

PC11
reader/punch control
engineering drawings

DIGITAL EQUIPMENT CORPORATION • MAYNARD, MASSACHUSETTS

PC11 ENGINEERING DRAWINGS

Drawing No.	Title
A-ML-PC11-0	High-Speed Paper Tape Reader & Punch, Master List
A-PL-PC11-0-0	High-Speed Paper Tape Reader & Punch, Parts List
C-DI-PC11-0-1	Drawing Index (PC11)
D-MU-PC11-0-MU	Module Utilization
A-PL-PC11-0-MU	Module Utilization, Parts List
D-CS-M7810-0-1	PC11 Interface
A-SP-PC11-0-5	PC11/PR11 Test Procedure

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742

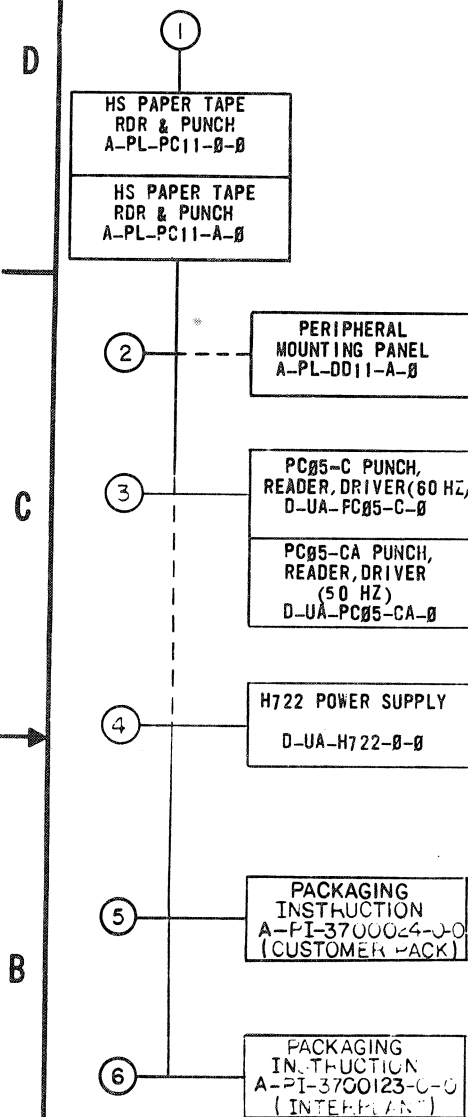
DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS					QUANTITY / VARIATION													
PARTS LIST					PC11-Ø-(60HZ)	PC11-A-Ø(50HZ)												
MADE BY P. MARCOTTE DATE 4/2/70		CHECKED AL PFYFFER DATE 4/14/70		SECTION 1														
ENG <i>P.E. Janson</i> DATE 5/4/70		PROD <i>+ MacPhail</i> DATE 5/5/70		ISSUED SECT. 1														
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION																
	A-PL-DD11-A-Ø	PERIPHERAL MOUNTING PANEL			1	1	(IF REQUIRED)											
	A-PL-PC11-Ø-MU	MODULE UTILIZATION			1	1												
	C-SC-1209856-0-01	MODULE HOLDER			A/R	A/R												
	D-UA-BCØ8J-6-Ø	BCØ8J CABLE 6FT.			*	*												
	D-UA-PCØ5-C-Ø	PCØ5-C, PUNCH, READER, DRIVER			1													
	D-UA-PCØ5-CA-Ø	PCØ5-CA, PUNCH, READER, DRIVER				1												
	D-AR-PC11-Ø-4	OPTION ARRANGEMENT			1													
	D-UA-BCØ8J-1Ø-Ø	BCØ8J CABLE 10 FT.			*	*												
	A-PI-3700024-0-0	PACKAGING INSTRUCTIONS CUST. PACK			1	1												
	A-PI-3700123-0-0	PACKAGING INSTRUCTIONS INTERPLANT			1	1												
	23-760A9	BOOTSTRAP ROM, PC11 **			1	1												
	9906228	BOX ROM SHIPPING **			1	1												
	*NOTE: 2 EA. BCØ8F-X CABLES ARE REQUIRED.																	
	THE LENGTH IS DETERMINED BY THE SYSTEM CONFIGURATION.																	
	** NOTE: TO BE SHIPPED WITH PC11 AND USED WHEN HOST SYSTEM CONTAINS AN M9312 BOOT MODULE.																	

