — DMX (07:04) — DBCC DMX 07 H, DBCC DMX 06 H, DBCC DMX 05 H, DBCC DMX04 H

MBSB SYNC D07 H, MBSB SYNC D06 H, MBSA SYNC D05 H, MBSA SYNC D04 H

74157 E51 — IMX (07:04)

74174 E52 — IBUF (05:00)

DBCE UNIB D03 H
DBCF D03 IN H
DBCE UNIB D02 H
DBCF D02 IN H
DBCE UNIB D01 H
DBCF D01 IN H
DBCE UNIB D00 H
DBCF D00 IN H

74157 E2 — DMX (03:00) — DBCC DMX03 H, DBCC DMX02 H, DBCC DMX01 H, DBCC DMX00

MBSA SYNC D03 H, MBSA SYNC D02 H, MBSA SYNC D01 H, MBSA SYNC D00 H

74157 E49 — IMX (03:00)

74174 E50 — IBUF (05:00)

CSRA READ+ WR CHK H (E72)

CSRA SEL BUSA H (FR1) 11
BCTN NPC MASTER L (F72) 12
74S02 E89 — 13 — DBCC DMX S0 L

DBCB CLK IBUF H

DBCC -12V

VGG IR OR — 3341 E52 — SILO (11:08)

VGG IR OR — 3341 E40 — SILO (07:04)

VGG IR OR — 3341 E48 — SILO (03:00)

DBCC IR3 H
DBCC OR3 H
DBCC IR2 H
DBCC OR2 H
DBCC IR1 H
DBCC OR1 H

DBCJ +3V H

74174 E42 — OBUF (11:06) — DBCC OBUF 11 H, DBCC OBUF 10 H, DBCC OBUF 09 H, DBCC OBUF 08 H, DBCC OBUF 07 H, DBCC OBUF 06 H

74174 E38 — OBUF (05:00) — DBCC OBUF 05 H, DBCC OBUF 04 H, DBCC OBUF 03 H, DBCC OBUF 02 H, DBCC OBUF 01 H, DBCC OBUF 00 H

DBCB SHIFT IN H
DBCB SHIFT OUT H
DBCB SILO CLR L
DBCB CLR OBUF H

74157 QUAD MULTIPLEXER

S0	OUTPUT
L	A→F
H	B→F

SLOT 03
SILO DATA PATH <11:00>

REVISIONS

CHK	CHANGE NO	REV

TITLE DATA BUFFER & CONTROL (DBCC)
SIZE D | CODE CS | NUMBER M7294-0-1 | REV. H
SCALE NONE | SHEET 4 OF 9 | DIST.

DEC FORM NO DRD 127

DBCC OBUF04 H
DBCC DMX04 H
DBCC OBUF03 H
DBCC DMX03 H
DBCC OBUF02 H
DBCC DMX02 H
DBCC OBUF01 H
DBCC DMX01 H
DBCC OBUF00 H
DBCC DMX00 H
8242 E41
8242 E39

DBCC OBUF07 H
DBCC DMX07 H
DBCC OBUF06 H
DBCC DMX06 H
DBCC OBUF05 H
DBCC DMX05 H
8242 E34
8242 E41

DBCD OBUF14 H
DBCD DMX14 H
DBCD OBUF13 H
DBCD DMX13 H
DBCD OBUF12 H
DBCD DMX12 H
DBCC OBUF11 H
DBCC DMX11 H
DBCC OBUF10 H
DBCC DMX10 H
8242 E43
8242 E45
8242 E34

DBCD OBUF17 H
DBCD DMX17 H
DBCD OBUF16 H
DBCD DMX16 H
DBCD OBUF15 H
DBCD DMX15 H
8242 E47
8242 E45

R18 750Ω +5V
R19 750Ω +5V

DBCJ +3V H
74H00 E27
74H74 WCE E36
EK1
DBCD WCE (1) H
ER2
DBCD WCE (0) H
CSRA WR CHK H
DBCA MSYN WAIT(1) H
EK2
74H11 E28
CSRB CLR ERR L
FK1

DBCJ -12V
DBCD EXCP SAVE (1) H
DBCD IR5 H
DBCD OR5 H
74H04 E24
DBCD EXCP STOP L

74157 E10
DMX (17:16)
DBCE UNIB DI7 H
DBCF DI7 IN H
DBCE UNIB DI6 H
DBCF DI6 IN H
DBCD DMX17 H
DBCD DMX16 H
SØ STB
DBCH EN PAR H

74157 E57
IMX (17:16) (PA)
MBSC SYNC PA H
EM2
MBSC SYNC DI7 H
EL1
MBSC SYNC DI6 H
EP2

DBCJ +3V H
74H74 E37 IBUF PA
74174 E56
IBUF (17:12)
CLK CLR
DBCJ +3V H
DBCB CLK IBUF H

VGG IR OR
3341 E46
SILO (17:16) PA
SI SO MR
DBCD IR5 H
DBCD OR5 H
VGG IR OR
3341 E54
SILO (15:12)
SI SO MR
DBCB SHIFT IN H
DBCB SHIFT OUT H
DBCS SILO CLR L
R21 1K +5V

74H74 E37 OBUF PA
DP1
DBCD OBUF PA H
DBCJ +3V H
74174 E44
OBUF (17:12)
ED3 DBCD OBUF 17 H
DS2 DBCD OBUF 16 H
EM1 DBCD OBUF 15 H
EN1 DBCD OBUF 14 H
EC1 DBCD OBUF 13 H
CU1 DBCD OBUF 12 H
CLK CLR
DBCJ +3V H
DBCB CLK OBUF H

74157 E8
DMX (15:12)
DBCE UNIB DI5 H
DBCF DI5 IN H
DBCE UNIB DI4 H
DBCF DI4 IN H
DBCE UNIB DI3 H
DBCF DI3 IN H
DBCE UNIB DI2 H
DBCF DI2 IN H
DBCD DMX15 H
DBCD DMX14 H
DBCD DMX13 H
DBCD DMX12 H
SØ STB
DBCC DMX SØ L

74157 E55
IMX (15:12)
MBSC SYNC DI5 H
EE2
MBSC SYNC DI4 H
DR1
MBSC SYNC DI3 H
DI2
MBSC SYNC DI2 H
EF1
CSRA READ + WR CHK H
(ET2)

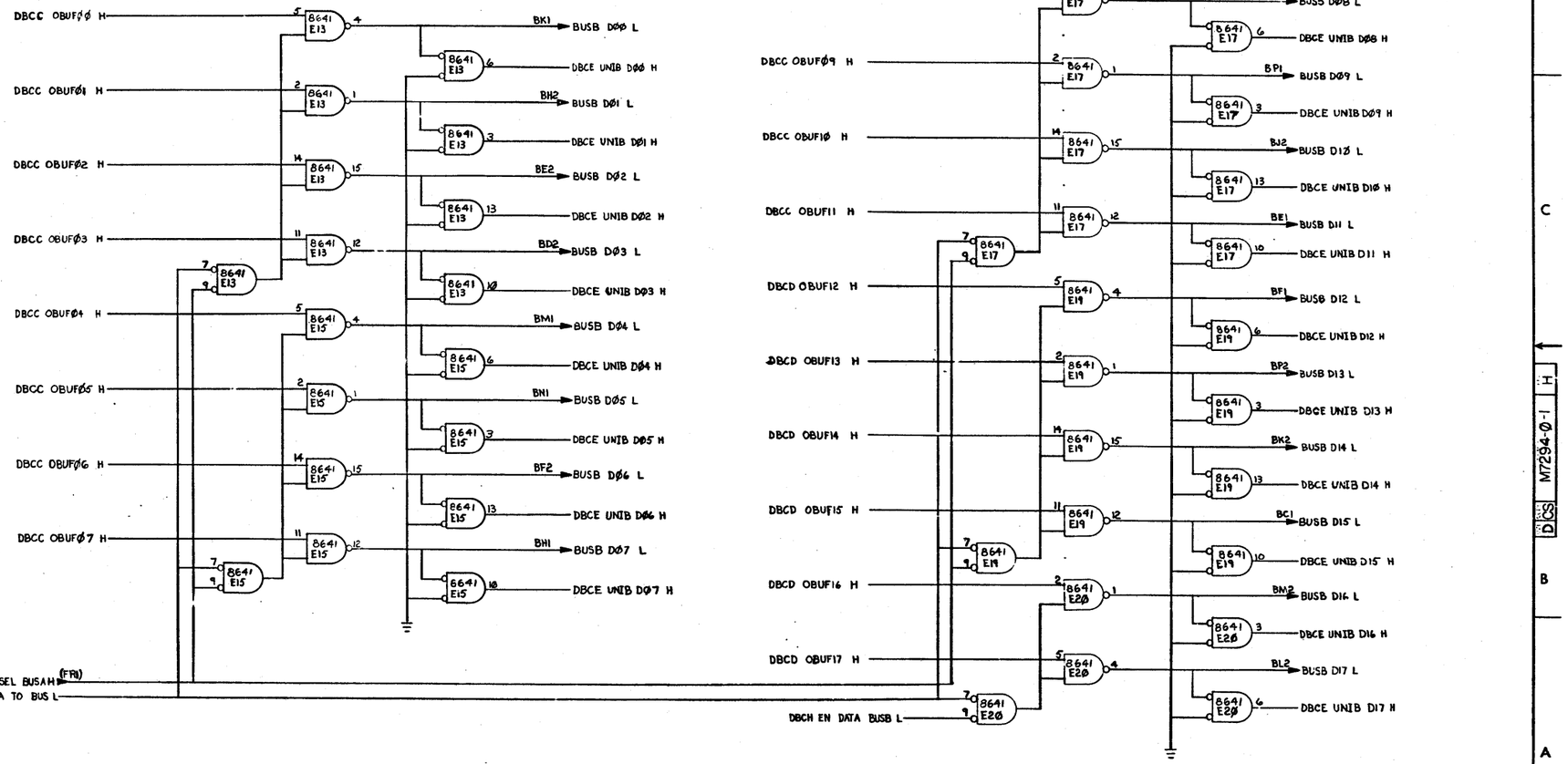
DBCB +3V H
74H74 E87
DBCD EXCP SAVE (1) H
CSRB EXCP L
(FU2)
DBCB SILO CLR L

SLOT 03
SILO DATA PATH <17:12> & WRITE CHECK

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
DATA BUFFER & CONTROL (DBCD)	D	CS	M7294-0-1	H
SCALE NONE	SHEET 5 OF 9		DIST.	

DIGITAL M7294-0-1

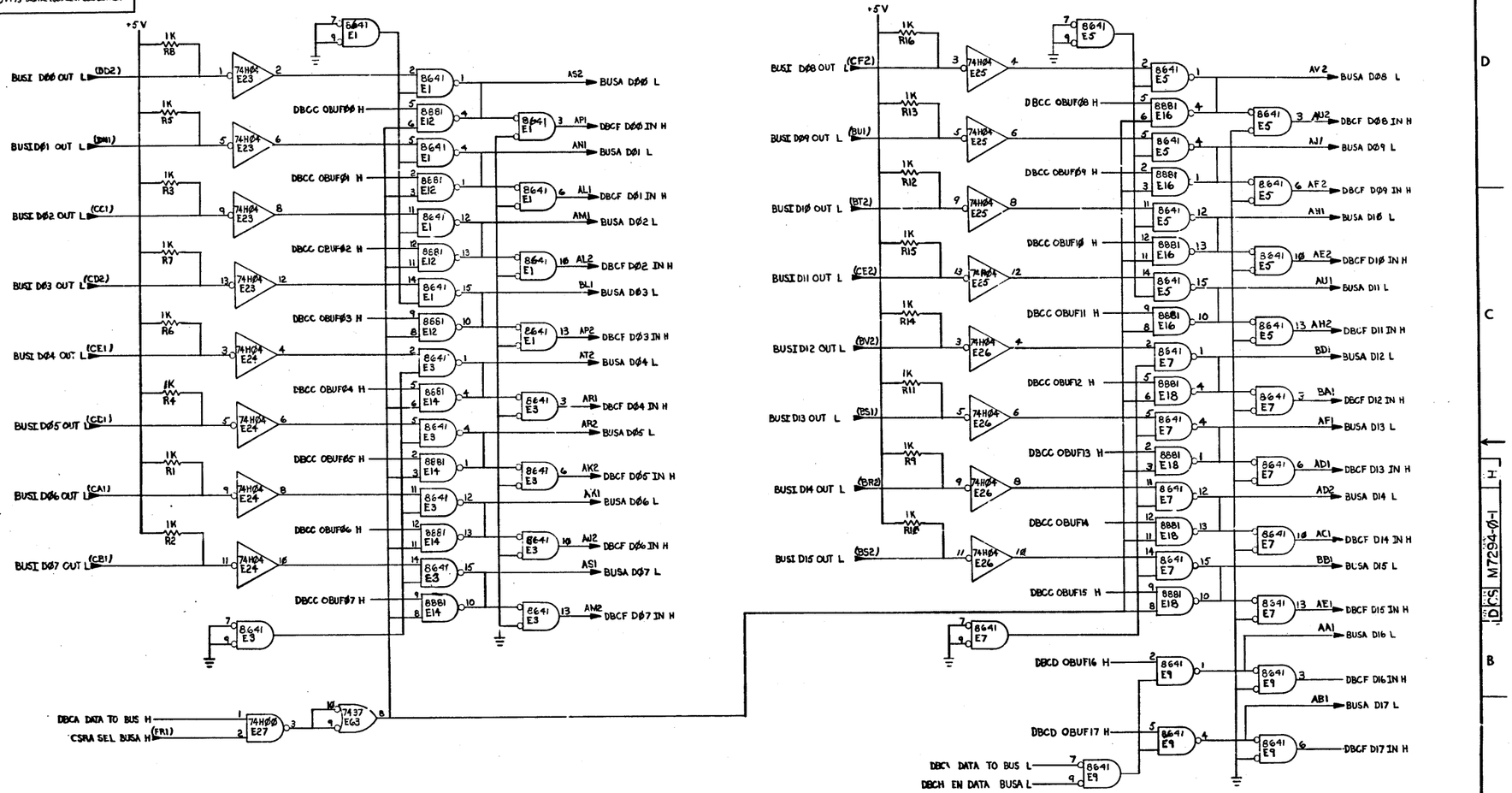


REVISIONS		
CHK	CHANGE NO.	REV

SLOT 03
UNBUS B DATA TRANSCEIVERS

TITLE	SIZE	CODE	NUMBER	REV.
DATA BUFFER & CONTROL (DBCE)	D	CS	M7294-0-1	H
SCALE NONE	SHEET 6 OF 9	DIST.		

