

digital

DUII

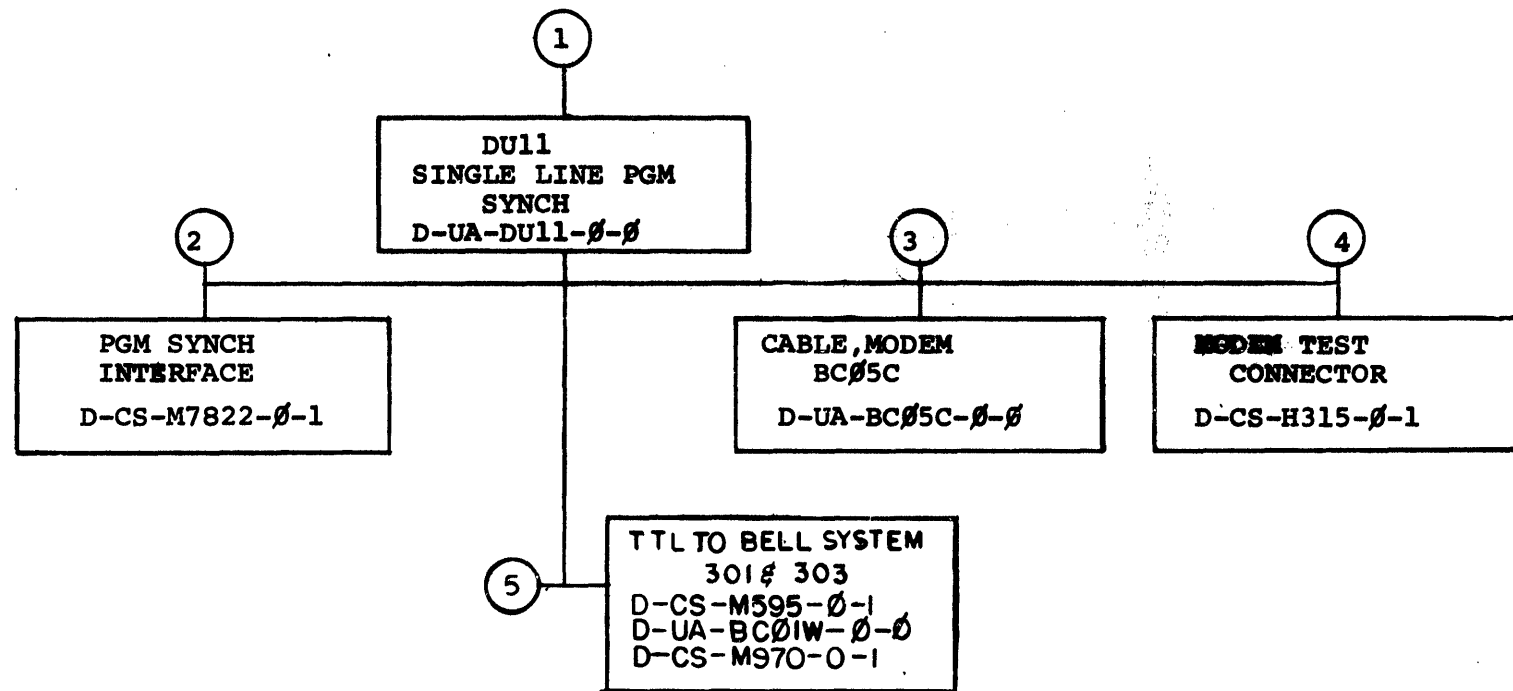
Engineering Drawings

Digital Equipment Corporation

The material herein is for information purposes only and is subject to change without notice. Digital Equipment Corporation assumes no responsibility for any errors which may appear herein.

These drawings and specifications herein are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

