CR11
card reader
engineering drawings

CR11 ENGINEERING DRAWINGS

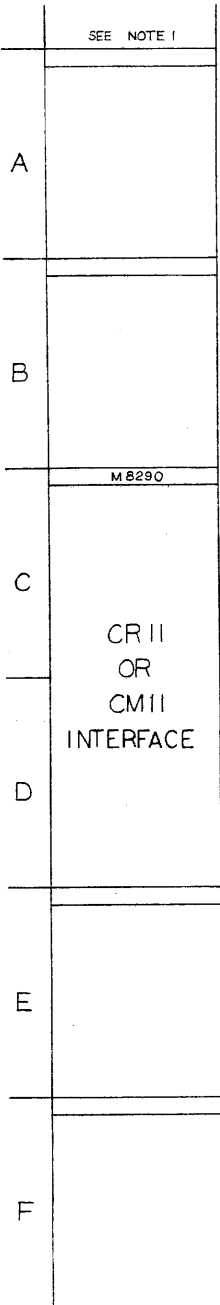| Drawing Number	Title
A-ML-CR11-0	Card Reader Control
A-PL-CR11-0-0	Card Reader Control, Parts List
D-MU-CR11-0-01	CR11 Module Utilization
A-PL-CR11-0-01	CR11 Module Parts List
D-CS-M8290-0-1	CR11 Interface
D-IA-7008738	Card Reader Cable

MASTER DRAWING LIST

MAINTENANCE MANUALS

NO.	TITLE	UNIT VARIATIONS CR11-Ø
CR11-Ø	CARD READER	X

USED ON OPTIONS

CM11-Ø

digital EQUIPMENT CORPORATION — MAYNARD, MASSACHUSETTS		
DRN K. RUSS	DATE 3/15/71	
CHK'D R. COOK	DATE 3/23/71	
ENG R. KRISHNA	DATE 3/23/71	
PROJ. ENG R. KRISHNA	DATE 3/23/71	
PROD D. CALL	DATE 3/25/71	
FIRST USED ON PDP11		

TITLE **CARD READER CONTROL**

SIZE	CODE	NUMBER	REV
A	ML	CR11-Ø	E

SCALE # SHEET 1 OF 2 DIST.

REVISIONS

REV	CHG. NO.	DATE	APP'D
A	MISC-86	7/71	R.V.
B	00002	7/71	R.V.
C	00003	2/72	R.V.
D	00004	7/72	R.V.
E	00005	11/72	R.V.

CARD READER CONTROL

PRINT SET CR11-Ø	DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
X	A-PL-CR11-Ø-Ø	C	1	CARD READER CONTROL
X	D-MU-CR11-Ø-Ø1	A	1	CR11 MODULE UTILIZATION
X	A-PL-CR11-Ø-Ø1	A	1	CR11 MODULE COUNT
X	D-BS-CR11-Ø-Ø2		1	DEVICE CONTROL
X	A-AL-CR11-Ø-Ø3		1	ACCESSORY LIST
X	D-CS-M829-Ø-1	#		READER CONTROL
X	C-CS-M1Ø5-Ø-1	#		ADDRESS SELECTOR
X	D-CS-M782-Ø-1	#		INTERRUPT CONTROL
X	D-CS-M829Ø-Ø-1	A	#	CR11 INTERFACE

SIZE	CODE	NUMBER	REV
A	M	CR11-Ø	E

TITLE CARD READER CONTROL SHEET 2 OF 2

OPTION NO.