DEC FORM 40
0000 138



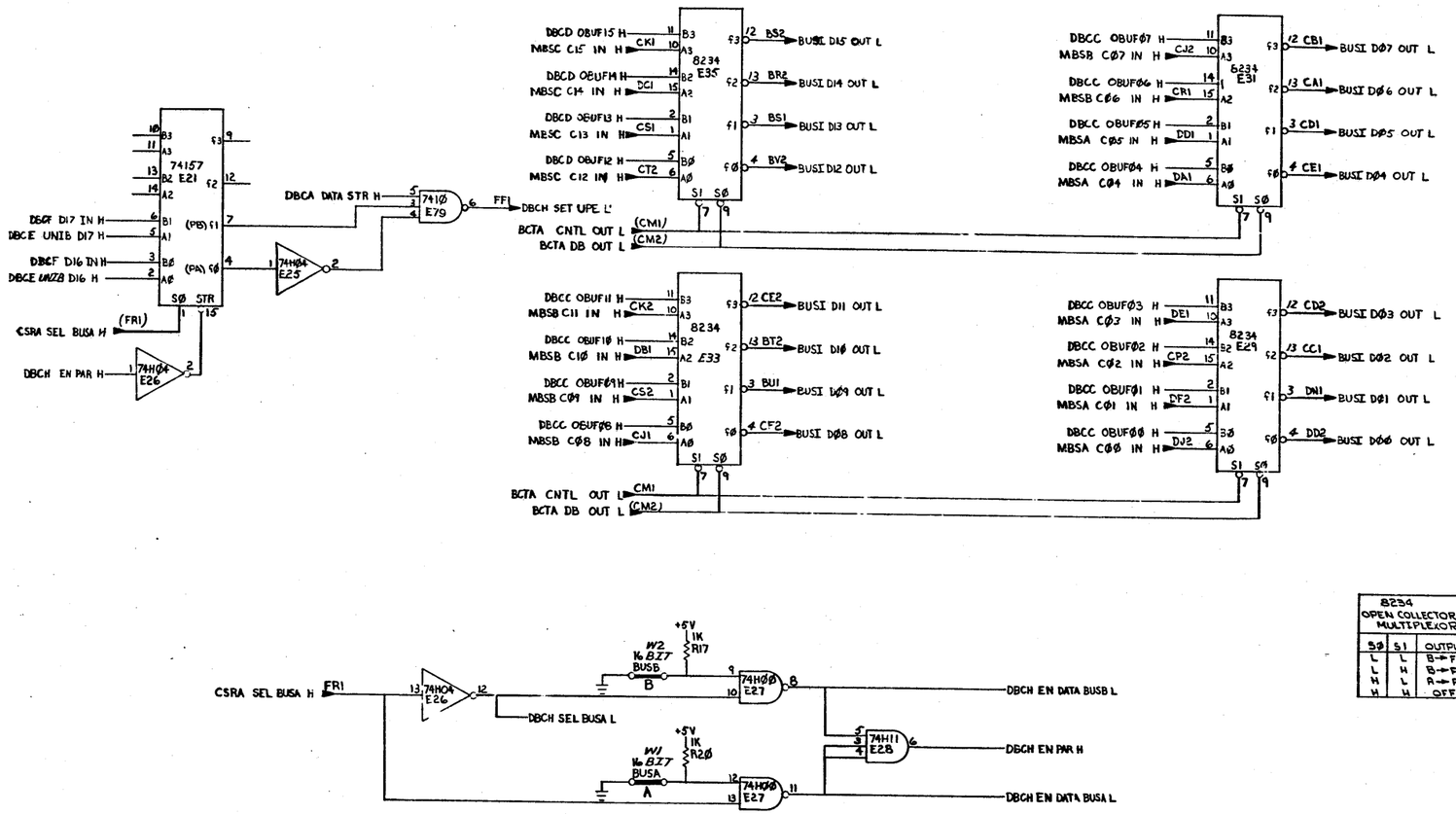
REVISIONS

CHK	CHANGE NO	REV

SLOT 03
UNIBUS A DATA TRANSCEIVERS

TITLE: DATA BUFFER & CONTROL (DBCF)		SIZE: D	CODE: CS	NUMBER: M7294-0H
SCALE: NONE	SHEET 7 OF 9	DIST.		REV: H

DCS M7294-0-H



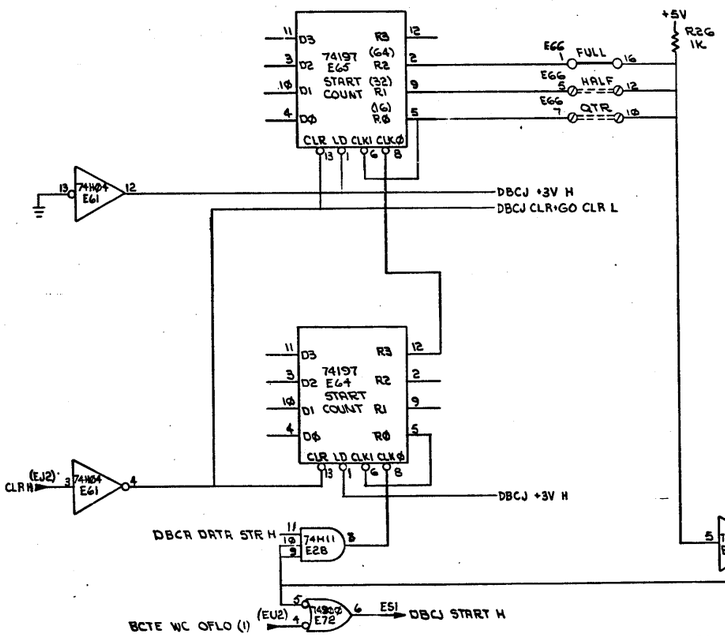
8234
OPEN COLLECTOR
MULTIPLEXOR

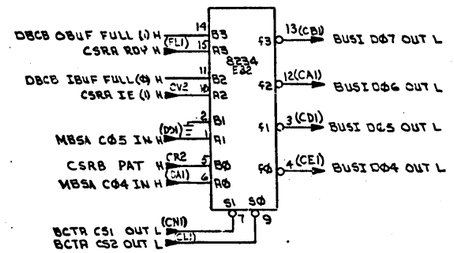
S0	S1	OUTPUT
L	L	B→F (NOT USED)
L	H	B→F
H	L	A→F
H	H	OFF

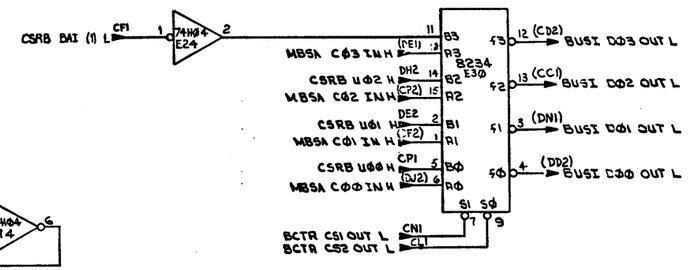
REVISIONS		
CHK	CHANGE NO	REV.

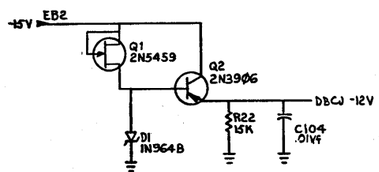
SLOT 03
UNIBUS PARITY CNTL & DATA OUT MPXS

TITLE	SIZE	CODE	NUMBER	REV.
DATA BUFFER & CONTROL (DBCH)	D	CS	M7294-0-1	H
SCALE: NONE SHEET 8 OF 9	DIST.			









REVISIONS

CHK	CHANGE NO.	REV.

SLOT 03
START CNTL & DATA OUT MPXS

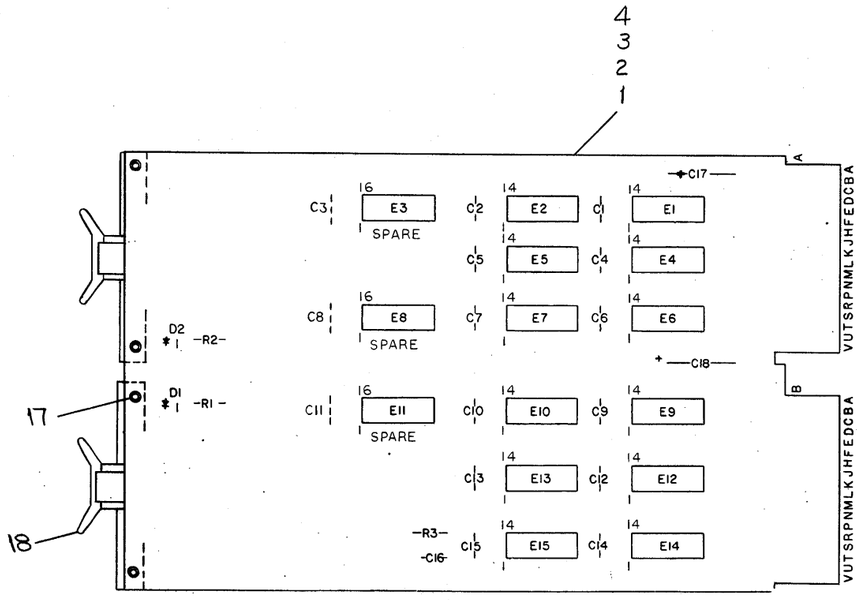
TITLE	SIZE	CODE	NUMBER	REV.
DATA BUFFER & CONTROL (DBCJ)	D	CS	M7294-0-1	H

SCALE NONE SHEET 9 OF 9 DIST.

DCSM7294-0-1 H

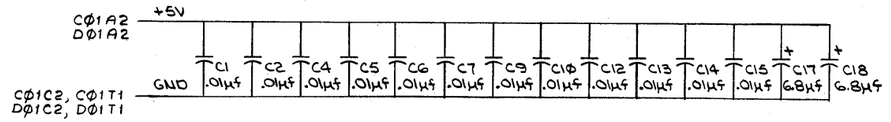
NOTES:

1. PIN NOTATION THROUGHOUT IS ORDERED UPON MODULE PLACEMENT IN THE RH11. MODULE PIN REFERENCE ALONE IS OBTAINED BY DELETING THE NUMBER (SLOT LOCATION) AFTER THE FIRST LETTER AND CONVERTING THE FIRST LETTER ACCORDING TO THE PIN NOMENCLATURE CHART AT RIGHT.
2. C3, C8, C11, E3, E8 & E11 ARE SPARE COMPONENT SLOTS.



PIN NOMENCLATURE

MODULE	RH11
A	C
B	D



REF				
REF		XY COORDINATE HOLE LOCATION	K-CO-M7297-Ø-4	1
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-M7297-Ø-5	2
REF		MODULE ECO HISTORY	B-MH-M7297-Ø-6	3
1		ETCHED CIRCUIT BOARD	5010504	4
12	C1,C2,C4,C5,C6,C7,C9,C10, C12,C13,C14,C15	CAP. .01μf, 20%, 50V DISC	1001610-00	5
1	C16	CAP. 27pf, 5%, 100V MICA	1001739	6
2	C17, C18	CAP. 6.8μf, 10%, 35V S.TANT	1005306	7
2	D1, D2	DIODE LED	1110864	8
1	R3	RES. 1K, 5%, 1/4W	1300365	9
2	R1, R2	RES. 390, 5%, 1/4W	1300309	10
1	E7	IC DEC 74HØØ	1909056	11
1	E5	IC DEC 74H1Ø	1909057	12
1	E10	IC DEC 74H74	1909067	13
1	E15	IC DEC 8881	1909705	14
1	E13	IC DEC 74HØ4	1909931	15
7	E1,E2,E4,E6,E9,E12,E14	IC DEC 7418Ø	1910724	16
4		EYELET	9006732	17
2		HANDLE, FLIP-CHIP (MAGENTA)	9008337-6	18

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

IC TYPE	GND	+ 5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE		

IC PIN LOCATIONS

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

REV	CHANGE NO.	CHK
A	M7297-Ø01	S.JENKINS 9/73

REVISIONS

FIRST USED ON OPTION MODEL: RH11

ETCH BOARD REV: B

		DATE
DRN.		
CHK'D.		9/20/73
ENG.		
PROJ. ENG.		
PROD.		

NEXT HIGHER ASSY

SCALE NONE

SHEET OF 2

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: PARITY CONTROL (PAC)

SIZE	CODE	NUMBER	REV.
D	CS	M7297-Ø-1	A

DIST.

DEC FORM NO. DRD-135A

SIZE D | CODE CS | NUMBER M7297-0-1 | REV A

DBCB GATE SYNCD H C0I PI — 74H00 E7 — C0I RI PACA SYNC PA H

74H04 E13 — PACA +3V H

BCTB AS REG H D0I VI — 8881 E15 — C16 27pf — +5V R3 1K

74H10 E5 — 74H00 E7 — PACA +3V H

DBCA DATA STR H C0I BI — 74H10 E5 — 74H74 E10 — D0I SI PACA SYNC PE (1) H; PACA SYNC PE (Ø) H

74H74 E10 — D0I UI PACA CNTL PE (1) H; PACA CNTL PE (Ø) H

BCTA CNTL OUT L D0I RI

C9RA WRITE L C0I RI — 74H04 E13 — D0I V2 PACA WRITE H

C9RB CLR ERR L D0I RI — 74H04 E13 — 74H04 E13

PACA SYNC PE (1) L; PACA CNTL PE (1) L — 74H00 E7 — PACA MPE H

D0I BI PACA CNTL PA OUT H

DBCD OBUFPA H C0I C1
DBCD OBUF17 H C0I D1
DBCD OBUF16 H C0I E1
DBCD OBUF15 H C0I N2
DBCD OBUF14 H C0I P2
DBCD OBUF13 H C0I K1
DBCD OBUF12 H C0I M1
DBCD OBUF11 H C0I K2
DBCC OBUF10 H C0I L2
DBCC OBUF09 H C0I M2
DBCC OBUF08 H C0I L1
DBCC OBUF07 H C0I H1
DBCC OBUF06 H C0I J1
DBCC OBUF05 H C0I J2
DBCC OBUF04 H C0I H2
DBCC OBUF03 H C0I D2
DBCC OBUF02 H C0I E2
DBCC OBUF01 H C0I F1
DBCC OBUF00 H C0I F2

74181Ø E2 (EVEN / ODD) — 74181Ø E4 (EVEN / ODD) — 74181Ø E1 (EVEN / ODD)

DBCF D15 IN H D0I C1
DBCF D14 IN H D0I D1
DBCF D13 IN H D0I D2
DBCF D12 IN H D0I E2
DBCF D11 IN H D0I F2
DBCF D10 IN H D0I H2
DBCF D09 IN H D0I K2
DBCF D08 IN H D0I J2

74181Ø E9 (EVEN / ODD)

DBCF D07 IN H C0I U1
DBCF D06 IN H C0I V1
DBCF D05 IN H C0I R2
DBCF D04 IN H C0I S2
DBCF D03 IN H C0I T2
DBCF D02 IN H C0I V2
DBCF D01 IN H C0I U2
DBCF D00 IN H C0I S1

74181Ø E6 (EVEN / ODD)

MBSC C15 IN H D0I T2
MBSC C14 IN H D0I U2
MBSC C13 IN H D0I L2
MBSC C12 IN H D0I M2
MBSB C11 IN H D0I N2
MBSB C10 IN H D0I S2
MBSB C09 IN H D0I R2
MBSB C08 IN H D0I P2

74181Ø E14 (EVEN / ODD)

MBSB C07 IN H D0I M1
MBSB C06 IN H D0I N1
MBSA C05 IN H D0I E1
MBSA C04 IN H D0I F1
MBSA C03 IN H D0I H1
MBSA C02 IN H D0I L1
MBSA C01 IN H D0I K1
MBSA C00 IN H D0I J1

74181Ø E12 (EVEN / ODD)

74H04 E13 — MBSC CNTL PA IN H D0I P1

CSRB FAT H C0I N1 — 74H04 E13

+5V R1 390 — CONTROL BUS PARITY ERROR D1 — 8881 E15 — PACA CNTL PE (1) H

+5V R2 390 — SYNCHRONOUS BUS PARITY ERROR D2 — 8881 E15 — PACA SYNC PE (1) H

74181Ø TRUTH TABLE

INPUTS			OUTPUTS	
# OF 1'S AT D0 - D7	EVEN	ODD	ΣEVEN	ΣODD
EVEN	L	H	L	H
ODD	L	H	H	L
EVEN	H	L	H	L
ODD	H	L	L	H

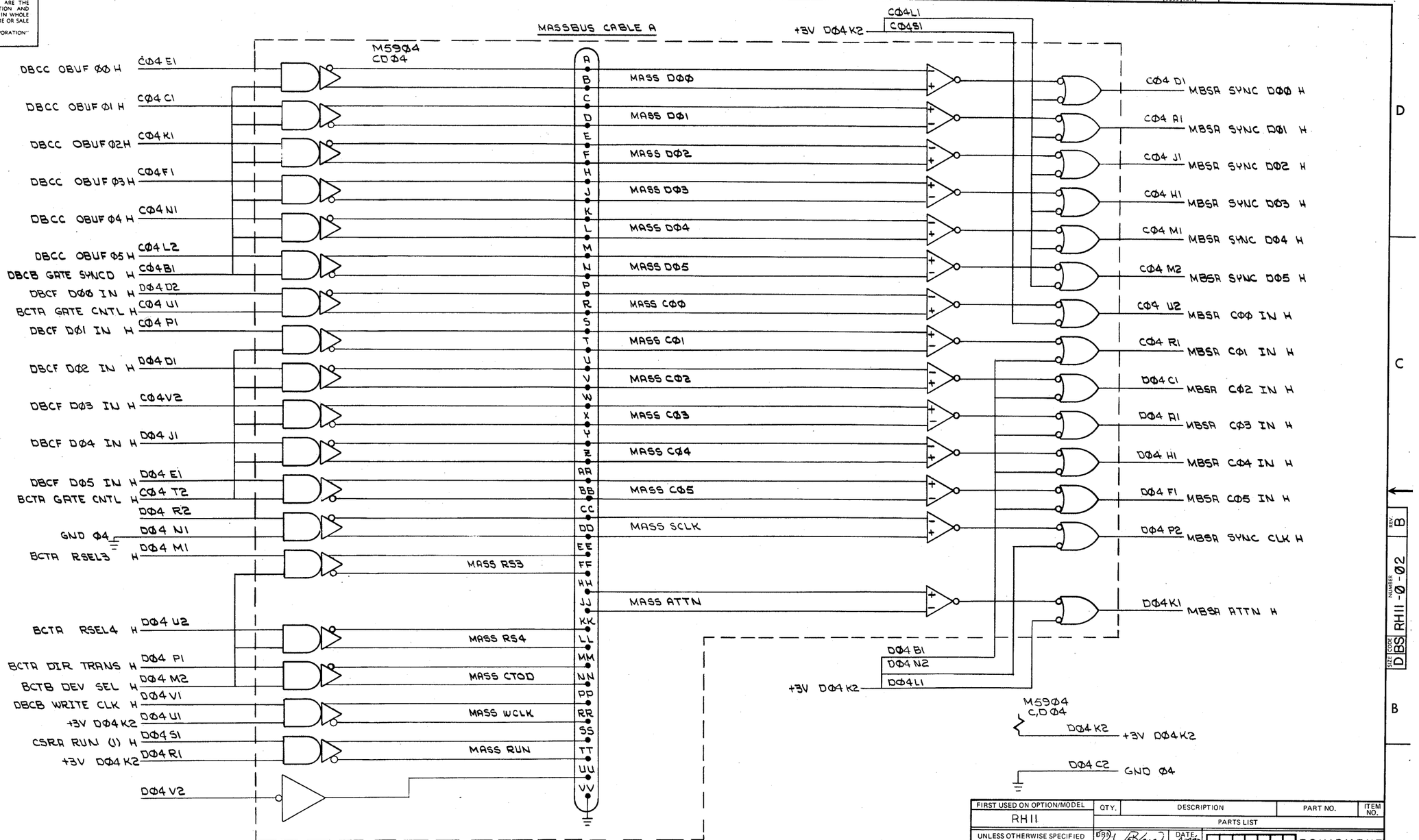
REVISIONS		
CHK	CHANGE NO.	REV.