TITLE HS PAPER TAPE RDR & PUNCH		ASSY NO. SHEET 1 OF 1		SIZE A	CODE PL	NUMBER PC11-Ø-Ø		REV. D	ECONO. PC11-00008
				DIST.	G				

DEC FORM NO.
DRA 110

 M_L

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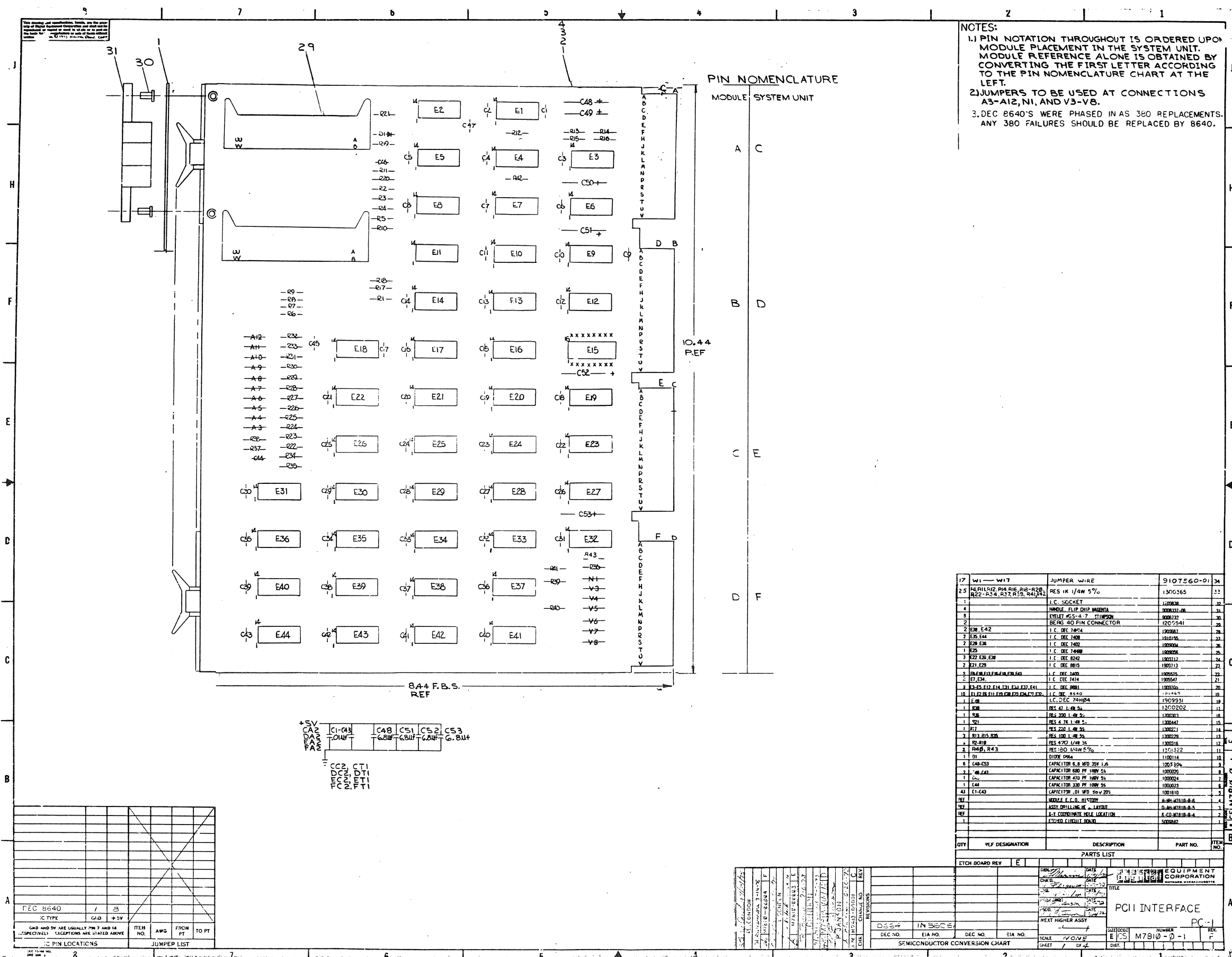