DRA 132
DEC 16 (325) 16AP. 1 1473

4

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS
PARTS LIST

MADE BY	KEN RUSS	CHECKED	R. Cook	SECTION	1
DATE	3/15/71	DATE	3-23-71		
ENG	RKrishna	PROD	W Cull	ISSUED SECT.	1
DATE	3/12/71	DATE	3/25/71		

ITEM NO.	DWG NO./ PART NO.	DESCRIPTION	CR11-A	CR11-B								
1	A-PL-CR11-Ø-Ø1	MODULE COUNT	1	1								
2	~~D-1A-7007174-0-0~~	~~CARD READER CABLE~~	=									
3	3010639-1	CARD READER 60 HZ	1	–								
4	3010639-2	CARD READER 50 HZ	–	1								
5	7008738	CARD READER CABLE	1	1								
6	1210037-4	LOGO (RED)	1	1								

QUANTITY/VARIATION

| TITLE | CARD READER CONTROL | ASSY NO. -11- | SIZE A | CODE PL | NUMBER CR11-Ø-Ø | REV. C | ECO NO. CR11-00004 |
| | | SHEET 1 OF 1 | DIST. | | | | |

DEC FORM NO.16-1031
DRA 110

5

SEE NOTE 1

A

B

M 8290

C

CR 11
OR
CM 11
INTERFACE

D

E

F

NOTE:
1. SLOT 1, 2, 3 OR 4 IN DD11-A

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION		PART NO	ITEM NC.
CR11		PARTS LIST			

UNLESS OTHERWISE SPECIFIED	DRN. T.Quillin	DATE 12/3/70
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	CHK'D. W Major	DATE 2/18/71
DECIMALS FRACTIONS ANGLES ± .005 ± 1/64 ± 0°30'	ENG. P Krishu	DATE 3/3/71
FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS	PROJ. ENG.	DATE 3/3/71
	PROD. W Cell	DATE 3/3/71

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE

MODULE
UTILIZATION

MATERIAL

NEXT HIGHER ASSY
A-ML-CR11-0

SIZE CODE	NUMBER	REV
D ML CR 11-0-01		A

FINISH

SCALE

SHEET 1 OF 1   DIST.

REVISIONS

CHANGE NO.	REV
CR11-00003	A

M Town 2-16-72
KRISHNA 2-16-72

SIZE CODE D ML CR11-0-01 NUMBER A

6

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS
PARTS LIST

QUANTITY/VARIATION														

MADE BY W. MAJOR	CHECKED W. MAJOR	SECTION
DATE 12/18/70	DATE 2/18/71	1
ENG PKrishna	PROD WCall	ISSUED SECT.
DATE 3/23/71	DATE 3/25/71	1

ITEM NO.	DWG NO./PART NO.	DESCRIPTION															
	~~M105~~	~~ADDRESS SELECTOR MODULE~~	1														
	~~M782~~	~~INTERRUPT CONTROL MODULE~~	1														
	~~M829~~	~~DATA BUFFER AND STATUS REGISTER~~	1														
	M8290	CR11 INTERFACE	1														
	5408780	PRIORITY JUMPER LEVEL #6	1														

TITLE		ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
MODULE UTILIZATION		D-MU-CR11-0-01	A	PL	CR11-0-01	A	CR11-00003
		SHEET 1 OF 1	DIST.				