PARITY DETECT. & GEN. FOR MASSBUS

TITLE	SIZE	CODE	NUMBER	REV.
PARITY CONTROL (PACA)	D	CS	M7297-0-1	A

SCALE NONE | SHEET 2 OF 2 | DIST.

DEC FORM NO. 1138



REVISION:	CHK	CHANGE NO	REV
		RH11-00001 J Markwarth 11-16-73 S JENKINS 11-20-73	A
		RH11-00002 G Blanchard 2-11-74 S JENKINS 2-15-74	B

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1 — ANGLES: 0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

MATERIAL —

FINISH —

DRN DJ Blanchard 5/14/73
CHKD J Markwarth 5-31-73
ENG.
PROJ. ENG.
PROD.

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: MASSBUS TRANSCEIVER (MBSA)

NEXT HIGHER ASSY. B-DL-RH11-Ø

SIZE D | CODE BS | NUMBER RH11-Ø-Ø2 | REV. B

SCALE NONE

SHEET 1 OF 3

DIST.

DEC FORM NO DRD 102-C

MASSBUS CABLE B

M5904 C,D05

DBCC OBUF Ø6 H — C05E1
DBCC OBUF Ø7 H — C05C1
DBCC OBUF Ø8 H — C05K1
DBCC OBUF Ø9 H — C05F1
DBCC OBUF 1Ø H — C05N1
DBCC OBUF 11 H — C05L2
DBCB GATE SYNCD H — C05B1
DBCF DØ6 IN H — DØ5D2
BCTA GATE CNTL H — C05U1
DBCF DØ7 IN H — C05P1
DBCF DØ8 IN H — DØ5D1
DBCF DØ9 IN H — C05V2
DBCF D1Ø IN H — DØ5J1
DBCF D11 IN H — DØ5E1
BCTA GATE CNTL H — C05T2
GND Ø5 — DØ5R2
BCTA RSEL Ø H — DØ5N1, DØ5M1
BCTA RSEL1 H — DØ5U2
BCTA RSEL2 H — DØ5P1
BCTB DEV SEL H — DØ5M2
BCTJ MB INIT H — DØ5V1
+3V DØ5K2 — DØ5U1, DØ5S1
GND Ø5 — DØ5R1
DØ5V2

A MASS DØ6
B MASS DØ7
C MASS DØ8
D MASS DØ9
E MASS D1Ø
F MASS D11
H MASS CØ6
J MASS CØ7
K MASS CØ8
L MASS CØ9
M MASS C1Ø
N MASS C11
P MASS EXC
R MASS RSØ
S MASS EBL
T MASS RS1
U MASS RS2
V MASS INIT
W MASS SP1

+3V DØ5K2 — C05L1, C05S1

MASS DØ6 — C05D1 — MBSB SYNC DØ6 H
MASS DØ7 — C05A1 — MBSB SYNC DØ7 H
MASS DØ8 — C05J1 — MBSB SYNC DØ8 H
MASS DØ9 — C05H1 — MBSB SYNC DØ9 H
MASS D1Ø — C05M1 — MBSB SYNC D1Ø H
MASS D11 — C05M2 — MBSB SYNC D11 H
MASS CØ6 — CØ5U2 — MBSB CØ6 IN H
MASS CØ7 — C05R1 — MBSB CØ7 IN H
MASS CØ8 — DØ5C1 — MBSB CØ8 IN H
MASS CØ9 — DØ5A1 — MBSB CØ9 IN H
MASS C1Ø — DØ5H1 — MBSB C1Ø IN H
MASS C11 — DØ5F1 — MBSB C11 IN H
MASS EXC — DØ5P2 — MBSB EXCP H
MASS EBL — DØ5K1 — MBSB EBL H

DØ5B1, DØ5N2, DØ5L1 — +3V DØ5K2

M5904 C,DØ5 — DØ5K2 — +3V DØ5K2

DØ5C2 — GND Ø5

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1 — ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY √

DRN R.J. LeBlanc DATE 5/MAY/73
CHKD R.J. LeBlanc DATE 6-5-73
ENG. J. Jenkins DATE 6-5-73
PROJ ENG J. Jenkins DATE 6-5-73
PROD A. Markstein DATE 6/7/73

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: MASSBUS TRANSCEIVER (MBSB)

MATERIAL: //
FINISH: //
NEXT HIGHER ASSY. B-DD-RH11-Ø
SCALE NONE
SHEET 2 OF 3

SIZE	CODE	NUMBER	REV.
D	BS	RH11-Ø-Ø2	B

DIST.

REVISIONS | REV | CHANGE NO | CHK

DEC FORM NO. DRD 102-C

MASSBUS CABLE C

M5904 CDØG

DBCD OBUF 12 H — CØG E1
DBCD OBUF 13 H — CØG C1
DBCD OBUF 14 H — CØG K1
DBCD OBUF 15 H — CØG F1
DBCD OBUF 16 H — CØG N1
DBCD OBUF 17 H — CØG L2
DBCB GATE SYNCD H — CØG B1
PACA SYNC PA H — DØG D2
PACA WRITE H — CØG U1
DBCF D12 IN H — CØG P1
DBCF D13 IN H — DØG D1
DBCF D14 IN H — CØG V2
DBCF D15 IN H — DØG J1
PACA CNTL PA OUT H — DØG E1
BCTA GATE CNTL H — CØG T2
DØG R2
GND ØG — DØG N1
CSRB UØØ H — DØG M1
CSRB UØ1 H — DØG U2
CSRB UØ2 H — DØG P1
BCTB DEV SEL H — DØG M2
BCTB DEMAND (1) H — DØG V1
+3V DØGK2 — DØG U1
DØG S1
GND ØG — DØG R1
SUPPLY AC LO L — DØG V2

A MASS D12
B MASS D13
C MASS D14
D MASS D15
E MASS D16
F MASS D17
H MASS DPA
J MASS C12
K MASS C13
L MASS C14
M MASS C15
N MASS CPA
P MASS OCC
R MASS DSØ
S MASS TRA
T MASS DS1
U MASS DS2
V MASS DEM
W MASS SP2
X MASS FAIL H

+3V DØGK2 — CØG L1, CØG S1

CØG D1 — MBSC SYNC D12 H
CØG A1 — MBSC SYNC D13 H
CØG J1 — MBSC SYNC D14 H
CØG H1 — MBSC SYNC D15 H
CØG M1 — MBSC SYNC D16 H
CØG M2 — MBSC SYNC D17 H
CØG U2 — MBSC SYNC PA H
CØG R1 — MBSC C12 IN H
DØG C1 — MBSC C13 IN H
DØG R1 — MBSC C14 IN H
DØG H1 — MBSC C15 IN H
DØG F1 — MBSC CNTL PA IN H
DØG P2 — MBSC OCC H
DØG K1 — MBSC TRANS H

DØGB1, DØGN2, DØGL1 — +3V DØGK2

M5904 C,DØG
DØGK2 — +3V DØGK2
DØGC2 — GND ØG

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES: DECIMALS .xxx = .005, .xx = .02, .x = .1; ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY √
MATERIAL —
FINISH —

DRN P.J. LeBlanc DATE 5/24/73
CHK'D P.J. LeBlanc DATE 5-24-73
ENG. DATE
PROJ. ENG. DATE
PROD. DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: MASSBUS TRANSCEIVER (MBSC)

NEXT HIGHER ASSY. B-DD-RH11-Ø
SCALE NONE
SHEET 3 OF 3

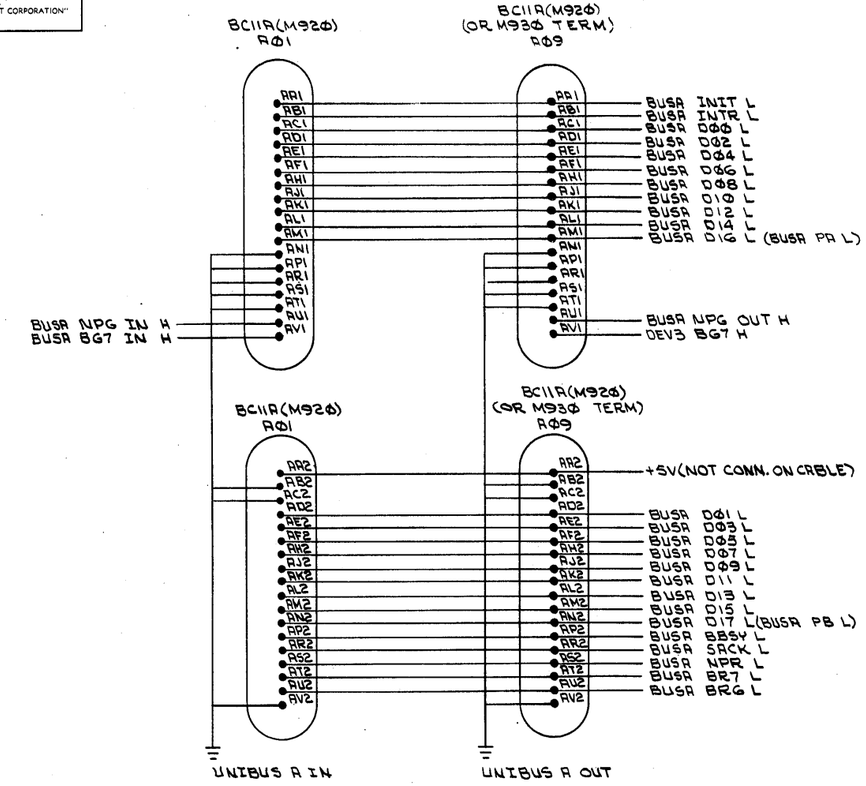
SIZE	CODE	NUMBER	REV.
D	BS	RH11-Ø-Ø2	B

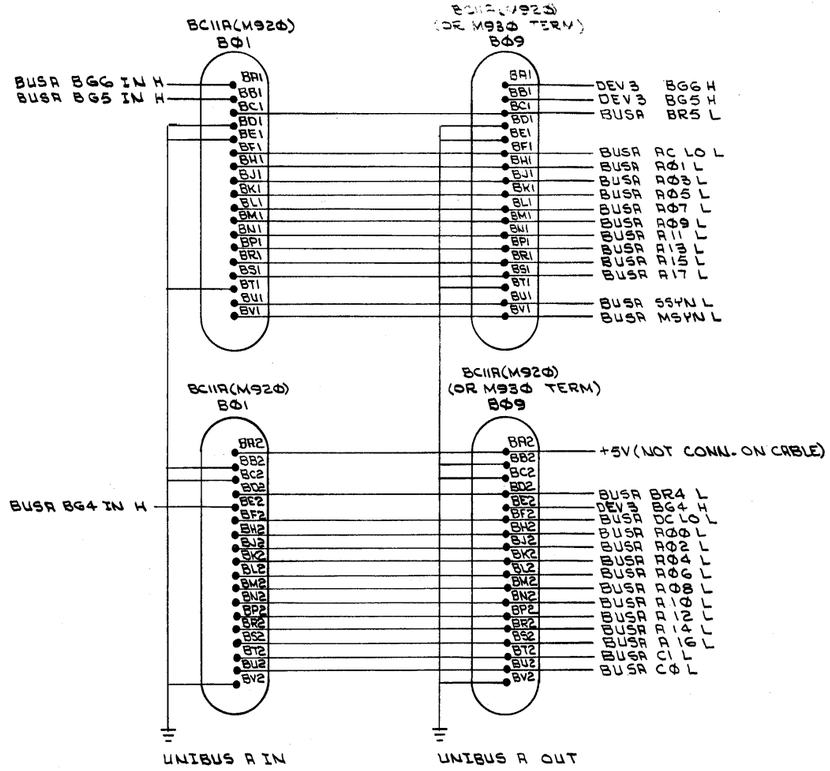
DIST.

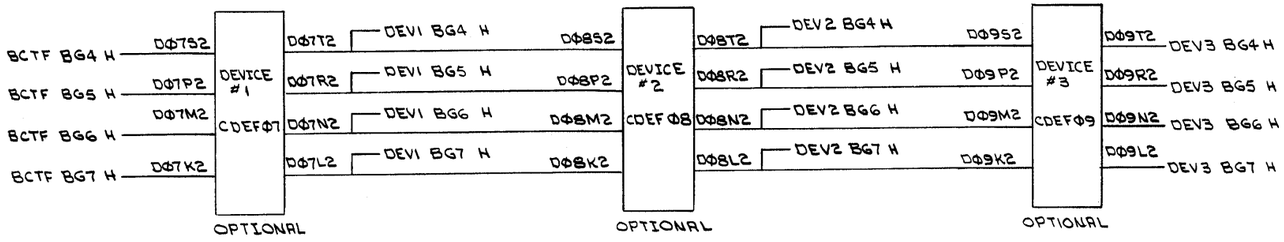
REVISIONS | REV | CHANGE NO | CHK

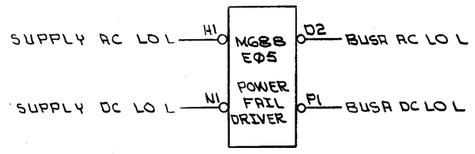
DEC FORM NO. DRD 102-C

SIZE CODE D BS NUMBERS RH11-0-02 REV B









FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1 — ANGLES: ·0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY √

DRTD. — DATE 4 MAR 73
CHK'D. — DATE 4-3-73
ENG. — DATE
PROJ. ENG. — DATE
PROD. — DATE
MATERIAL
FINISH
NEXT HIGHER ASSY. B DD-RH11-Ø
SCALE NONE
SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
UNIBUS A CABLE DIAGRAM (BUSA)

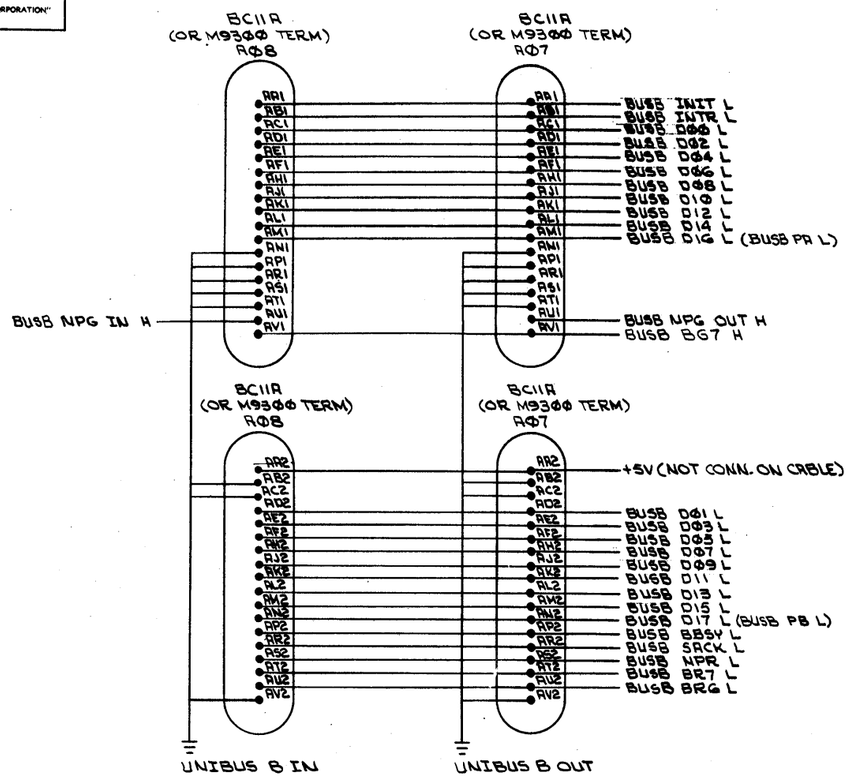
SIZE	CODE	NUMBER	REV.
D	IC	RH11-Ø-03	

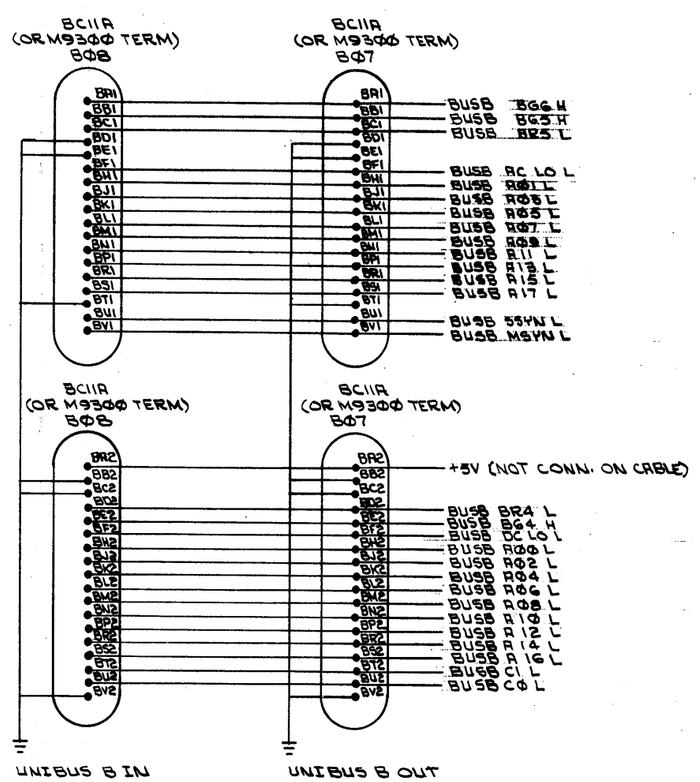
DIST.