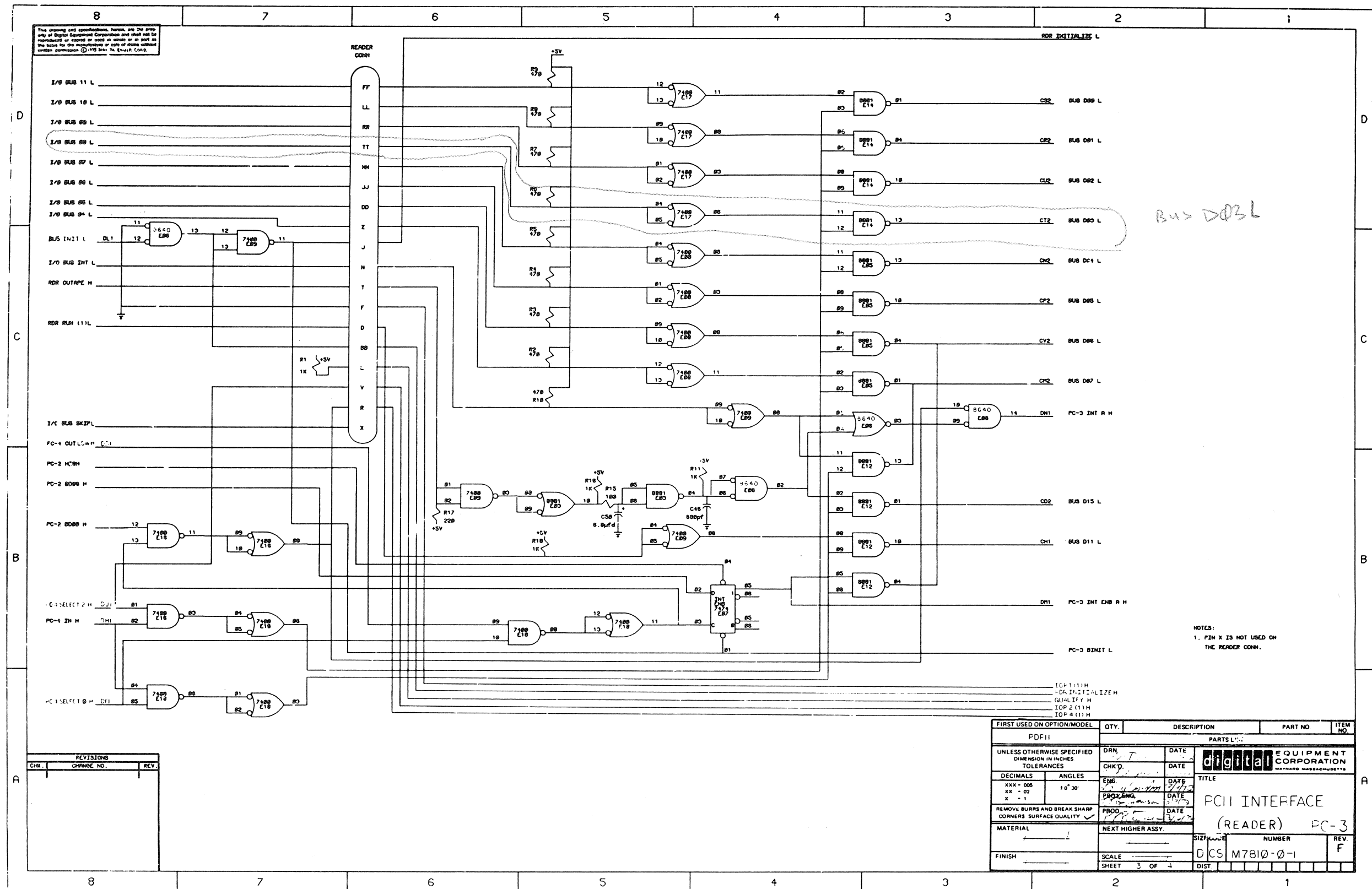
MECHANICAL			USAGE		
FIND NO.	DESCRIPTION	PART NO.	PROD	CUST	FC
1.	HS PAPER TAPE RDR & PUNCH HS PAPER TAPE RDR & PUNCH (PL) BC08J CABLE MODULE HOLDER	A-PL-PC11-B-B A-PL-PC11-A-B D-UA-BC08J-6-B C-SC-1209856-0-01			
2.	PERIPHERAL MOUNTING PANEL DRAWING INDEX	A-PL-DD11-A-B C-DI-DD11-A-1			
3.	PC05-C, PUNCH, READER, DRIVER PC05-C, PUNCH, READER DRIVER (PL) DRAWING INDEX PC05-CA, PUNCH, READER DRIVER (PL) PC05-CA, PUNCH, READER DRIVER (PL)	D-UA-PC05-C-B A-PL-PC05-C-B D-DI-PC05-B-1 D-UA-PC05-CA-B A-PL-PC05-CA-B			
4.	H722 POWER SUPPLY H722 POWER SUPPLY PANEL, MOUNTING PROTECTION COVER	D-UA-H722-B-B A-PL-H722-B-B D-IA-5308863-B-B B-MD-5302903-B-B			
5.	PACKAGING INST. (CUST. PACK) OUTER SHIPPING CARTON INNER SHIPPING CARTON BOTTOM PAD FRONT SPACER SIDE SPACER REAR SUPPORT TOP SPACER TORO PAD POLY BAG -20x13x40x1-1/2 MIL.	A-PI-3700024-0-0 A-PS-9905046-0-0 A-PS-9905047-0-0 A-PS-9905053-0-0 A-PS-9905054-0-0 A-PS-9905055-0-0 A-PS-9905052-0-0 A-PS-9905056-0-0 A-PS-9905044-1-0 A-PS-9905129-7-0			
6.	PACKAGING INST. (INTERPLANT) TAPELESS CARTON SPECIAL DIE CUT ONE PIECE FOLDER QUAD MODULE BOOK PACK POLY BAG	A-PI-3700123-0-0 A-PS-9905348-0-0 A-PS-9905348-1-0 A-PS-9905348-2-0 A-PS-9905072-0-0 A-PS-9905129-7-0			