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PARTS LIST

ITEM NO	DRAWING REFERENCE	DESCRIPTION	PART NUMBER	QUANTITY
1		ETCHED CIRCUIT BOARD	5009885	1
2	K–CO–M8290–0–4	X-Y CO-ORDINATE HOLE LOCATION		
3	D–AH–M8290–0–5	ASSY DRILLING HOLE LAYOUT		
4	B–MH–M8290–0–6	MODULE ECO HISTORY		
5		HANDLE FLIP-CHIP MAGENTA	1206337-06	4
6		EYELET ROGERS 4-7 STIMPSON	9006732	8
7		BERG 40 PIN CONNECTOR	1209941	1
8	E17	IC SOCKET	1209838	1
9	C53 THRU C56	CAP 6.8 Mfd 35V 20% S TANT	1000067	4
10	C1 THRU C52	CAP .01 Mfd 100V 20% DISC	1001510	52
11	C62	CAP .005 Mfd 100V 20%	1001755	1
12	C64	CAP 330Pf 100V 5%	1000023	1
13	C57 THRU C61,C63	CAP 470Pf 100V 5%	1000024	6
14	D1 THRU D4	DIODE DEC 664	1100114	4
15	R32	RESISTOR 100Ω 1/4W 5%	1300229	1
16	R48	RESISTOR 180Ω 1/4 W 5%	1301322	1
17	R46	RESISTOR 47Ω 1/4 W 5%	1300202	1
18	R1,R2,R3,R6,R8,R9,R11	RESISTOR 220Ω 1/4W 5%	1300271	7
19	R10, R47	RESISTOR 390Ω 1/4W 5%	1300309	2
20	R4,R5,R7,R12,R29,R30,R31,R33 THRU R45	RESISTOR 1KΩ 1/4 W 5%	1300365	20
21	R13 THRU R28	RESISTOR 560Ω 1/4W 5%	1301590	16
22	E5,E11,E16,E22	IC DEC 4015	1910087	4
23	E49,E50	IC DEC 7408	1910155	2
24	E7,E12,E24	IC DEC 7437	1910091	3
25	E5,E47,E53	IC DEC 7474	1905547	3
26	E3,E45,E52	IC DEC 7400	1905575	3
27	E4	IC DEC 7440	1905579	1
28	E23	IC DEC 7473	1905587	1
29	E18,E20,E35,E44	IC DEC 7402	1909004	4
30	E36	IC DEC 74H00	1909056	1
31	E27 THRU E30,E33,E34,E39	IC DEC 380	1909485 *	7
32	E51	IC DEC 74H74	1909567	1
33	E6,E13,E25	IC DEC 7404	1909626	3
34	E1,E2,E9,E10,E14,E15,E21,E26,E31,E38,E43,E48	IC DEC 8881	1909705	12
35	E32,E37,E42	IC DEC 8242	1909712	3
36	E19,E40,E41	IC DEC 8815	1909713	3
37	E46	IC DEC 74H04	1909931	1

ALLOWABLE SUBSTITUTION LIST

ORIG PART #	SUBSTITUTION PART		ITEM NO.
	DESCRIPTION	PART #	
1909485	IC 11380	1911113	31

NOTES:

1. PIN NOTATION THROUGHOUT IS ORDERED UPON MODULE PLACEMENT IN THE SYSTEM UNIT. MODULE 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. JUMPERS TO BE USED AT CONNECTIONS A3-A12 N1,V3-V8,J1 AND J2.