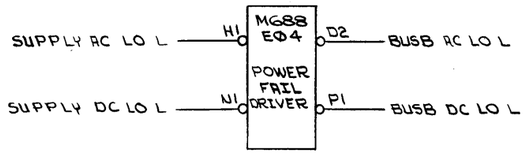
REVISIONS			
LTR	CHANGE NO	CHK	

DEC FORM NO
ORD 102 C

SIZE D | CODE IC | NUMBER RH11-Ø-03 | REV





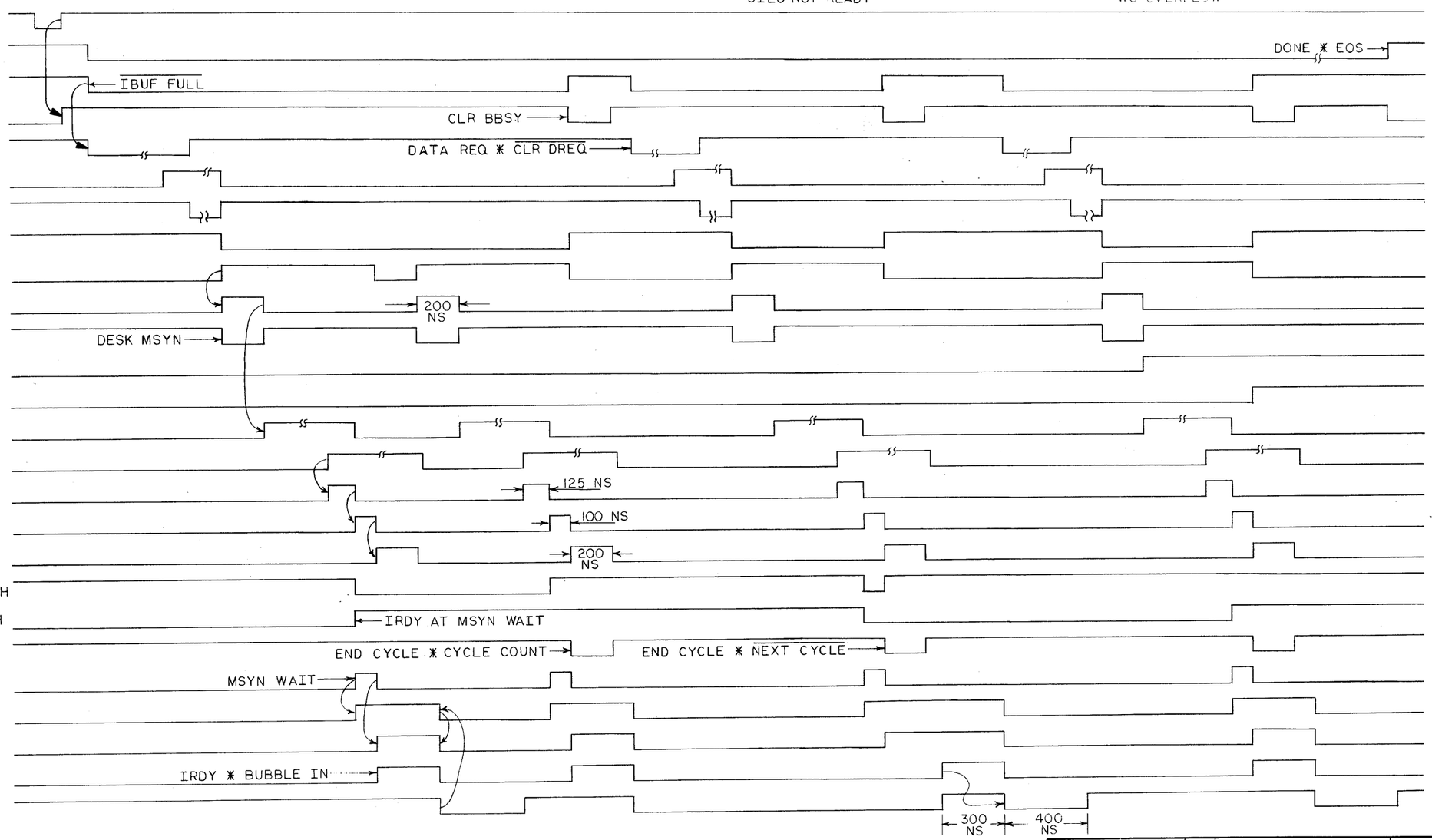


REVISIONS		
REV	CHANGE NO	CHK

FIRST USED ON OPTION/MODEL: RH11	QTY.	DESCRIPTION: PARTS LIST	PART NO. / ITEM NO.
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES: DECIMALS .xxx = .005, .xx = .02, .x = .1; ANGLES ±0° 30'. REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY √	DRAWN	DATE 4 APR 73	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
	CHK'D	DATE 8-3-73	TITLE: UNIBUS B CABLE DIAGRAM (BUSB)
	ENG.	DATE 8-3-73	
	PROJ. ENG.	DATE 8 3 73	
	PROD.	DATE 8-3-73	
MATERIAL —	NEXT HIGHER ASSY. B-DD-RH11-0		SIZE D / CODE IC / NUMBER RH11-0-04 / REV.
FINISH —	SCALE NONE	SHEET OF	DIST.

DEC FORM NO. DRD 102-C

WRITE COMMAND UNIBUS TIMING DIAGRAM (DATI)



REVISIONS			
CHK	CHANGE NO	REV	
PM	RH11-00001	A	
J. Mankuta	11-16-73		
S. JENKINS	11-28-73		

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES

DECIMALS	ANGLES
.xxx = .005	±0° 30'
.xx = .02	
.x = .1	

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY √

MATERIAL —"—

FINISH —"—

DRN	P.N. LeBlanc	DATE 21 JUNE 73
CHKD	J.J. Coffman	DATE 7-30-73
ENG	S. Jenkins	DATE 8-2-73
PROJ ENG	J. Mankuta	DATE 8-3-73
PROD	[illegible]	DATE 8-7-73

NEXT HIGHER ASSY. B-DD-RH11-0
SCALE NONE
SHEET OF

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
WRITE UNIBUS
(TIMING DIAGRAM)

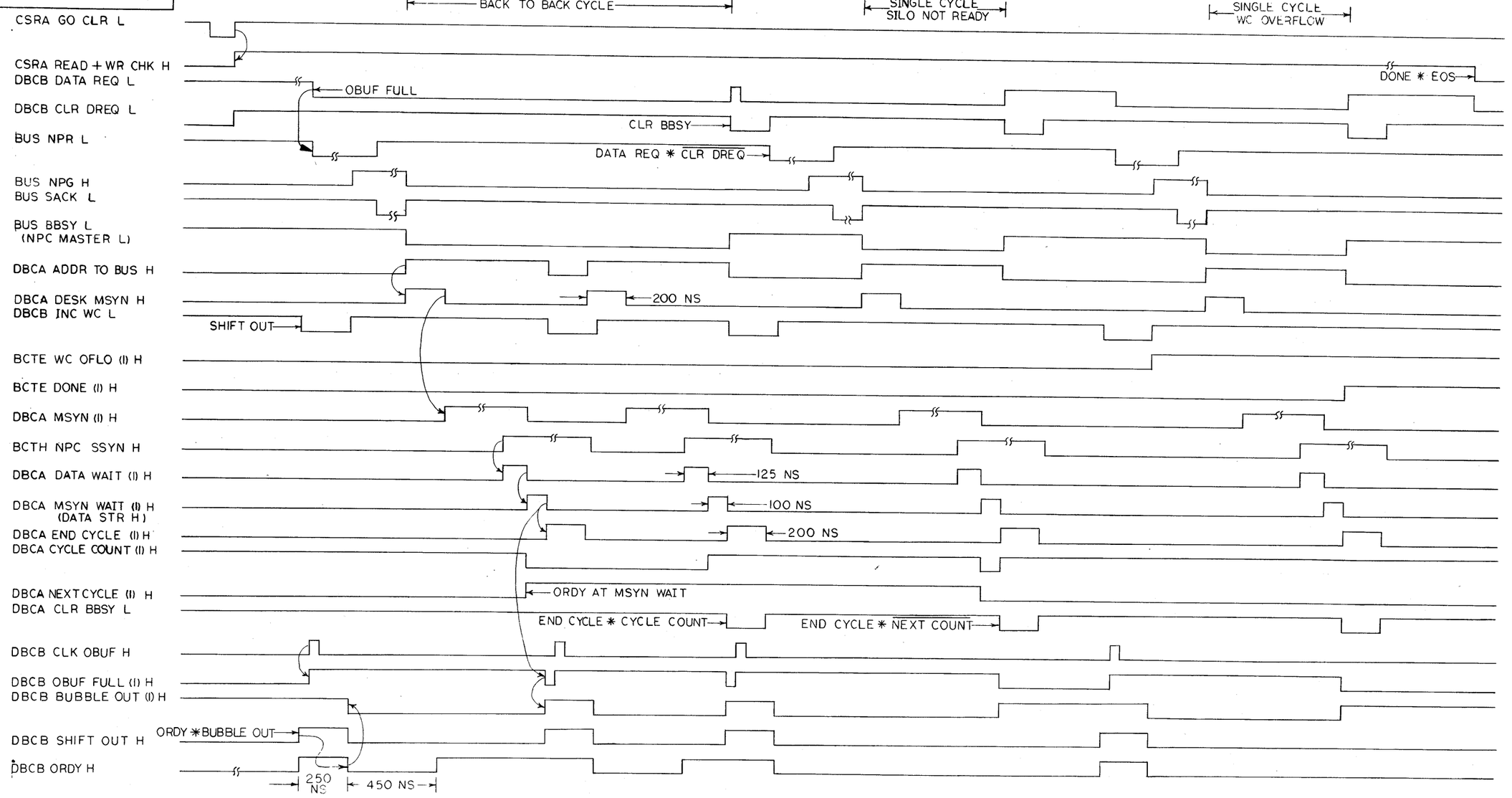
SIZE D | CODE TD | NUMBER RH11-0-05 | REV. A

DIST.

DEC FORM NO. DRD 102-C

SIZE D | CODE TD | NUMBER RH11-0-05 | REV A

READ OR WRITE CHECK UNIBUS TIMING DIAGRAM (READ: DATO-WR CHK: DATI)



REVISIONS			
CHK	CHANGE NO	REV	
[illegible]	RHII-0000!	A	
S. Markowitz	11-16-73		
S. JENKINS	11-29-73		

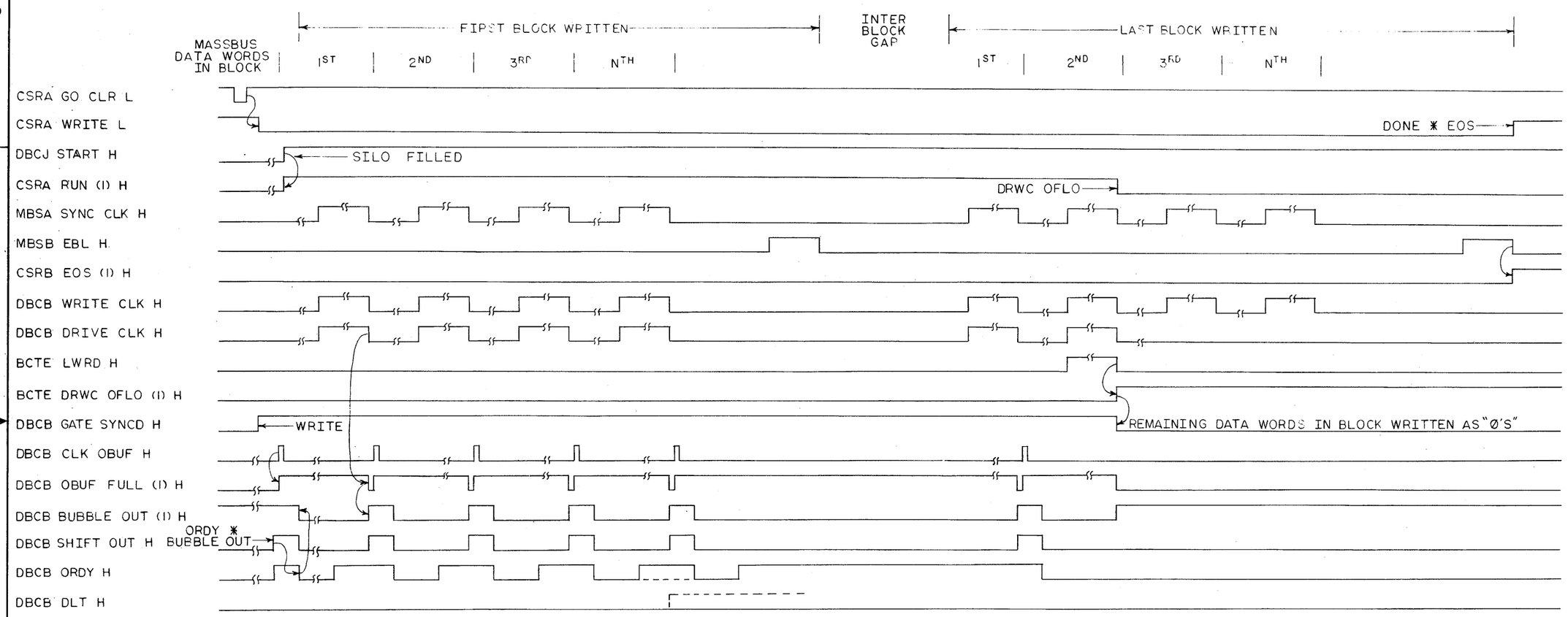
FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RHII		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES: DECIMALS .xxx = .005, .xx = .02, .x = .1; ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY √

DRN. B. Nichols	DATE 6-22-73	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHKD. [illegible]	DATE 6-22-73	
ENG. [illegible]	DATE 6-22-73	
PROJ. ENG. [illegible]	DATE	TITLE READ+WRITE CHECK UNIBUS (TIMING DIAG)
PROD. [illegible]	DATE	
MATERIAL —	NEXT HIGHER ASSY. B-DD-RHII-0	SIZE D CODE TD NUMBER RHII-0-06 REV. A
FINISH —	SCALE NONE	
	SHEET 1 OF 1	DIST.