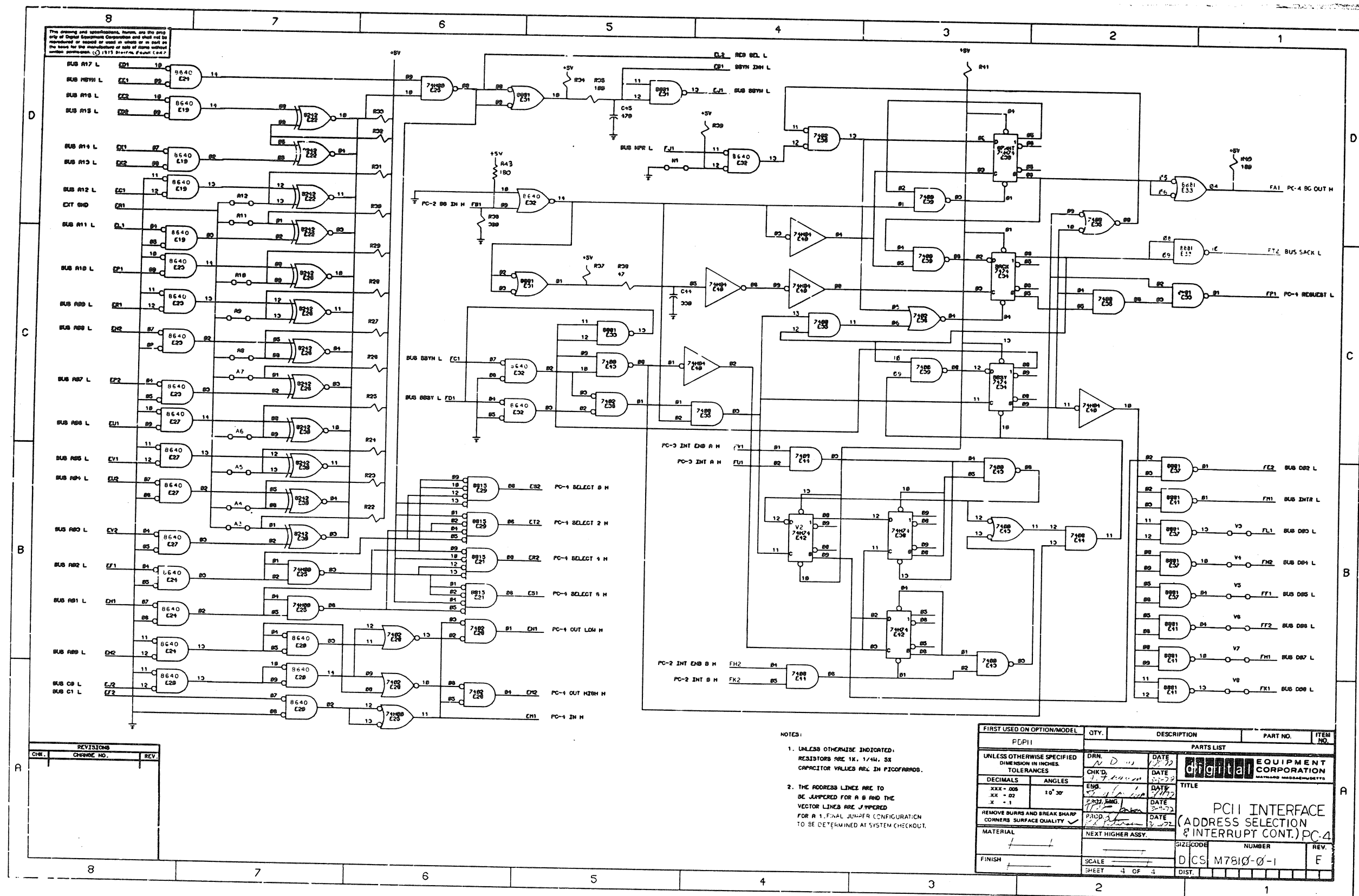
ELECTRICAL			USAGE		
FIND NO.	DESCRIPTION	PART NO.	PROD	CUST	FC
1.	HS PAPER TAPE RDR & PUNCH HS PAPER TAPE RDR & PUNCH PC11 INTERFACE MODULE UTILIZATION MODULE UTILIZATION (PL) PC11/PR11 TEST PROCEDURE ACCESSORY LIST	A-ML-PC11-B A-ML-PC11-A D-CS-M7810-0-1 D-MU-PC11-B-MU A-PL-PC11-B-MU A-SP-PC11-0-5 A-AL-PC11-0-6			
4.	H722 POWER SUPPLY	D-CS-H722-B-1			