3. ON ITEM #31, ALL 7 CHIPS MUST BE EITHER DEC 380'S OR ITS SUBSTITUTE, 11380 I.C.S. COMBINATIONS ARE NOT ALLOWED ON THE SAME OPTION.
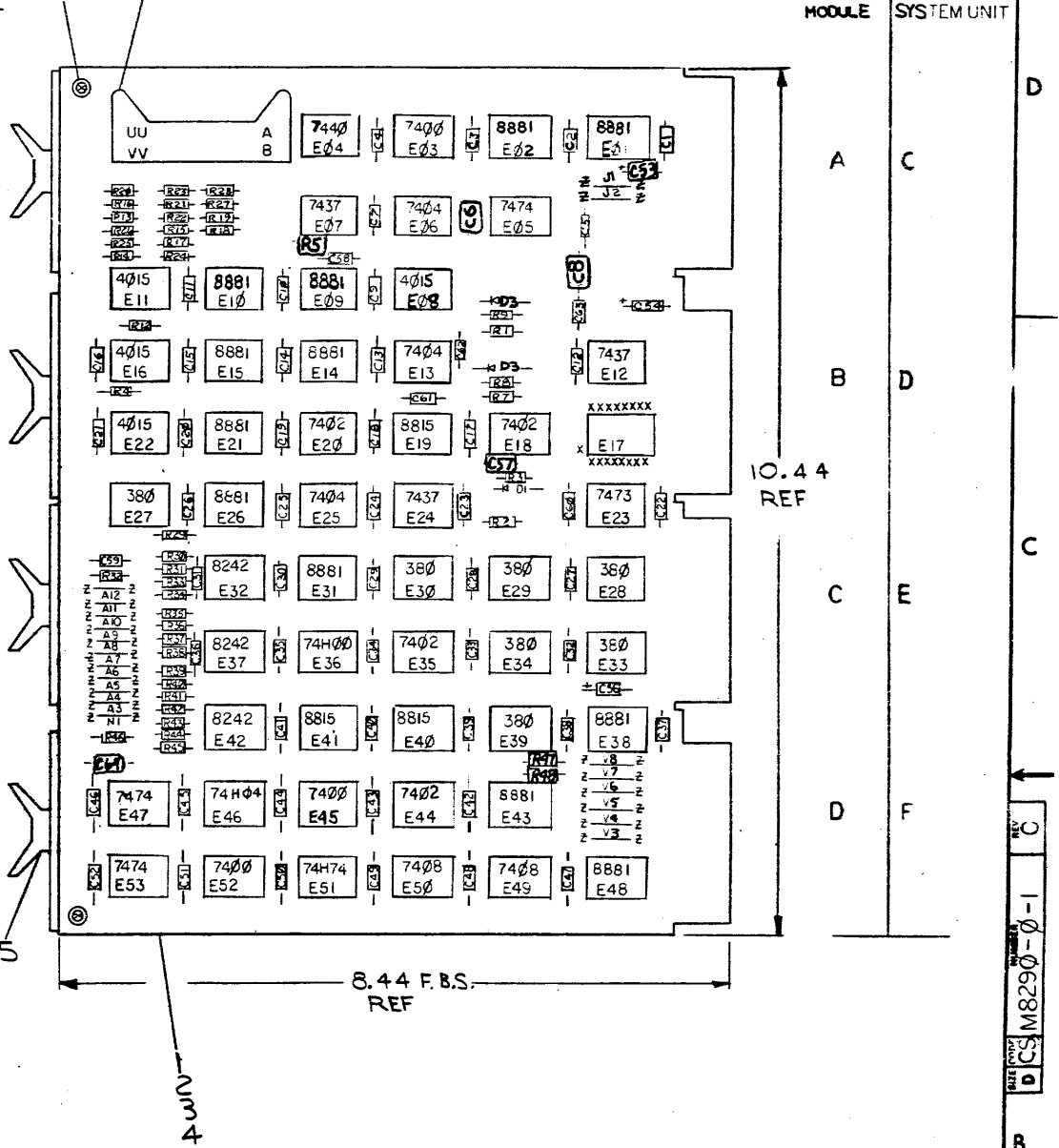
*SEE ALLOWABLE SUBSTITUTION LIST & NOTE 3.

GND AND +5V ARE USUALLY PIN 7 AND PIN 14, RESPECTIVELY. EXCEPTIONS ARE:

IC TYPE	GND	+5V
DEC 380	PIN 1	PIN 8
DEC 4015	PIN 8	PIN 16
DEC 7473	PIN 11	PIN 4
DEC	PIN	PIN
DEC	PIN	PIN
DEC	PIN	PIN
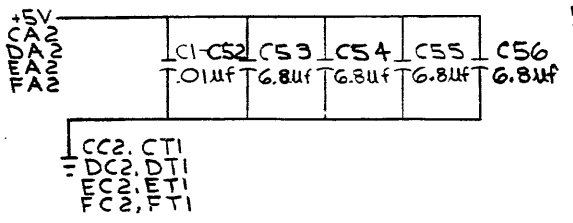
COMPONENT PLACEMENT