DEC FORM NO. DRD 102-C

WRITE COMMAND MASSBUS TIMING DIAGRAM



FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1 — ANGLES: ·0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

DRN.	DATE 1/6/73
CHK'D.	DATE 1-8-73
ENG.	DATE
PROJ. ENG.	DATE
PROD.	DATE

MATERIAL —#—
FINISH —#—
NEXT HIGHER ASSY. E-DC-RH11-0
SCALE NONE
SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: WRITE MASSBUS (TIMING DIAGRAM)

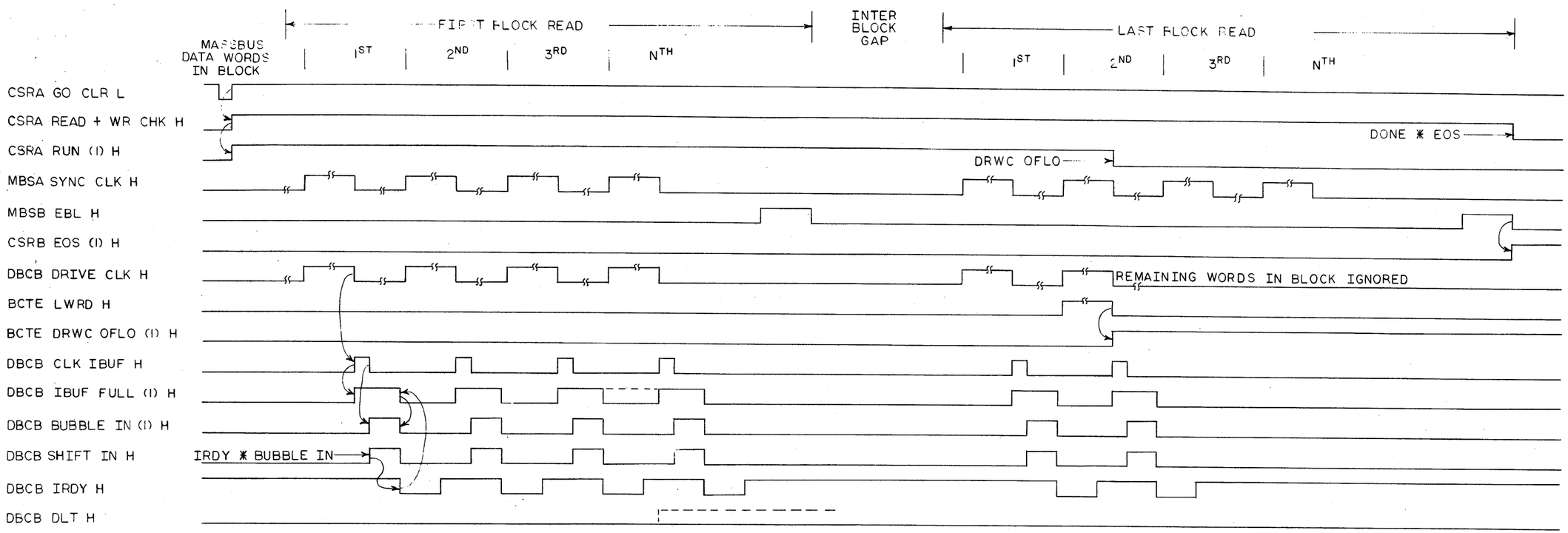
SIZE	CODE	NUMBER	REV.
D	TD	RH11-Ø-Ø7	

DIST.

REVISIONS:	REV	CHK
CHANGE TO		

DEC FORM NO. DRD 102-C

READ OR WRITE CHECK MASSBUS TIMING DIAGRAM



REVISIONS	REV	CHANGE NO	CHK

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES

DECIMALS	ANGLES
.xxx = .005	·0 30'
.xx = .02	
.x = .1	

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —"—

FINISH —"—

DRN.	P.J. Gilmore	DATE 21 JUNE 73
CHKD.	R. Gilmore	DATE 6-3-73
ENG.		DATE
PROJ. ENG.		DATE
PROD.		DATE

NEXT HIGHER ASSY. B-DL-RH11-0

SCALE NONE

SHEET OF

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

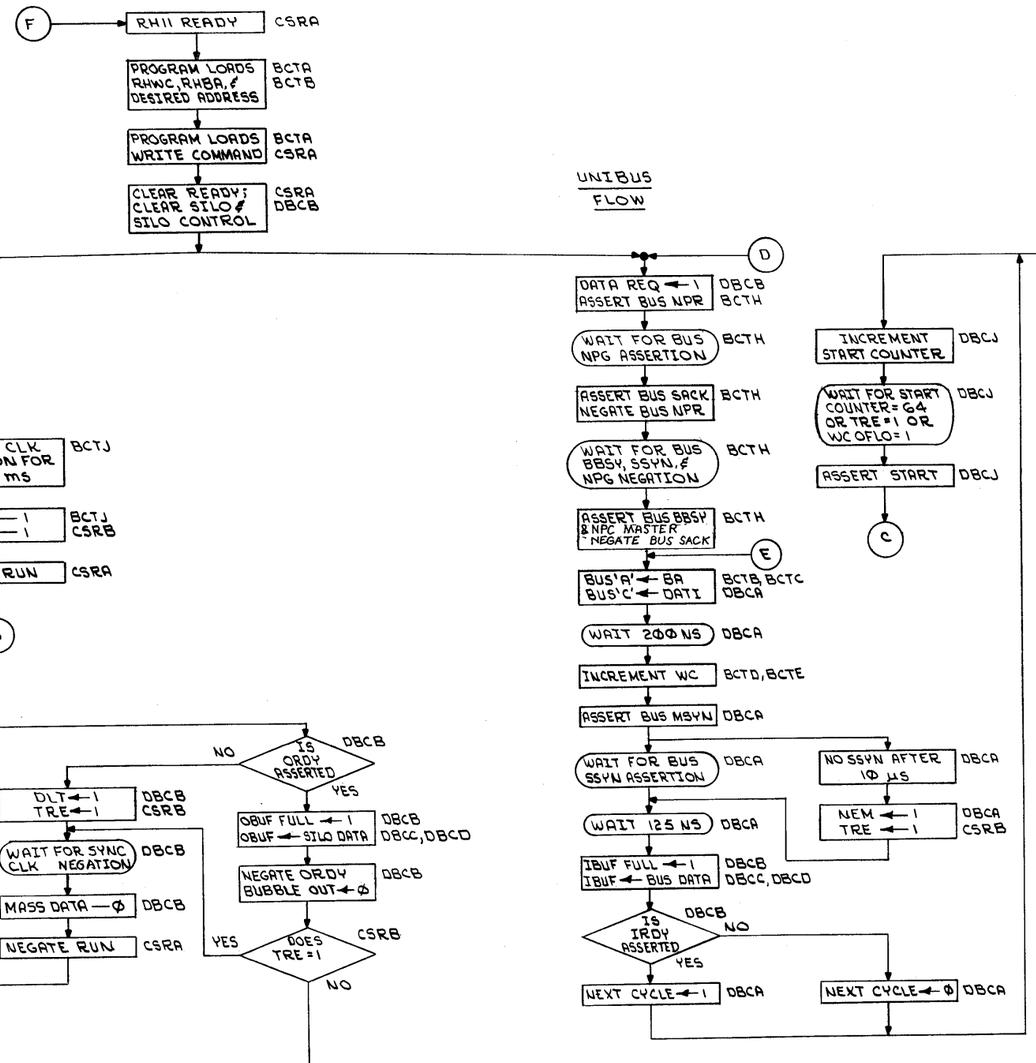
TITLE READ + WRITE CHECK MASSBUS (TIMING DIAGRAM)

SIZE	CODE	NUMBER	REV.
D	TD	RH11-0-08	

DIST.

DEC FORM 1-10, DRD 102 C

SIZE CODE DTD NUMBER RH11-0-08 REV.



REVISIONS	REV	CHK	CHANGE NO
	A	gm	RHII-00001

C. Mendenhall 8-14-73
S. JENKINS 11-28-72

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RHII		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1 — ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

DRAWN	J. Gilmore	DATE 15 JUNE 73
CHK'D		DATE 8-3-73
ENG.		DATE 8-3-73
PROJ. ENG.		DATE 8-3-73
PROD.		DATE

MATERIAL —
FINISH —

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

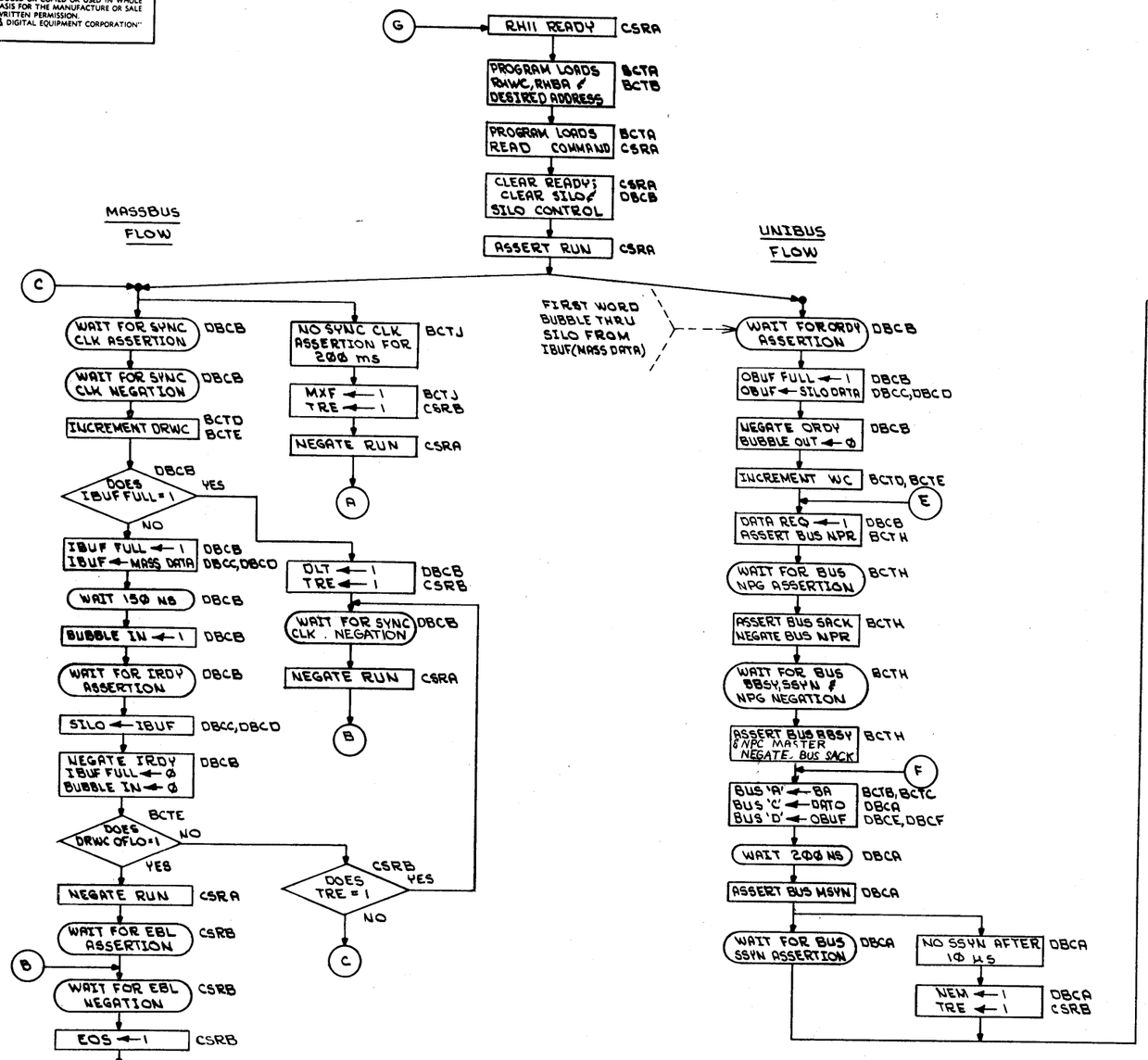
TITLE
WRITE COMMAND FLOW DIAGRAM

NEXT HIGHER ASSY. B-DD-RH11-Ø
SCALE NONE
SHEET | OF |

SIZE	CODE	NUMBER	REV.
D	FD	RH11-Ø-Ø9	A

DIST.

DEC FORM NO DRD 102 C



REVISIONS	REV	CHANGE NO	CHK
	A	RH11-00001	S. Jenkins 11-26-73

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1 | ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY √

MATERIAL —//—
FINISH —//—

DRN	T. J. Bland	DATE 26 JUNE 73
CHKR	[illegible]	DATE 8-3-73
ENG	S. Jenkins	DATE 8-3-73
PROJ ENG.	S. Jenkins	DATE 8-3-73
PROD.	J. Malaberg	DATE 8-3-73

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

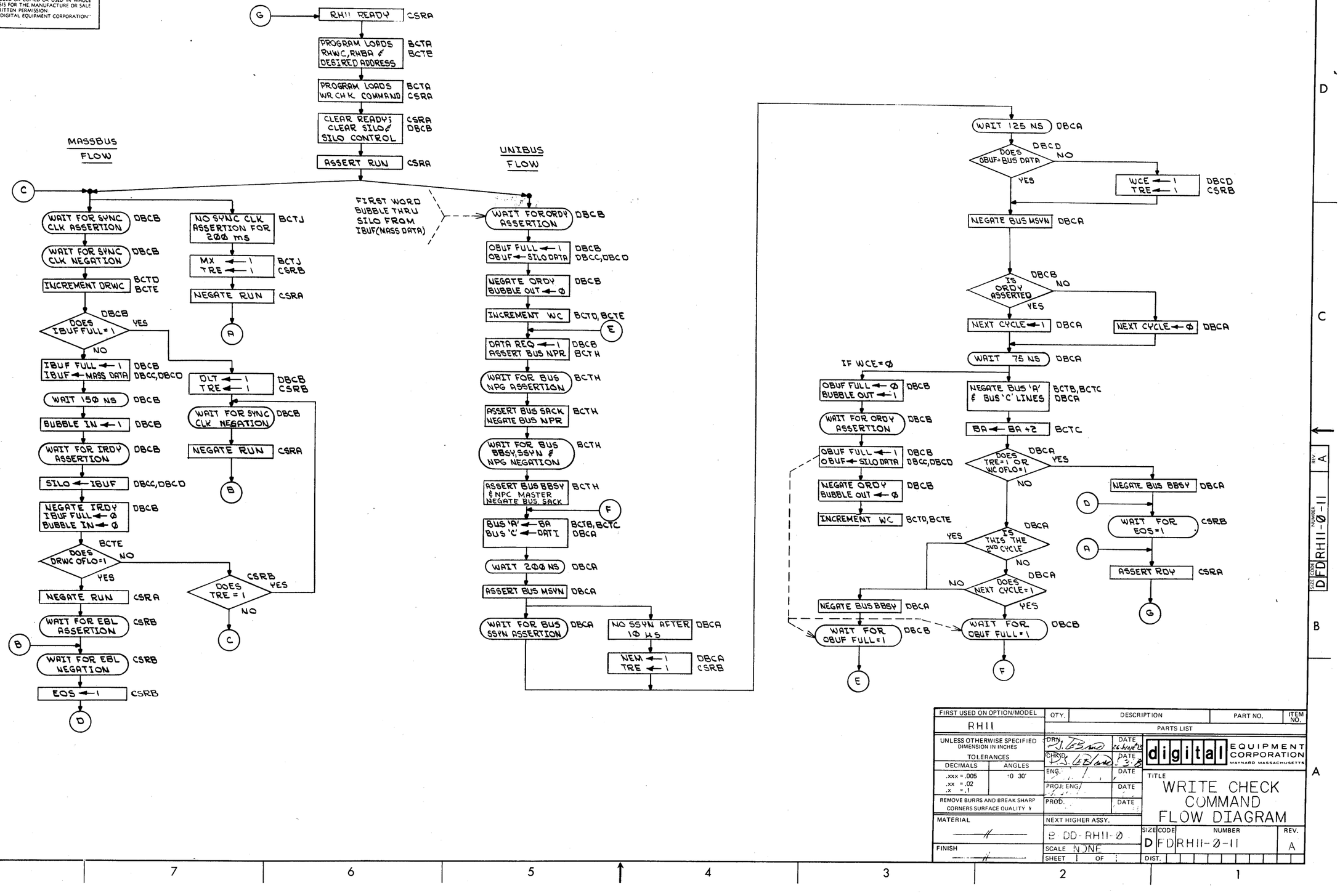
TITLE: READ COMMAND FLOW DIAGRAM

NEXT HIGHER ASSY. B-DD-RH11-Ø
SCALE NONE
SHEET 1 OF 1

SIZE	CODE	NUMBER	REV.
D	FD	RH11-Ø-1Ø	A

DIST.