REV.	CHANGE NO.	CHK	DATE	BY
A	1	EV	10/1/79	PC11-0004
B	2	EV	10/1/79	PC11-0004
C	3	EV	10/1/79	PC11-0004
D	4	EV	10/1/79	PC11-0004
E	5	EV	10/1/79	PC11-0004
F	6	EV	10/1/79	PC11-0004
G	7	EV	10/1/79	PC11-0004
H	8	EV	10/1/79	PC11-0004
I	9	EV	10/1/79	PC11-0004
J	10	EV	10/1/79	PC11-0004
K	11	EV	10/1/79	PC11-0004
L	12	EV	10/1/79	PC11-0004
M	13	EV	10/1/79	PC11-0004
N	14	EV	10/1/79	PC11-0004
O	15	EV	10/1/79	PC11-0004
P	16	EV	10/1/79	PC11-0004
Q	17	EV	10/1/79	PC11-0004
R	18	EV	10/1/79	PC11-0004
S	19	EV	10/1/79	PC11-0004
T	20	EV	10/1/79	PC11-0004
U	21	EV	10/1/79	PC11-0004
V	22	EV	10/1/79	PC11-0004
W	23	EV	10/1/79	PC11-0004
X	24	EV	10/1/79	PC11-0004
Y	25	EV	10/1/79	PC11-0004
Z	26	EV	10/1/79	PC11-0004
AA	27	EV	10/1/79	PC11-0004
AB	28	EV	10/1/79	PC11-0004
AC	29	EV	10/1/79	PC11-0004
AD	30	EV	10/1/79	PC11-0004
AE	31	EV	10/1/79	PC11-0004
AF	32	EV	10/1/79	PC11-0004
AG	33	EV	10/1/79	PC11-0004
AH	34	EV	10/1/79	PC11-0004
AI	35	EV	10/1/79	PC11-0004
AJ	36	EV	10/1/79	PC11-0004
AK	37	EV	10/1/79	PC11-0004
AL	38	EV	10/1/79	PC11-0004
AM	39	EV	10/1/79	PC11-0004
AN	40	EV	10/1/79	PC11-0004
AO	41	EV	10/1/79	PC11-0004
AP	42	EV	10/1/79	PC11-0004
AQ	43	EV	10/1/79	PC11-0004
AR	44	EV	10/1/79	PC11-0004
AS	45	EV	10/1/79	PC11-0004
AT	46	EV	10/1/79	PC11-0004
AU	47	EV	10/1/79	PC11-0004
AV	48	EV	10/1/79	PC11-0004
AW	49	EV	10/1/79	PC11-0004
AX	50	EV	10/1/79	PC11-0004
AY	51	EV	10/1/79	PC11-0004
AZ	52	EV	10/1/79	PC11-0004
BA	53	EV	10/1/79	PC11-0004
BB	54	EV	10/1/79	PC11-0004
BC	55	EV	10/1/79	PC11-0004
BD	56	EV	10/1/79	PC11-0004
BE	57	EV	10/1/79	PC11-0004
BF	58	EV	10/1/79	PC11-0004
BG	59	EV	10/1/79	PC11-0004
BH	60	EV	10/1/79	PC11-0004
BI	61	EV	10/1/79	PC11-0004
BJ	62	EV	10/1/79	PC11-0004
BK	63	EV	10/1/79	PC11-0004
BL	64	EV	10/1/79	PC11-0004
BM	65	EV	10/1/79	PC11-0004
BN	66	EV	10/1/79	PC11-0004
BO	67	EV	10/1/79	PC11-0004
BP	68	EV	10/1/79	PC11-0004
BQ	69	EV	10/1/79	PC11-0004
BR	70	EV	10/1/79	PC11-0004
BS	71	EV	10/1/79	PC11-0004
BT	72	EV	10/1/79	PC11-0004
BU	73	EV	10/1/79	PC11-0004
BV	74	EV	10/1/79	PC11-0004
BW	75	EV	10/1/79	PC11-0004
BX	76	EV	10/1/79	PC11-0004
BY	77	EV	10/1/79	PC11-0004
BZ	78	EV	10/1/79	PC11-0004
CA	79	EV	10/1/79	PC11-0004
CB	80	EV	10/1/79	PC11-0004
CC	81	EV	10/1/79	PC11-0004
CD	82	EV	10/1/79	PC11-0004
CE	83	EV	10/1/79	PC11-0004
CF	84	EV	10/1/79	PC11-0004
CG	85	EV	10/1/79	PC11-0004
CH	86	EV	10/1/79	PC11-0004
CI	87	EV	10/1/79	PC11-0004
CJ	88	EV	10/1/79	PC11-0004
CK	89	EV	10/1/79	PC11-0004
CL	90	EV	10/1/79	PC11-0004
CM	91	EV	10/1/79	PC11-0004
CN	92	EV	10/1/79	PC11-0004
CO	93	EV	10/1/79	PC11-0004
CP	94	EV	10/1/79	PC11-0004
CQ	95	EV	10/1/79	PC11-0004
CR	96	EV	10/1/79	PC11-0004
CS	97	EV	10/1/79	PC11-0004
CT	98	EV	10/1/79	PC11-0004
CU	99	EV	10/1/79	PC11-0004
CV	100	EV	10/1/79	PC11-0004