PIN NOMENCLATURE

MODULE	SYSTEM UNIT
A	C
B	D
C	E
D	F

10.44 REF

8.44 F.B.S. REF

+5V
CA2
DA2
EA2
FA2

	C1-C52	C53	C54	C55	C56
	.01 µf	6.8 µf	6.8 µf	6.8 µf	6.8 µf

CC2, CT1
DC2, DT1
EC2, ET1
FC2, FT1

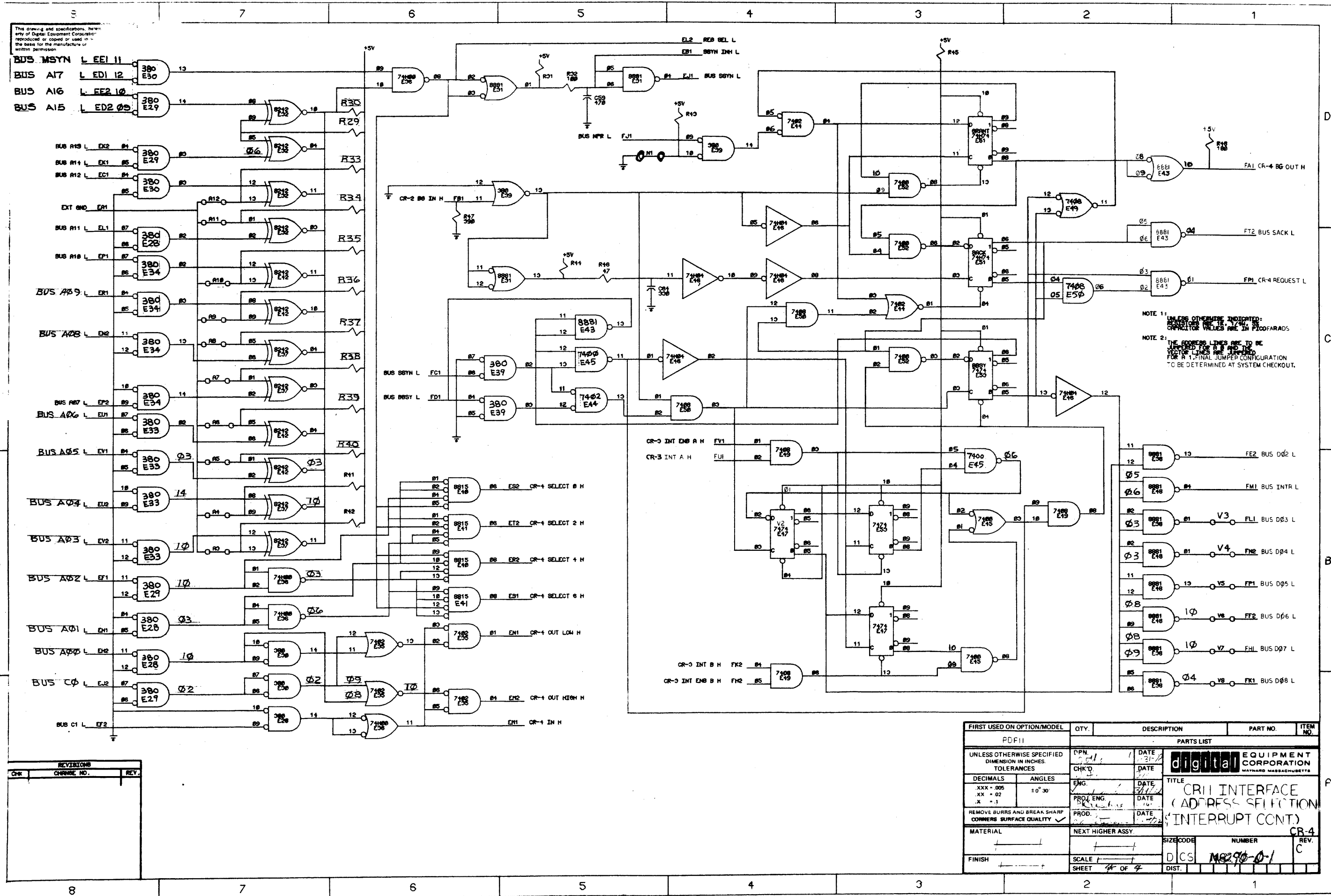CR11 INTERFACE (DATA BUFFERS)