DEC FORM NO. DRD 102-C



REVISIONS			
CHK	CHANGE NO	REV	
PM	RH11-0001	A	11-26-73
S. Monkewicz			11-16-73
S. JENKIN			11-20-73

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1 | ANGLES: ±0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —

DRN	J. Lebrun	DATE 26 JUNE 73
CHKD	J. Lebrun	DATE 7-3-73
ENG.		DATE
PROJ. ENG.		DATE
PROD.		DATE

NEXT HIGHER ASSY. D DD-RH11-0
SCALE NONE
SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

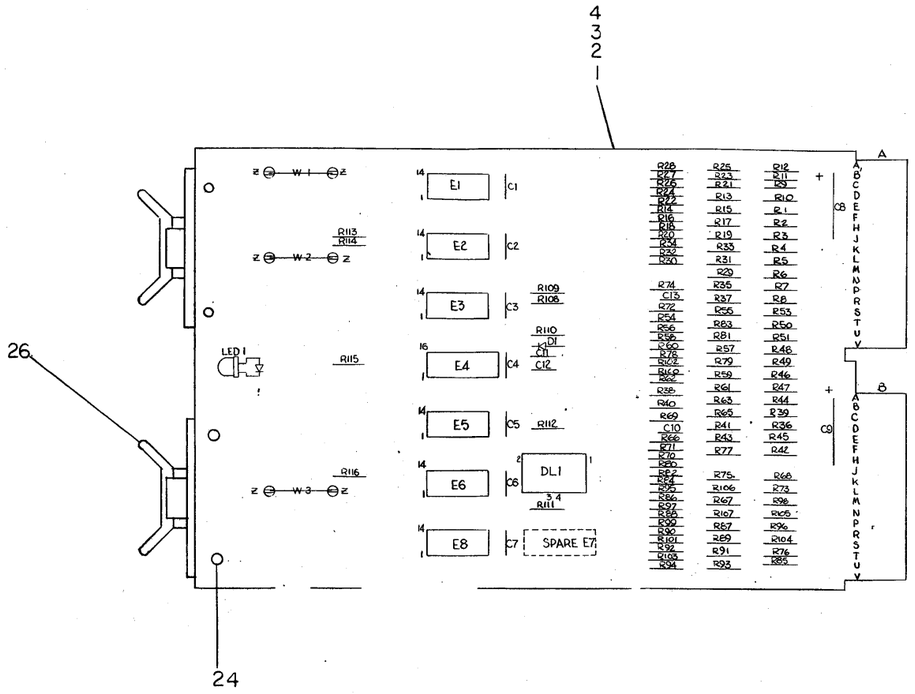
TITLE
WRITE CHECK COMMAND FLOW DIAGRAM

SIZE	CODE	NUMBER	REV.
D	FD	RH11-0-11	A

DIST.

OEC FORM NO DRD 107 C

NOTES:



A/R				
2		#22 AWG BUS WIRE	9107560-01	27
6		HANDLE FLIP CHIP MAGENTA	9008337-6	26
4		SPLITLUG	9006735	25
2	E5, E1	EYELETS	9006732	24
1	E4	IC DEC 11380	1911113	23
1	E6	IC DEC 74123	1910436	22
1	E8	IC DEC 7437	1910091	21
1	E2	IC DEC 8881	1909705	20
1	E3	IC DEC 74H00	1909056	19
1	DL1	IC DEC 7474	1905547	18
1	R108	DELAY LINE	1609559	17
2	R109, R111	RES 330 1/4W 5%	1300295	16
52	R2, A4, R6, R8, R10, R12, R14, R115 R16, R18, R20, R22, R24, R26 R28, R30, R32, R34, R36, R38 R40, R42, R44, R46, R48, R50, R57 R69, R54, R56, R58, R60, R62 R66, R68, R70, R72, R74, R76 R78, R80, R82, R84, R86, R88 R90, R92, R94, R96, R98, R100, R102	RES 390 1/4W 5%	1300309	14
54	R1, R3, R5, R7, R9, R11, R13. R15, R17, R19, R21, R23, R25 R27, R29, R31, R33, R35, R37, R39 R41, R43, R45, R47, R49, R51, R53 R55, R59, R61, R63, R65, R67, R71 R73, R75, R77, R79, R81, R83, R85 R87, R89, R91, R93, R95, R97, R99 R101, R103, R104, R105, R106, R107	RES 180 1/4W 5%	1301322	13
1	R110	RES 15K 1/4W 5%	1300496	12
4	R114, R116, R113, R112	RES 1K 1/4W 5%	1300365	11
1	LED1	DIODE LED	1110864	10
1	D1	DIODE D664	1100114	9
2	C11, C12	CAP 1200 PF 100V 5% DM	1002424	8
7	C1, C2, C3, C4, C5, C6, C7	CAP .01uF 50V 20% AXIAL	1001610	7
2	C8, C9	CAP 39 uF 10V 10% STANT	1000076	6
2	C10, C13	CAP .001 uF 250V 20% DISC	1000043	5
1		ETCHED CIRCUIT BOARD	5010509	4
REF		MODULE ECO HISTORY	B-MH-M9300-0-6	3
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-M9300-0-5	2
REF		X-Y COORDINATE HOLE LOCATION	K-CO-M9300-0-4	1
QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

ETCH BOARD REV A

FIRST USED ON OPTION MODEL
RH11

74123	8	16
11380	1	8
IC TYPE	GND	+ 5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

REV	CHANGE NO.	
D664	IN3600	
TIL-209	—	

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

DRN.	S. Charlier	DATE 3/6/73
CHK'D.		DATE 4/10/73
ENG.		DATE
PROJ. ENG.		DATE
PROD.		DATE
NEXT HIGHER ASSY	—11—	
SCALE		
SHEET	1 OF 2	

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE
UNIBUS B TERMINATOR

SIZE	CODE	NUMBER	REV.
D	CS	M9300-0-1	

DIST.

DEC FORM NO. DRD-135A

SIZE D CODE CS NUMBER M9300-0-1 REV.

REMOVE JUMPER (W1) FOR BEGINNING OF NON PROCESSOR BUS TERM.

W1 — R113 1K — +5V

BUS DC LO L (BF2) — BUS INIT L (AR1) — BUS NPR L (AS2) — BUS NPG H (AU1) — BUS SACK L (AR2)

R115 390 — LED-1 — ILLEGAL JUMPER CONFIG.

REMOVE JUMPER (W2) FOR END OF BUS TERM.

W2 — R114 1K — +5V

BUS BG7 H (AV1) — BUS BG6 H (BA1) — BUS BG5 H (BB1) — BUS BG4 H (BC1) — BUS NPG H (AU1) — BUS SACK L (AR2)

W3 — R116 1K — +5V

REMOVE JUMPER (W3) FOR END OF PROCESSOR BUS TERM.

R108 330Ω — R109 750Ω — R110 15K — C12 120PF — C11 120PF — D1 DG64 — DL1 100ns — R111 750Ω — R112 1K — R113 1K

AU1 BUS NPG H — AV1 BUS BG7 H — AR2 BUS SACK L — AS2 BUS NPR L — BA1 BUS BG6 H — AA1 BUS INIT L — BF2 BUS DC LO L — BE2 BUS BG4 H — BB1 BUS BG5 H

AA2, BA2 +5V — GND

C7 .01 uf — C6 .01 uf — C5 .01 uf — C4 .01 uf — C3 .01 uf — C2 .01 uf — C1 .01 uf — C9 39 MFD — C8 39 MFD

AB2, AC2, AN1, AP1, AR1, AS1, AT1
AV2, BB2, BC2, BD1, BE1, BT1, BV2

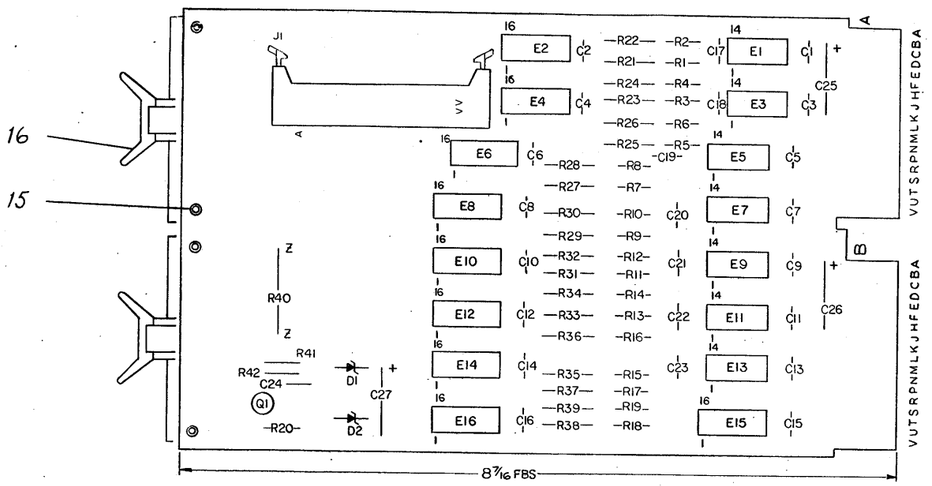
R57 390 — C13 .001 µf — C10 .001 µf

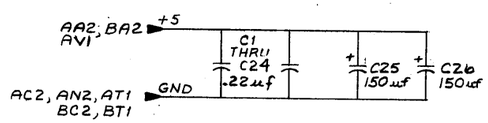
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
UNIBUS B TERMINATOR	D	CS	M9300-0-1	
SCALE	SHEET 2 OF 2	DIST.		

DEC FORM NO. DRD 138

NOTES:





I.C. 75107B	13	7	14
I.C. 75113	—	8	16
IC TYPE	-5V	GND	+ 5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

REF				
REF		X-Y COORDINATE HOLE LOCATION	K-CO-M5904-0-4	1
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-M5904-0-5	2
REF		MODULE ECO HISTORY	B-MH-M5904-0-6	3
1		ETCHED CIRCUIT BOARD	5010503	4
24	C1 THRU C24	CAP. .22 uf 20% 50V DISC	1010274	5
				6
2	D1, D2	DIODE ZENER IN4733A 5.1V 1W	1109943	7
19	R21 THRU R39	RES. 82 5% 1/2W	1301781	8
19	R1 THRU R19	RES. 82 5% 1/4W	1301477	9
1	R41	RES. 150 5% 1/4W	1300250	10
1	R42	RES. 390 5% 1/4W	1300309	11
1	R40	RES. 56 5% 5W	1311337	12
7	E1,E3,E5,E7,E9,E11,E13	I.C. DEC 75107B	1910268	13
9	E2,E4,E6,E8,E10,E12,E14,E15,E16	I.C. DEC 75113	1911341	14
4		EYELET	9006732	15
2		HANDLE, FLIP-CHIP MAGENTA	9008337-06	16
1	J1	CONN. (40 PIN)	1209941-2	17
2	C25, C26	CAP. 150uf 20% 6V	1005572	18
1	Q1	TRANS. DEC 2N3646	1503014-00	19
1	R20	RES. 4.7K 5% 1/4W	1300477-00	20
1	C27	CAP. 6.8uf 35V S.TANT	1005306	21
1		CLIP	1209941-3	22
1		CLIP	1209941-4	23

QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO.

PARTS LIST

FIRST USED ON OPTION MODEL: RH11

ETCH BOARD REV: F

IN4733A	SAME		
DEC 3646	SAME		
DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

REV	CHANGE NO.	CHK	REVISIONS
C	M5904-1		
D	M5904-00002	D. POTTER	11/5/73
E	M5904-00003		9-11-74
F	M5904-00004	John Carter	10/14/75

T. STAMBAUGH 24 Sep 74; D. POTTER 8 Jan 75

DRN. J. Gilmore 4-27-73
CHK'D. D. Davis 7/26/73
ENG. [illegible] 7/24/73
PROJ. ENG. [illegible] 7/30/73
PROD. R. Karkenni 11/30/73
NEXT HIGHER ASSY

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: CONTROLLER TRANSCEIVER

SIZE D | CODE DCS | NUMBER M5904-0-1 | REV. F

SCALE

SHEET 1 OF 2

DIST.

DEC FORM NO. ORD-135A

RE 1 AL1 — 75107 E1 — DATA OUT 1 AD1
DATA OUT 2 AB1
DATA IN 1 AE1 — 75113 E2
TE 1 AB1
DATA IN 2 AC1
R1 82 R2 82 R21 82 +5 R22 82

DATA IN 3 AK1 — 75113 E4
DATA IN 4 AF1
DATA OUT 3 AJ1 — 75107 E3
DATA OUT 4 AH1
R3 82 R4 82 R23 82 +5 R24 82

DATA IN 5 AN1 — 75113 E6
DATA IN 6 AL2
DATA OUT 5 AM1 — 75107 E5
DATA OUT 6 AM2
R5 82 R6 82 R25 82 +5 R26 82

RE 2 AS1 — 75107 E7
DATA OUT 7 AU2
RE 3 BB1
DATA OUT 8 AR1
DATA IN 7 BD2 — 75113 E8
TE 2 AU1
TE 3 AT2
DATA IN 8 AP1
R7 82 R8 82 R27 82 +5 R28 82

J1 UU — BK2
BV2 — R20 4.7K — Q1 2N3646 — R41 150 — R42 390 — C24 .22 UF
AN2, AC2 AT1, BC2, BT1
GND — C17 .22 | C18 .22 | C19 .22 | C20 .22 | C21 .22 | C22 .22 | C23 .22 — -5
-5 — C27 6.8 UF — D1 1N4733A 5.1V — R40 56 5W — D2 1N4733A 5.1V — AB2 -15V

RE 3 BB1 — 75107 E9 — DATA OUT 9 BC1
DATA OUT 10 BA1
DATA IN 9 BD1 — 75113 E10
TE 3 AT2
DATA IN 10 AV2
R9 82 R10 82 R29 82 +5 R30 82

DATA IN 11 BJ1 — 75113 E12
DATA IN 12 BE1
DATA OUT 11 BH1 — 75107 E11
DATA OUT 12 BF1
R11 82 R12 82 R31 82 +5 R32 82

RE 4 BN2 — 75107 E13 — DATA OUT 13 BP2
RE 5 BL1
DATA OUT 14 BK1
DATA IN 13 BR2 — 75113 E14
TE 4 BN1
TE 5 BM2
DATA IN 14 BM1
R16 82 R13 82 R36 82 +5 R33 82

DATA IN 15 BP1 — 75113 E15
TE 7 BU1
DATA IN 18 BV1
DATA IN 16 BU2 — 75113 E16
TE 6 BR1
DATA IN 17 BS1
R18 82 R15 82 R38 82 +5V R35 82
R14 82 R34 82 +5V
R19 82 R17 82 R39 82 +5 R37 82

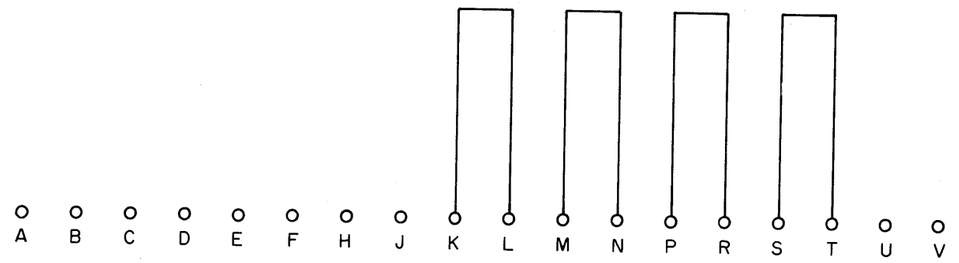
+3V

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
CONTROLLER TRANSCEIVER	D	DCS	M5904-0-1	F
SCALE	SHEET 2 OF 2		DIST.	

DEC FORM NO ORD 138

SIZE	CODE	NUMBER	REV.
B	CS	G727-0-1	



REVISIONS					
REV	CHG NO		DRN.	BUTLER	DATE 11-19-69
			CHK'D		DATE
			ENG.		DATE
CHK			PROD.		DATE

TRANSISTOR & DIODE CONVERSION CHART

DEC	EIA	DEC	EIA

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE
GRANT CONTINUITY G727

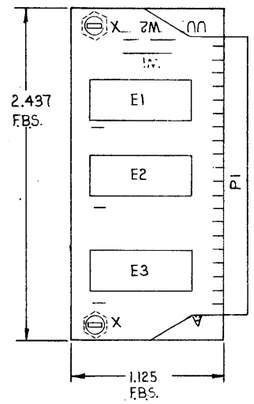
SIZE	CODE	NUMBER	REV.
B	CS	G727-0-1	

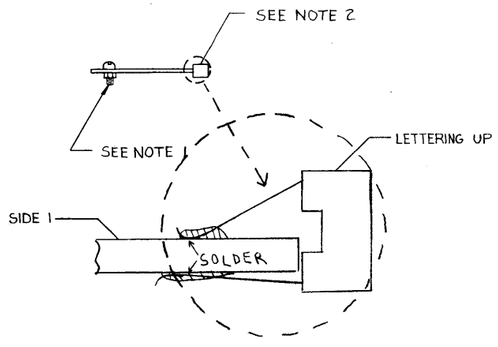
PRINTED CIRCUIT REV. A

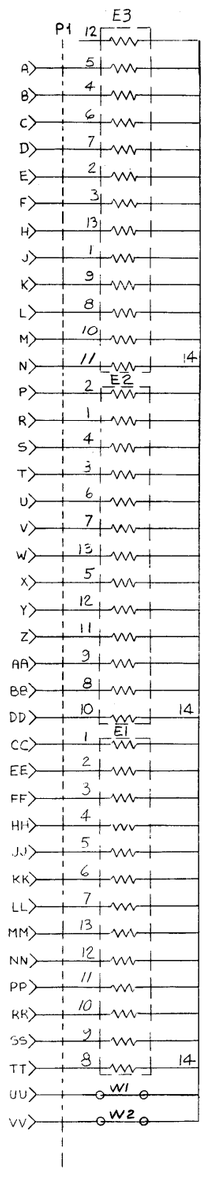
FORM NO
102

NOTES:

1. ASSEMBLE (2) SCREW AND NUT TO BOARD, CUT OFF SCREW FLUSH WITH NUT.
2. INSERT BOARD INTO CONNECTOR FINGERS AND SOLDER ON TO BOARD PADS AS PER DETAIL SHOWN, USING TOOLING #9912105-1 AS SOLDERING HOLDING FIXTURE
3. USE TOOLING 9912101-1 TO REWORK P1 PRIOR TO ASSEMBLY.