FIRST USED ON OPTION/MODEL PDP11	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST				
UNLESS OTHERWISE SPECIFIED	DRN	DATE	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	
UNLESS OTHERWISE SPECIFIED	CHK'D	DATE	TITLE	
DIMENSION IN INCHES	ENG	DATE	DRAWING INDEX (PC11)	
TOLERANCES	PROJ. ENG.	DATE	SIZE CODE NUMBER REV.	
DECIMALS FRACTIONS ANGLES	PROD	DATE	C DI PC11-0-1 D	
± .005 ± 1/64 ± 0°30'	NEXT HIGHER ASSY	DATE	DIST. 1 OF 1	
FINAL SURFACE QUALITY	A-ML-PC11-0	DATE		
REMOVE BURRS AND BREAK SHARP CORNERS	SCALE NONE	DATE		
MATERIAL	SHEET	DATE		
FINISH		DATE		







NOTES:
SLOT 13 OR 14 IN THE KALI PROCESSOR OR,
SLOT 1,2,3 OR 4, IN THE DDII-A.

SEE NOTE 1

A

B

M7810

C

PCII
INTERFACE

D

E

F

FIRST USED ON OPTION / MODEL PCP II	DO NOT SCALE DRAWING		QTY.	DESCRIPTION	PART NO.	ITEM NO.
	UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES DECIMALS FRACTIONS ANGLES $\pm .006 \pm 1/64 \pm 0^{\circ}30'$ FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS		DRS <i>[Signature]</i> DATE <i>1/15/70</i> CHKD <i>[Signature]</i> DATE <i>1/20/70</i> ENGR <i>[Signature]</i> DATE <i>1/20/70</i> PROJ ENGR <i>[Signature]</i> DATE <i>1/20/70</i> PRD <i>[Signature]</i> DATE <i>1/20/70</i>	PARTS LIST digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS TITLE MODULE UTILIZATION		
	MATERIAL <i>+</i>		NEXT HIGHER ASSY A-ML-PCP II-0			
	FINISH <i>+</i>		SCALE NONE SHEET 1 OF 1 SIZE CODE NUMBER REV D M U PCP II-0 - MU B			

DEC FORM NO
DPO 100

MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY F. MARCOTTE

DATE 3/16/70

ENG *VE*

DATE 5/4/70

CHECKED AL PFYFFER

DATE 4/14/70

PROD *Therapeutic*

DATE 5/5/70

SECTION

1

ISSUED SECT.

1

QUANTITY / VARIATION

ITEM
NO.

DWG NO. / PART NO.