CR-2

D CS M8290-01 REV C

SHEET 2 OF 4

NOTE 1: UNLESS INDICATED OTHERWISE RESISTORS ARE 560 Ω 1/4, 5%

NOTE 2: THE FOLLOWING PINS ARE GROUNDED ON THE BERG CONN: B, A, C, E, H, M, P, S, U, W, Y, AA, CC, EE, HH, KK, MM, PP, SS, UU, VV

NOTE 3: LETTERS ENCLOSED - EX (JJ) - REFER TO PINS ON THE BERG CONNECTOR

READY H (J)

CR-2 HIGH

CIR (N)

CR-2 DATA BIT 6 L

CL-2 CLR READ H

CR-2 STROBE H

BUS INIT L   DL1

BUS D06 L   CV2

BUS D01 L   CR2

BUS D00 L   CS2

CR-4 OUT LOW H   DD1

CR-4 SELECT 0 H   DF1

CR-4 IN H   DH1

CR-4 SELECT 2 H   DJ1

CR-4 SELECT 4 H   DE1

REG
4015
E06

CP2 BUS D15 L
CL2 BUS D14 L
CF2 BUS D13 L
CH2 BUS D12 L
CH1 BUS D11 L
CJ2 BUS D10 L
CK2 BUS D09 L
CL2 BUS D08 L
CM2 BUS D07 L
CV2 BUS D06 L
CR2 BUS D01 L

DM1 CR-3 INT ENB A H
DN1 CR-3 INT A H

(R) READ COMMAND H

CR-3 TIMING ERROR (B) H
CL1 CR-3 INT ENB B H
CJ1 CR-3 INT B H

NOTE 1:
LETTERS ENCLOSED — EX
(F) — REFER TO PINS ON
THE BERG CONNECTORS

CR-2 BG IN H	DU2	01
CR-4 B9 OUT H	DV2	02
BUS B04 OUT H	DT2	03
BUS B04 IN H	DS2	04
BUS B05 OUT H	DR2	05
BUS B05 IN H	DP2	06
BUS B06 OUT H	DN2	06

E17 PRIORITY PLUG

16	DD2	BUS BR7 L
15	DE2	BUS BR6 L
14	DF2	BUS BR5 L
13	DH2	BUS BR4 L
12	DJ2	CR-4 REQUEST L
11	DK2	BUS B07 IN H
10	DL2	BUS B07 OUT H
09	DM2	BUS B06 IN H

10

CR11 INTERFACE
(ADDRESS SELECTION)
(INTERRUPT CONT.)

WIRE TABLE

ITEM NO	AWG	COLOR	FROM CONNECTION	WITH	TO CONNECTION	WITH	SIGNAL NAME
5	24 TWP	RED	PI-TT	3	P2-U	4	ROW 6 DATA
		BRN	PI-SS		P2-W		RETURN
		GRY	PI-RR		P2-V		ROW 7 DATA
		RED	PI-PP		P2-X		RETURN
		GRN	PI-NN		P2-Y		ROW 8 DATA
		WHT	PI-MM		P2-CC		RETURN
		ORN	PI-LL		P2-Z		ROW 9 DATA
		WHT	PI-KK		P2-DD		RETURN
		BLU	PI-JJ		P2-C		ROW 10 DATA
		WHT	PI-HH		P2-H		RETURN
		BLU	PI-FF		P2-M		ROW 4 DATA
		YEL	PI-EE		P2-S		RETURN
		BLU	PI-DD		P2-K		ROW 2 DATA
		BLK	PI-CC		P2-P		RETURN
		RED	PI-BB		P2-A		ROW 12 DATA
		BLU	PI-AA		P2-E		RETURN
5	24 TWP	ORN	PI-Z		P2-N		ROW 5 DATA
		BLK	PI-Y	3	P2-T	4	RETURN