ITEM NO.	QTY	REF DESIGNATION	DESCRIPTION	PART NO.
1			ETCH CIRCUIT BOARD	5010845
1	1	P1	CONNECTOR, EDGE CARD 40 PIN	12116Ø-00
3	3	E1, E2, E3	RESISTOR PACK	1300005-05
4	2		SCREW NYLON #2-56 X 1/2 LG	9006410-05
5	2		NUT #2-56 3/16 ACROSS FLATS 1/16 THK	9007263
6	2	W1 & W2	REEL JUMPER (UNINSULATED)	91 07560-1
7	REF		X-Y COOR. HOLE LOCATION	X-CO-H87Ø-0-4
8	REF		ASSY DRILLING HOLE LAYOUT	D-AH-H87Ø-0-5
9	REF		MODULE ECO HISTORY	B-MW-H87Ø-0-6

PARTS LIST

ETCH BOARD REV F

FIRST USED ON OPTION MODEL

IC TYPE	GND	+ 5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE		

IC PIN LOCATIONS

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

REV	CHANGE NO.	CHK	REVISIONS
A	ORIGINATED	T. STAMBAUGH	3-15-74
E	H87Ø-00001	T. STAMBAUGH	3-15-74
F	H87Ø-00002	T. STAMBAUGH	10-01-74

DRN.	E.T. Brooks	DATE 1-8-74
CHK'D	D.J. LeBlanc	DATE 1-7-74
ENG.		DATE
PROJ. ENG.		DATE
PROD.		DATE
NEXT HIGHER ASSY		
SCALE	NONE	
SHEET	1 OF 1	

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE MASSBUS TERMINATOR

SIZE D | CODE CS | NUMBER H87Ø-Ø-1 | REV. F

DIST.

BRUNING 40-522 16699
DEC FORM NO. DRD-135A

DEC FORM NO. DRO-102

REVISIONS			
CHK	CHG NO	REV.	
	10001	A	
	00002	B	
	00004	C	

DRN. DM 12-6-69
CHK'D [illegible]
ENG [illegible] DATE 2-17-70
PROD. [illegible] DATE 12-6-69
QA [illegible] DATE 12/2/69

TRANSISTOR & DIODE CONVERSION CHART

DEC	EIA	DEC	EIA

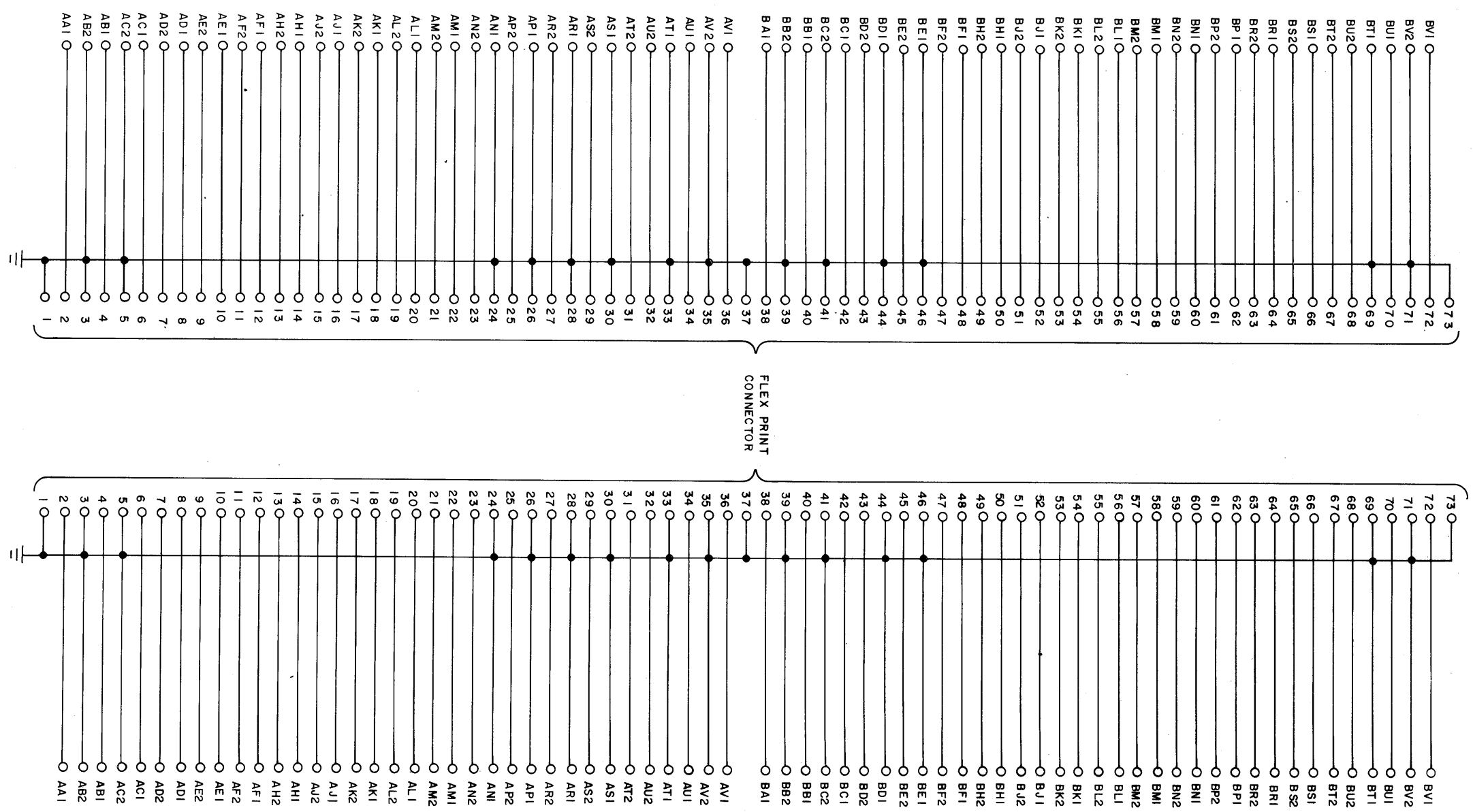
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE INTERNAL BUS CONNECTOR M920

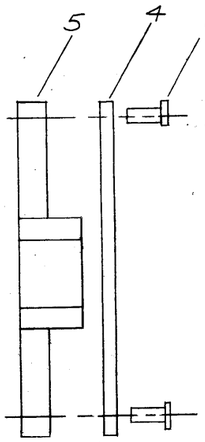
SIZE	CODE	NUMBER	REV.
C	CS	M920-0-1	C

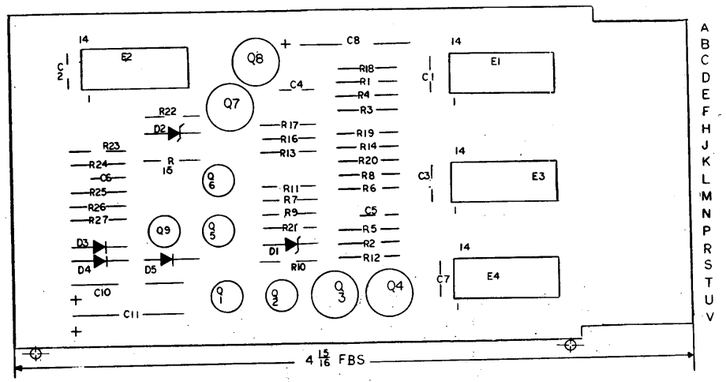
PRINTED CIRCUIT REV. B

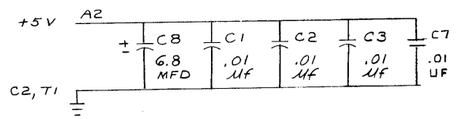
SIZE C | CODE CS | NUMBER M920-0-1 | REV. C



NOTES:







QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
				32
4	Q3,Q4,Q7,Q8	TRANSIPADS	9007209	31
1	C11	CAP. 10UF 20V 10%	1004813	30
1	C10	CAP. 39UF 10V 10%	1000076	29
6	R7, R13, R19, R20, R10, R16	RES. 4.7K 1/4W 5%	1300447	28
2	R23, R24	RES. 1.5K 1/4W 5%	1300391	27
4	R12, R18, R25, R26	RES. 470 1/4W 5%	1300316	26
				25
1	Q9	TRANSISTOR DEC 3009B	1503100	24
3	D3, D4, D5	DIODE D664	1100114	23
1	E2	IC DEC 7404	1909686	22
5	C1, C2, C3, C6, C7	CAP. .01 Uf 100V 20% DISC	1001610	21
1	C8	CAP. 6.8UF. 35V, 20% TANT	1000067	20
2	C4, C5	CAP. 1000PF. 100V, 5% MICA	1000042	19
2	D1, D2	DIODE IN750A 4.7V ZENER	1100124	18
				17
4	R8, R11, R14, R17,	RES. 10K 1/4 5%	1300479	16
2	R1, R2,	RES. 3.9K 1/4, 5%	1300444	15
6	R4, R6, R15, R9, R21, R22	RES. 1K 1/4, 5%	1300365	14
				13
3	R3, R5, R27	RES. 100 1/4, 5%	1300229	13
4	Q1, Q2, Q5, Q6	TRANS. DEC 6534D	1503409	12
2	Q3, Q7	TRANS. 2N1309	1501311	11
2	Q4, Q8	TRANS. 2N1308	1500583	10
1	E3	IC DEC 7405	1909930	9
2	E1, E4	IC DEC 74H52	1909061	8
				7
2		EYELET	9006732	6
1		HANDLE, FLIP CHIP-MAGENTA	9008337-06	5
1		ETCHED CKT BD	5010035	4
REF		MODULE ECO HISTORY	B-MH-M688-0-6	3
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-M688-0-5	2
REF		X-Y COORDINATE HOLE LOCATION	K-CO-M688	1

PARTS LIST

ETCH BOARD REV B

FIRST USED ON OPTION MODEL: PDP 11

DEC NO.	EIA NO.	DEC NO.	EIA NO.
DEC 6534	NONE		
2N1309	SAME		
2N1308	SAME		
IN750A	SAME		

SEMICONDUCTOR CONVERSION CHART

REV	CHANGE NO.	CHK	REVISIONS
A	M699-00001	S. ROTHMAN 9-20-72	
B	M688-00002	S. ROTHMAN 10-25-72	
C	M688-00003	S. ROTHMAN 12-3-73	
D	M688-00004	S. ROTHMAN 5/14/74	
E	M688-00005	Monte Hunter 8-6-74	

DRN. S. ROTHMAN 5/15/72
CHK'D. [illegible] 6/1/72
ENG. [illegible] 6/7/72
PROJ. ENG. [illegible] 6/7/72
PROD. [illegible] 6/7/72
NEXT HIGHER ASSY
SCALE NONE
SHEET 1 OF 2

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: UNIBUS POWER FAIL DRIVERS

SIZE D | CODE CS | NUMBER M688-0-1 | REV. E

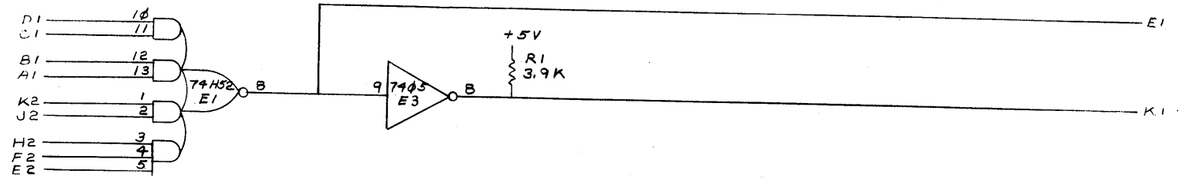
DIST.

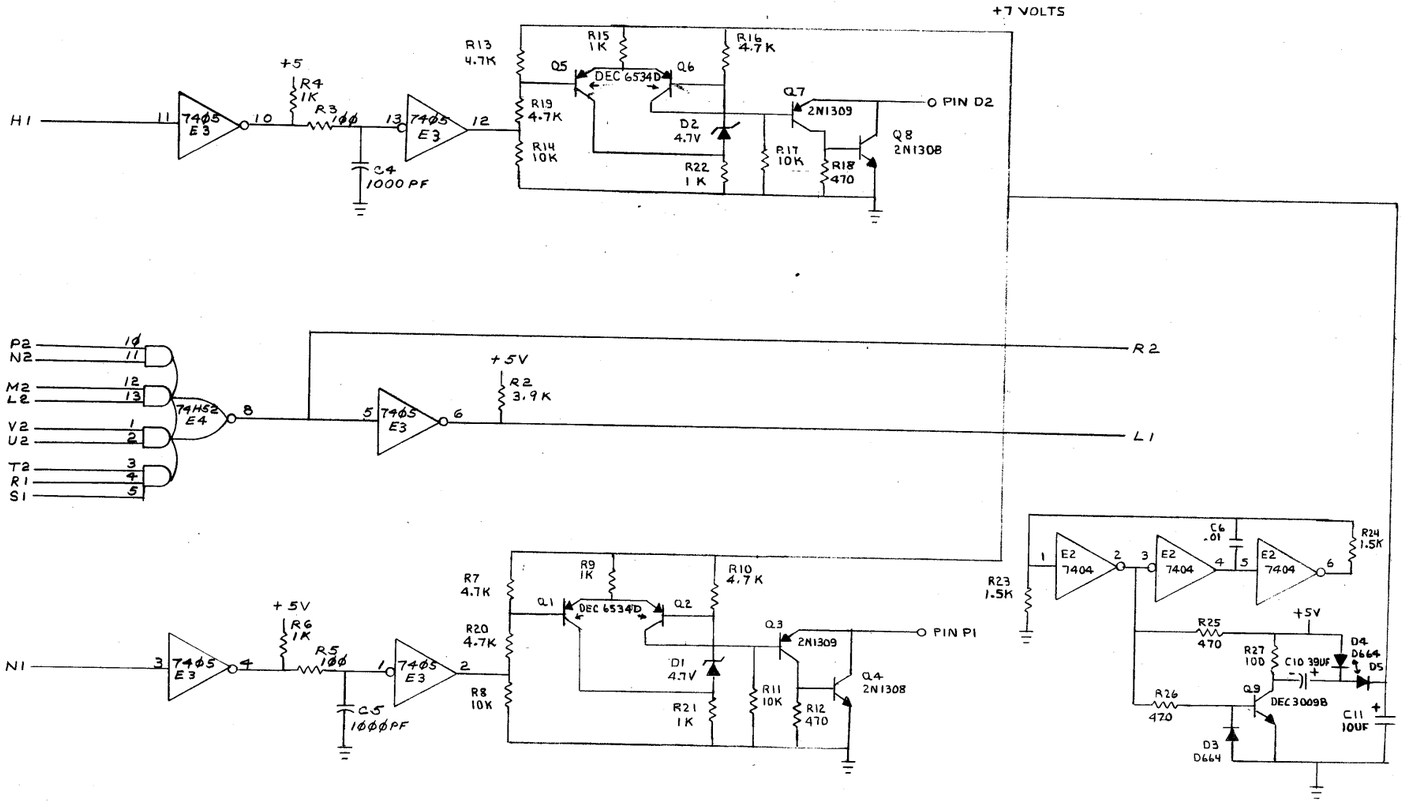
IC TYPE	GND	+ 5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE		

IC PIN LOCATIONS

BRUNING 40-522 16699

DEC FORM NO. DRD-135A





REVISIONS	REV	CHANGE NO.	CHK

DRAWING 40-24-13941

DEC FORM NO
DRD 102-B

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP 11		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS	ANGLES
.XXX = .005 .XX = .02 .X = .1	± 0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

DRN. E. Wilson	DATE 5/19/72	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHK'D	DATE	
ENG.	DATE	
PROJ. ENG.	DATE 6-1-72	
PRGR.	DATE	

NEXT HIGHER ASSY.