DESCRIPTION

M7810

PC II INTERFACE

5408776

PRIORITY JUMPER LEVEL#4

TITLE

MODULE UTILIZATION

ASSY NO.

D-MU-PC11-4--MU

SHEET 1 OF 1

SIZE	CODE
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LA PL

DiST	
------	--

NUMBER

PC11-~~X~~-MU

REV.

12

ECO NO.

PCII -
20004

DEC FORM NO.
DRA 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 9/11/70

REVISIONS				
REV	DESCRIPTION	CHG NO	ORIG	DATE
A	1	PC11-00003	P. JANSON	12-71
B		PC11-00004	P. JANSON	2-72

APPROVED: P. E. Janson
DATE: 2-22-72

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ENG. P. E. Janson	APP. P. E. Janson	SIZE CODE A SP	NUMBER PC11-0-5	REV B
DEC FORM NO. DBA 108				

SHEET 1 OF 5

ENGINEERING SPECIFICATION

TITLE PC11/PR11 TEST PROCEDURE

1.0 TEST EQUIPMENT

- 1.1 A known good PC11 module
- 1.2 A 425 scope and voltage probes.
- 1.3 Extender modules
- 1.3.1 2 double width
- 1.4 Small option test station equipped with:
 - 1.4.1 KAL processor
 - 1.4.2 4K of memory
 - 1.4.3 DD11 option panel with 3 G727 grant continuity boards
 - 1.4.4 Tape loader
 - 1.4.5 Test stand
 - 1.4.6 Teletype
 - 1.4.7 H722 step down transformer

2.0 TEST SET UP

- 2.1 Remove PC05 or PC05R from its carton
- 2.2 Remove chassis track slides from PC or PR to permit installation into test station cabinet
- 2.3 Remove metal cover over the modules to permit installation of I/O cables
- 2.4 Install PC0 to be tested in the chassis tracks provided in the test station cabinet
- 2.5 Connect AC power to the PC0:
 - 2.5.1 115 VAC @ 60HZ to PC11 or PR11
 - 2.5.2 115 VAC @ 50HZ to PC11A or PR11A by using the output of the H722 step down transformer
- 2.6 Install PC11/PR11 modules in the DD11 located in the test stand as follows:
 - 2.6.1 M78J0 in slots C,D,E,F, with a level #4 priority plug installed
 - 2.6.2 Address assignment: cut all "A" jumpers except A4 and A7 this gives address 777550
 - 2.6.3 Vector assignment: cut all "V" jumpers except V5, V4 and V3. Cut N1. This gives vector address 70

DEC FORM NO 16-1027 DBA 108	SIZE CODE A SP	NUMBER PC11-0-5	REV B
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SHEET 2 OF 5

ENGINEERING SPECIFICATION

TITLE PC11/PR11 TEST PROCEDURE

- 2.6.4 If for some reason one of the other slots in the DD11 must be used, each preceding (unused) D slot must contain a G727.

FOR EXAMPLE: If the option modules are installed in C, D, E & F four, slots D01, D02 & D03 must contain G727 grant continuity modules.

- 2.7 Connect I/O cables as follows:

- 2.7.1 Reader cable (BC08J) from the reader plug on the M781 to slot B9 in the PC0 logic.

- 2.7.2 Punch cable (BC08J) from the punch plug on the M781 to slot B10 in the PC0 logic.

- 2.8 Turn on power to the PC0 with the switch located on the rear of the PC0.

3.0 PC11/PR11 TESTING

- 3.1 If not previously loaded, load the diagnostic (Maindec 11-D2BA) into memory via the tape loader.

- 3.1.1 Put halt switch down, set the switch register to all 0's. Depress the LOAD ADDR switch and then hit the START switch (to initialize).

- 3.1.2 Place tape in reader.

- 3.1.3 Depress feed switch on reader.

- 3.1.4 Depress SW1 switch on loader control panel.

- 3.1.5 After tape is read, if END light comes on, the tape is loaded correctly. If ERROR light comes on go back to step 3.1.1 and reload tape.

- 3.2 The diagnostic (D2BA) consists of 12 different tests. All of these tests have a loading address of 200, but have varying switch register settings for starting.

- 3.3 Below is a table which lists the tests, run times (as indicated) for one successful pass of the test, and use of the test as it applies to the PC11 or PR11.