WIRE TABLE

ITEM NO	AWG	COLOR	FROM CONNECTION	WITH	TO CONNECTION	WITH	SIGNAL NAME
5	24 TWP	GRN	PI-X	3	P2-L	4	ROW 3 DATA
		BLK	PI-W		P2-R		RETURN
		GRN	PI-V		P2-B		ROW 11 DATA
		YEL	PI-U		P2-F		RETURN
		YEL	PI-T		P2-D		ROW 1 DATA
		ORN	PI-S		P2-J		RETURN
		GRY	PI-R		P2-LL		PICK
		BLK	PI-P		P2-SS		RETURN
		BRN	PI-N		P2-MM		BUSY
		WHT	PI-M		P2-TT		RETURN
		GRY	PI-L		P2-AA		INDEX
		WHT	PI-K		P2-EE		RETURN
		BRN	PI-J		P2-BB		READY
5	24 TWP	BLK	PI-H	3	P2-FF	4	RETURN

LEGEND

NUMBER	DIM "X" (VARIATION)	DIM "Y" (PRECUT) REF
7008738-15	15 FEET ± 3 IN	15 FEET 4.2 IN

NOTES

1. MANUFACTURING SHOULD USE MACHINE CRIMPING TOOL FOR THE ASSY OF PINS. (ITEM #3)
2. SPARE WIRES (ORG/RED, GRN/RED) TO BE CUT BACK UNDER CABLE JACKET.
3. PINS (ITEM #4) SHOULD BE CRIMPED USING ELCO HAND TOOL (067515-01) OR THE EQUIVALENT.