SCALE NONE

SHEET — OF 2

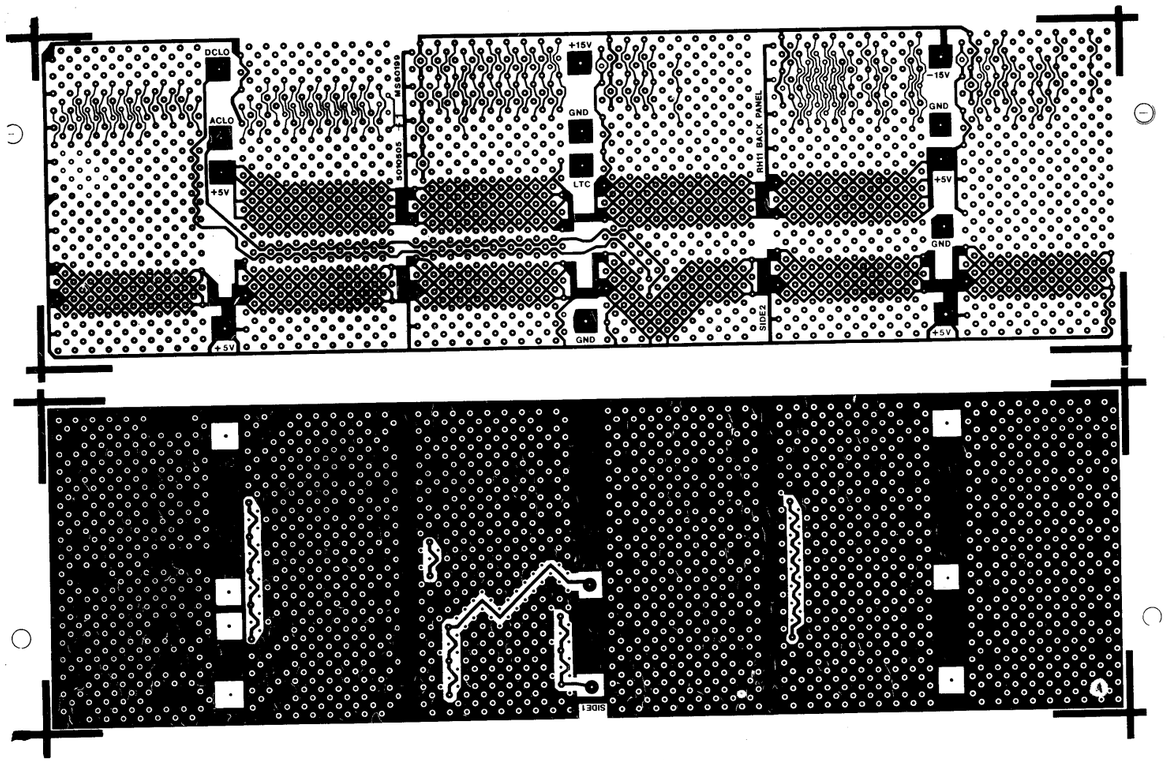
TITLE
UNIBUS
POWER FAIL
DRIVERS

SIZE	CODE	NUMBER	REV.
D	CS	M688-Ø-1	E

DIST.

REV E
NUMBER CSM688-Ø-1
SIZE CODE D

NOTES:



REF		ASSY DRILLING HOLE LAYOUT	D-AH-5410506-0-5	1
REF		MODULE ECO HISTORY	B-MH-5410506-0-6	2
REF		X-Y COORDINATE HOLE LOCATION	K-CO-5410506-0-4	3
1		ETCHED CIRCUIT BOARD	5010505	4

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

IC TYPE	GND	+ 5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE		
IC PIN LOCATIONS		

REV	CHANGE NO.	CHK	DATE
C	ORIGINATED	S. JENKINS	4-22-74
B	5410506-00001	R. Bonanno	7-11-74

REVISIONS

FIRST USED ON OPTION MODEL	ETCH BOARD REV
RH11	D

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

		DATE
DRN.	F. J. Lefebvre	7-20-73
CHKD.	R. Healy	7-30-73
ENG.	B. Hankins	8-3-73
PROJ. ENG.	S. Jenkins	8-3-73
PROD.	A. Kaalberg	8-3-73

NEXT HIGHER ASSY

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
RH11
BACK PANEL

SIZE	CODE	NUMBER	REV.
D	CS	5410506-0-1	C

SCALE NONE
SHEET 1 OF 1
DIST.

SIZE D CODE CS NUMBER 5410506-0-1 REV C

FEC FORM NO
DRD 131 B

REV.	NUMBER	SIZE	CODE
C	RH11-Ø-12	K	WL

REVISIONS	CHANGE NO.	CHK	REV.
J. Chartier 7-19-74	RH11-00003	RD	A
JENKINS			
S. Jenkins 7-30-74	RH11-00007	Kit	B
	RH11-00008		C

FIRST USED ON OPTION MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH11		PARTS LIST		

DRN. T.J. LEB Cane	DATE 19 JUNE '73	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. G Rahmey	DATE 8/6/73	
ENG. S. Jenkins	DATE 8-13-73	
PROJ. ENG. S. Jenkins	DATE 8-13-73	
PROG. G Rahmey	DATE 8-13-73	
NEXT HIGHER ASSEMBLY D-AD-700939700		TITLE: WIRE LIST
SCALE NONE		SIZE K · CODE WL · NUMBER RH11-Ø-12 · REV. C
SHEET 1 OF 1		DIST.

DEC FORM NO. DRB 109

AUTOMATIC WIRE TESTER (AWT) REVISION STATUS

DRAWING NUMBER	INIT REL	A	B	C	D	E
K-WL-RH11-Ø	T2	*	A	A	A	B	C
D-AD-7009397-0-0		B	C	D	E	F	H
D-CS-5410506-0-1		C	C	C	C	C	C

REV E

SIZE A | CODE WT | NUMBER 7009397-0

REVISIONS	CHK	CHANGE NO.	REV.
	—	RH11-00003 ORIGINATED	A
	S.H.	RH11-00004	B
	T.W.	RH11-00006	C
	K.M.	RH11-00007	D
	S.C.	RH11-00008	E

DRN. S. Hartwig	DATE 7-19-74	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. L. Gilbert	DATE 7-22-74	
ENG. D. Jenkins	DATE 7-30-74	TITLE RH11 MASSBUS CONTROLLER
PROJ. ENG. D. Jenkins	DATE 7-30-74	AWT REVISION STATUS
PROD. D. Jenkins	DATE 7-30-74	SIZE A | CODE WT | NUMBER 7009397-0 | REV E
FIRST USED ON		SCALE —
		SHEET 1 OF 1
		DIST.

DRA 123

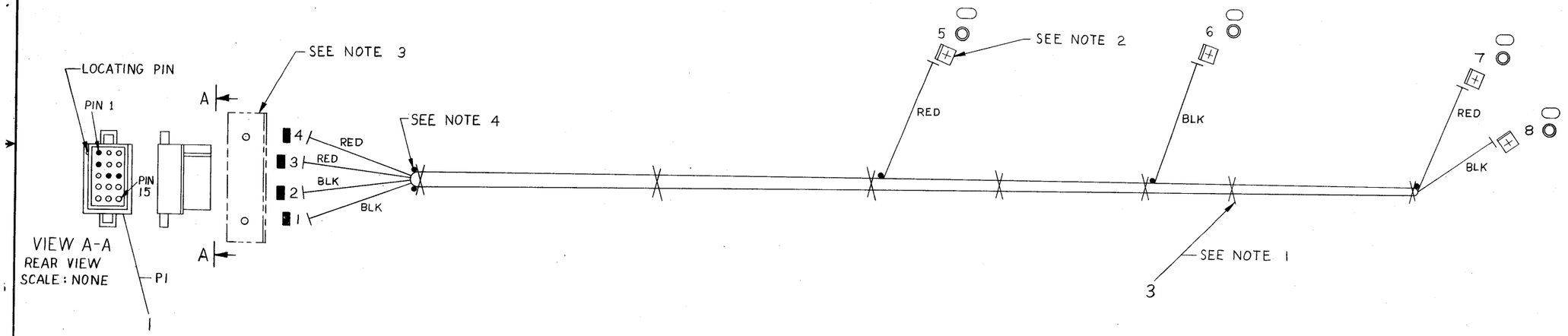
DEC 16-(325)-1097-N174

WIRE TABLE

ITEM NO.	DESCRIPTION AWG	COLOR	FROM POINT	FROM CONNECTION	FROM TERM	TO POINT	TO CONNECTION	TO TERM	SIGNAL
5	14	BLK	1	P1-9	2	8		4	GND
5	14	BLK	2	P1-8	2	6		4	GND
6	14	RED	3	P1-4	2	5		4	+5V
6	14	RED	4	P1-1	2	7		4	+5V

NOTES:

1. USE TIE WRAPS (X) ITEM #3 APPROXIMATELY EVERY THREE (3) INCHES WHEN NECESSARY, AND AT EVERY BREAKOUT POINT.
2. ATTACH MALE FASTON DEC # 9008219-0 WITH WOOD SCREWS (4 PLACES).
3. USE CONN. BRKT. C-MD-9305761-H15-0, MOUNT WITH WOOD SCREWS. USE MATING CONN. 1209350-15.
4. DOT (•) INDICATES NAIL LOCATIONS FOR ASSEMBLY USE ONLY. COVER NAILS WITH SHRINK TUBING TO PREVENT CUTTING HARNESS.



SCALE
0 IN — 6 IN — 12 IN

DO NOT REDUCE
DO NOT BUILD FROM REDUCED PRINT

ITEM NO.	QTY.	DESCRIPTION	PART NO.	FIRST USED ON OPT/MOD SYM
7	A/R	TUBING, SHRINK 3/16 ID. X 9/16	9107305-02	
6	A/R	WIRE, #14 AWG, RED	9107370-22	
5	A/R	WIRE, #14 AWG BLK	9107370-00	
4	4	CONN, SOLDERLESS	9009262-0	
3	A/R	WRAP, TIE	9007031	
2	4	PIN, MALE	1209378-00	
1	1	HOUSING, CONN 15 PIN	1209351-15	

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1
ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY √

DRN. B. Bodget DATE 10-8-73
CHKD. T. Bowden DATE 10/9/73
ENG. DATE 10/25/73
PROJ. ENG. DATE 10/25/73
PROD. DATE 10/24/73

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: OPTION HARNESS RH11 15 PIN

MATERIAL: SEE PARTS LIST
NEXT HIGHER ASSY.
FINISH
SCALE 1/1
SHEET 1 OF

SIZE D | CODE IA | NUMBER 7009570-0-0 | REV.
DIST.

REVISIONS: REV. | CHANGE NO. | CHK

DEC FORM NO. DRD 100-B

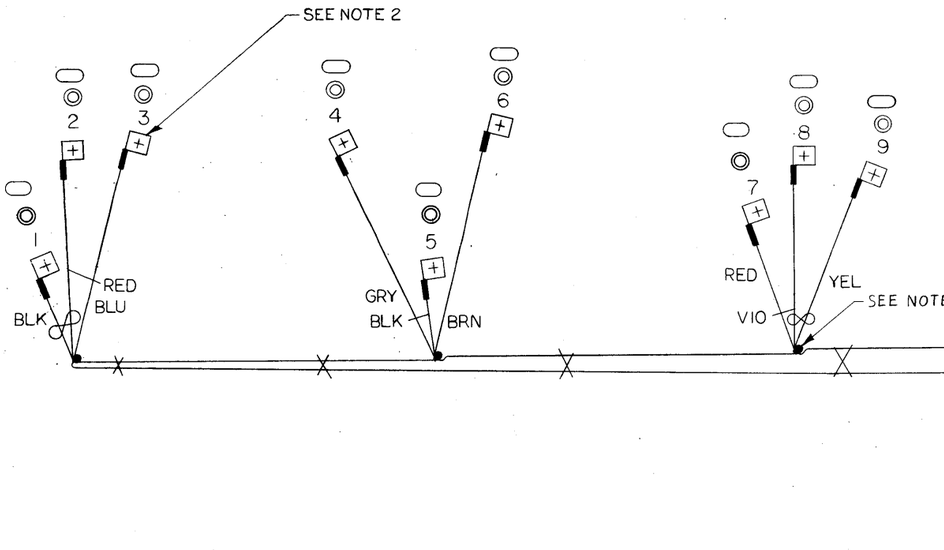
SIZE D | CODE IA | NUMBER 7009570-0-0 | REV.

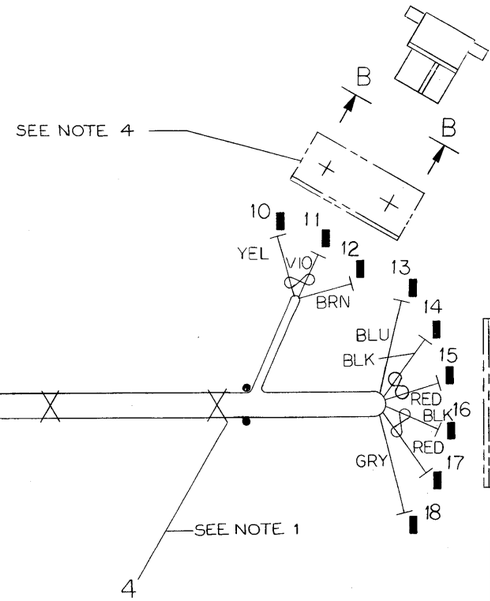
WIRE TABLE

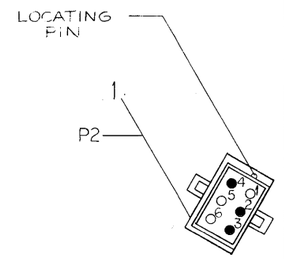
ITEM NO	DESCRIPTION AWG	COLOR	FROM POINT	FROM CONNECTION	FROM TERM	TO POINT	TO CONNECTION	TO TERM	REMARKS
7	14 TWP	RED	7		5,6	17	P1-1	3	+5V
		BLK	5			16	P1-7		GND
9	18 AWG	GRY	4			18	P1-2		+15
7	14 TWP	RED	2			15	P1-4		+5
		BLK	1			14	P1-9		GND
11	14 AWG	BLU	3			13	P1-13		-15
10	18 AWG	BRN	6			12	P2-2		LINE CLOCK
8	18 TWP	VIO	8			11	P2-3		DC LO
		YEL	9		5,6	10	P2-4	3	AC LO

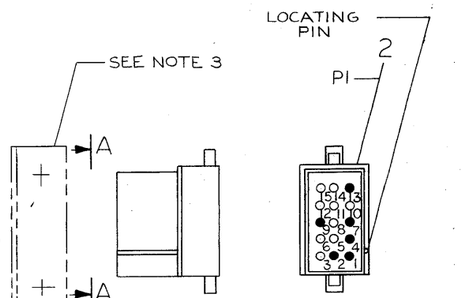
NOTES:

1. USE TIE WRAPS (X) ITEM 4 APPROXIMATELY EVERY THREE (3) INCHES WHEN NECESSARY AND AT EVERY BREAK-OUT POINT.
2. ATTACH MALE FASTON DEC 9008219-0 WITH #4 WOOD SCREWS (9 PLACES).
3. USE CONN. BRKT C-MD-9305761-H15-0 MOUNT WITH #6 WOOD SCREWS. USE MATING CONN. 1209350-15.
4. USE CONN. BRKT C-MD-9305761-H6-0 MOUNT WITH #6 WOOD SCREWS. USE MATING CONN. 1209350-06.
5. DOT (●) INDICATES NAIL LOCATIONS FOR ASSEMBLY USE ONLY. COVER NAILS WITH SHRINK TUBING TO PREVENT CUTTING HARNESS.









	A/R	WIRE, #14 AWG BLU	9107370-66	11
	A/R	WIRE, #18 AWG BRN	9107360-11	10
	A/R	WIRE, #18 AWG GRY	9107360-88	9
	A/R	WIRE, #18 TWP YEL/VIO	9107430-47	8
	A/R	WIRE, #14 TWP BLK/RED	9107440-02	7
⬭	A/R	TUBING, SHRINK	9107305-02	6
◎	9	CONN., SOLDERLESS	9009262-0	5
X	A/R	WRAP, TIE	9007031	4
▮	9	PIN, MALE	1209378-01	3
	1	HOUSING, CONN. 15 PIN	1209351-15	2
	1	HOUSING, CONN. 6 PIN	1209351-06	1

FIRST USED ON OPT/MOD SYM	QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

DO NOT REDUCE
SCALE
6 IN.
0 IN. — 12 IN.
DO NOT BUILD FROM REDUCED PRINT

REVISIONS			
CHK	CHANGE NO.	REV.	
RC	7009563-00001	A	15 Oct 76 H. KWAN

BRUNING 40-107 15968
DEC FORM NO.

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS: .XXX = .005, .XX = .02, .X = .1 | ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL: SEE PARTS LIST
FINISH

DRN. Carl Hilgay DATE 7-26-73
CHK'D. R. Tessier DATE 10/1/73
ENG. DATE
PROJ. ENG. DATE
PROD. DATE
NEXT HIGHER ASSY.
SCALE
SHEET OF

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: POWER HARNESS DA11-F/DD11-B

SIZE D | CODE IA | NUMBER 7009563-0-0 | REV A | DIST.