Test	Run Time (Min.)	Use
PRG0	3.0	PC11, PR11
PRG1	3.5	PC11, PR11
PRG2	1.5	PC11
PRG3	8.0	PC11
PRG4	See 3.5.3	PC11
PRG5	See 3.5.4	PC11
PRG6	See 3.5.5	PC11
PRG7	See 3.5.5	PC11, PR11
PRG10	See 3.5.5	PC11, PR11
PRG11	See 3.5.5	PC11
PRG12	See 3.5.6	PC11, PR11
PRG13	See 3.5.6	PC11

- 3.4 To run any test, set the switch register to 200 and hit load addr key. Set the switch register equal to the number of the test to be run and hit the start key. Operating instructions will be typed out along with normal switch register settings. Follow the instructions and set the switch register as desired, then hit continue.

DEC FORM NO. DBA 108	SIZE CODE A SP	NUMBER PC11-0-5	REV B
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SHEET 3 OF 5

ENGINEERING SPECIFICATION

TITLE PC11/PR11 TEST PROCEDURE

- 4.12 of the diagnostic abstract.

3.5 Diagnostic Testing Sequence

- 3.5.1 Run one pass (for time given in table 3.3) each of PRG0, PRG1 and PRG2.

- 3.5.2 Run one pass of PRG3 for the time indicated in table 3.3. Pick a section of the data portion of the tape just punched and test it by inserting it into a tape registration guide (Priden # T8118). If the "tap" punched doesn't fit the guide, run PRG13 to determine if the punch speed is correct. Adjust to correct speed and rerun PRG3 with guide test (3.5.2)

- 3.5.3 If no failures occurred in the testing done in 3.5.2, run test PRG4 using the tape just punched.

- 3.5.4 Run PRG5 as follows:
 1. After operating instructions have been typed out take the special binary count tape (D2CA) and load it into the reader.

2. Set switches to all 0's hit the start key.

3. At the end of the data portion of the tape being read, the computer will stop.

4. Using the tape just punched instead of D2CA, repeat steps 1-3 two more times.

- 3.5.5 Tests PRG6-PRG11 are not to be run during normal testing except as trouble shooting aids.

- 3.5.6 Run one pass each of PRG12 and PRG13 using the 30 second testing period for PRG12.

- 3.6 If any of the tests run in 3.5.1 to 3.5.6 cause failures, refer to section 4.0.

- 3.7 Vibrate the PC11/PR11 module. (M7810) while running PRG5. Use a standard vibrating wand, as described in DEC standard 7665057-0-0.

4.0 FAILURES

- 4.1 Adjustment failures may occur during testing. All adjustments are preset, but should a minor adjustment be necessary, use the following procedure:
 - PC0 reader setup
 - Dated March 18, 1970
 - Written by C. A. Youse (of Special Products, Peripherals Equipment Engineering, located at 4-5)

- 4.2 When a defective module is detected, it should be tagged and returned to the stockroom for replacement.
 - 4.2.1 After a module replacement, start test at step 3.4.

- 4.3 Note: Any failure of the PC0 other than noted in 4.1 constitutes a problem sufficient to remove the PC0 from the station and send it back to off-line testing for examination.

5.0 HEAT TEST

- 5.1 Heat test should be run only after successful completion of all previously indicated tests.

DEC FORM NO 16-1027 DBA 108	SIZE CODE A SP	NUMBER PC11-0-5	REV B
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SHEET 4 OF 5

diagram

CONTINUATION SHEET

TITLE PC11/PR11 TEST PROCEDURE

- 5.2 For PR11 heat testing run PRG1. For PC11 heat testing run PRG5 as indicated in 3.5.4.
- 5.3 Start diagnostic. Close the bottom door of the heat chamber, turn on the heater (heater control is preset to 50°C).
- 5.3.1 Start the computer running the test indicated in 5.2.
- 5.3.2 Close the bottom door of the heat chamber and turn on the heater (heater control is preset to 50°C).
- 5.3.3 When 50°C is reached, the top light on the heater control box will go out. Continue running the diagnostic for 10 minutes more with the door closed.
- 5.3.4 If no errors occur, turn off the heater, open the bottom door and allow it to cool.
- 5.3.5 NOTE: Do not stop the program until the temperature has returned to normal (ambient).
- 5.4 If unit fails in heat, refer to the typeout and the program write up, then go to 4.0 of this procedure.
- 6.0 TEST COMPLETION
- 6.1 Disconnect I/O cables and AC power.
- 6.2 For PC11, remove tape from unit and empty the chad box.
- 6.3 Remove PCO from test station.
- 6.4 Replace cover over modules and chassis tracks on PCO.
- 6.5 Put tested unit back into shipping container and send to the stockroom.

SIZE	CODE	NUMBER	REV
A	SP	PC11-0-5	B