VIEW B-B
SCALE: NONE

WIRED SIDE

SECTION A-A
SCALE: NONE

VIEW A-A
SCALE: NONE

KEYS

DIM "Y" REF

DIM "X"
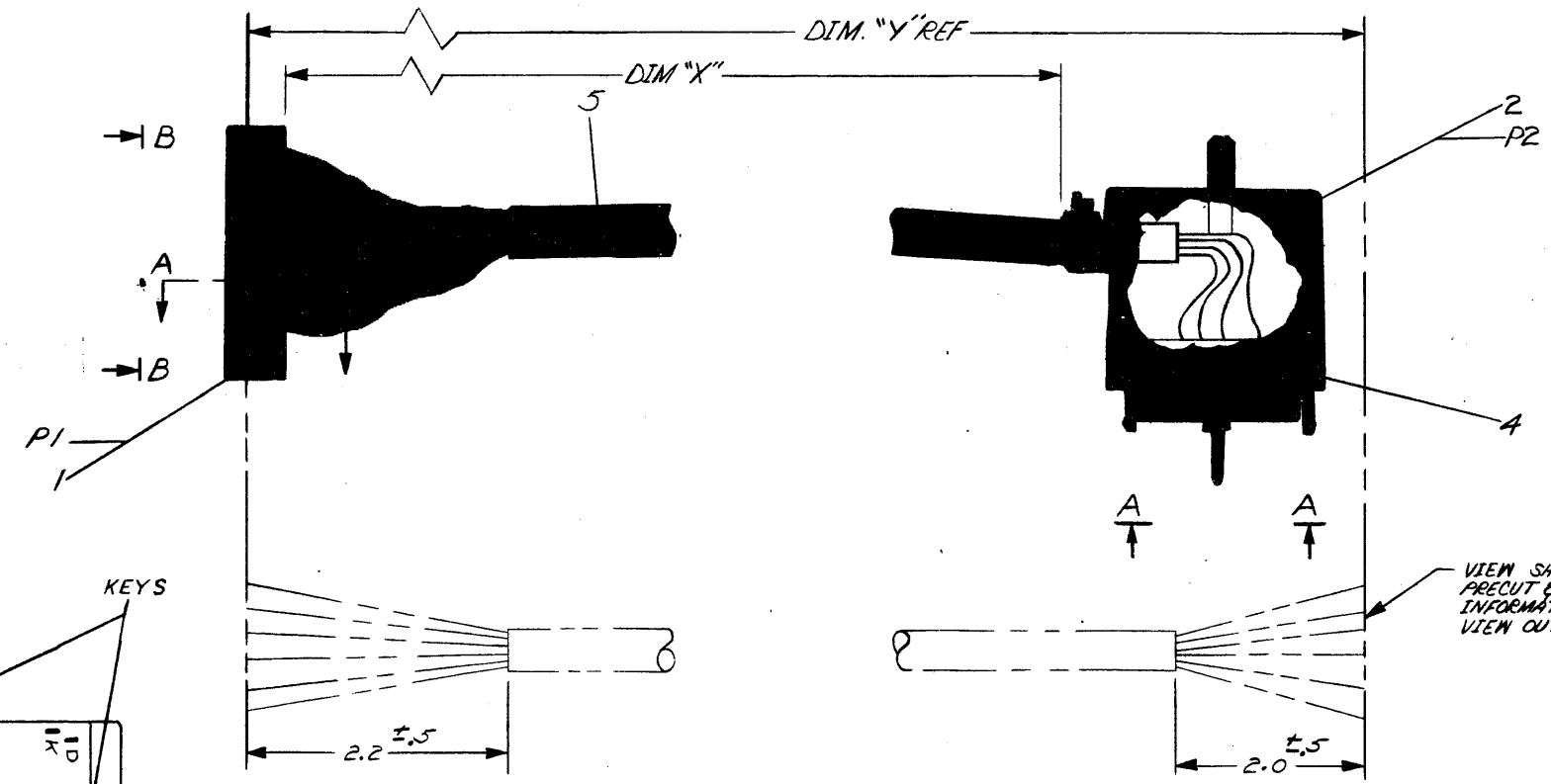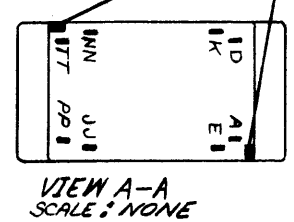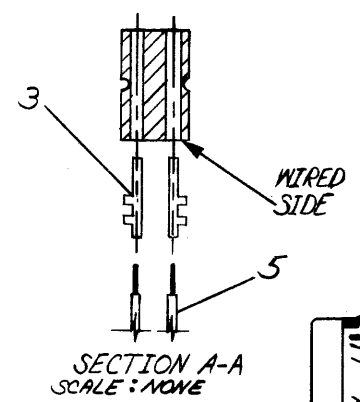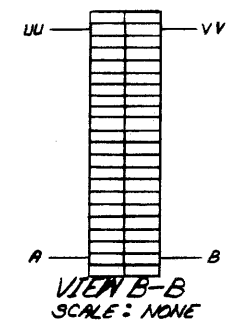
VIEW SHOWING PRECUT & STRIPING INFORMATION ONLY
VIEW OUT OF PROJECTION

2.2 ±.5

2.0 ±.5

A/R	CABLE TWP #24 AWG		9107700	5
32	PIN ELCO # 60-8017-03-13		1210675-1	4
32	SOCKET PIN 48015 BERG		1210089-5	3
1	CONNECTOR ELCO # 00-8016-038-000-704		1210675	2
1	HOUSING BERG # 20383		1210090-0	1
FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

PDP 8/E

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES.
TOLERANCES

DRN. M.Pierce
CHK.
ENG.
PROJ. ENG.
PROD.

digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

TITLE
CABLE CARD
READER INTERFACE

NEXT HIGHER ASSY.
A-PL-CR8-E-0

SIZE CODE	NUMBER	REV.
D IA	7008738-0-0	B

SCALE NONE
SHEET 1 OF 1

12