Copyright © 1975, Digital Equipment Corporation



TITLE	SHEET	SIZE	CODE	NUMBER	REV
SINGLE LINE PGM SYNCH. INT.	2 OF 3	B	DD	DUI-0	D

CUSTOMER PRINT SET		ELECTRICAL					CUSTOMER PRINT SET		MECHANICAL						
	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE		MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
X		1	D-UA-DU11- 0 - 0	*	1	SINGLE LINE PGM SYNCH. INT.				1	D-UA-DU11- 0 - 0	*	1	SINGLE LINE PGM SYNCH INT	
	X		A-SP-DU11- 0 -1	A	4	ACCEPTANCE PROCEDURE									
	X		A-SP-DU11- 0 -2	D	12	TEST PROCEDURE									
X			A-AL-DU11- 0 -3	A	1	ACCESSORY LIST									
X			A-SP-DU11- 0 -4	C	9	FIELD INSTALLATION AND ACC.									
X		2	D-CS-M7822- 0 -1	#	6	PGM SYNC INTERFACE									
			K-CO-M7822- 0 -4		1	X-Y COORDINATE HOLE LOCATION									
			D-AH-M7822- 0 -5		1	ASSY/DRILLING HOLE LOCATION									
			B-MH-M7822- 0 -6		1	MODULE ECO HISTORY									
X		3	D-UA-BC 0 5C- 0 - 0	#	1	CABLE MODEM BC 0 5C				3	D-UA-BC 0 5C- 0 - 0	*	1	CABLE, MODEM BC 0 5C	
X		4	D-CS-H315- 0 -1	#	1	MODEM TEST CONNECTOR									
			K-CO-H315- 0 -4		1	X-Y COORDINATE HOLE LOCATION									
			C-AH-H315- 0 -5		1	ASSY/DRILLING HOLE LAYOUT									
			B-MH-H315- 0 -6		1	MODULE ECO HISTORY									
X		5	D-CS-M595-0-1	#	2	TTL TO BELL SYSTEM 301 & 303									
X			D-UA-BC 0 1W-0-0	#	1	HIGH SPEED MODEM CABLE									
X			D-CS-M970-0-1	#	1	CABLE INTERFACE BD,* 1									

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
SINGLE LINE PGM SYNCH

SHEET 3 OF 3

SIZE CODE
B DD

NUMBER
DU11-~~0~~

REV
D

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 10/24/73

TITLE D111-DA, EA FIELD INSTALLATION AND ACCEPTANCE PROCEDURE

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
A	ECO CHANGE	D111-00001	REILLY	4/74	J. Reilly	4/21/74
B	ECO CHANGE	D111-00002	ZERESKI	8/74	J. Zereski	8/28/74
C	ECO CHANGE	D111-00004	ZERESKI	7-75	J. Zereski	7/19/75

Index

- 1.0 Module Configuration
 - 1.1.0 Unibus Address
 - 1.2.0 Interrupt Vector Address
 - 1.3.0 Miscellaneous Jumpers
 - 1.4.0 Mounting Information
 - 1.5.0 Power Requirement and Unibus Loading
 - 1.6.0 Environmental Specifications
 - 1.7.0 Preliminary Testing
 - 1.8.0 Testing with Diagnostics
 - 1.9.0 Systems Test
- 2.0 Customer Acceptance

ENG <i>J. Zereski</i>	APPD <i>J. Zereski</i>	SIZE A	CODE SP	NUMBER D111-0-4	REV C
-----------------------	------------------------	---------------	----------------	------------------------	--------------

DEC FORM NO DEC 16-(392)-1079-N971
DRA 107

SHEET 1 OF 9

ENGINEERING SPECIFICATION

CONTINUATION SHEET

TITLE

D111-DA, EA Field Installation and Acceptance Procedure

This document is divided into two sections; the first section deals with the field installation of a D111-DA or EA, the second section covers the customer acceptance of the option.

The installation section covers the configuration of jumpers and switches on the module itself. It also has helpful hints that could save aggravation. All references to modems are to the Bell 201 series for the D111-DA, and to the Bell 303 for the D111-EA. No attempt has been made to cover other modems, although many have the same characteristics as those cited.

Throughout this document the term D111, without a suffix, refers to both the DA and EA version. Where information pertains specifically to one version only the appropriate suffix will be added.

Field Installation

1.0 Module Configuration

The D111 module M7822 is configured for the customer's system by cutting jumpers on the module and by setting the switch pack. In most cases only the Unibus address and interrupt vector address need to be reconfigured although all jumpers will be defined.

1.1.0 Unibus Address

The D111 Unibus address falls into the floating address space. The first D111 floating address is 160000. This would be the address of the first D111 in a system if the system consisted of no other devices that preceded the D111 in the floating address scheme. In this floating address scheme the D111 uses four address spaces starting on a zero boundary and is preceded by the D111 (i.e., 160040-50). Once the position of the D111 has been determined in the floating address scheme, the Unibus address is selected by the rocker switches on the M7822.

1.1.1 Setting the Unibus Address

Switch pack (SP1) controls the Unibus address of the D111. Once the Unibus address has been determined, set the rocker switches as follows: For a logical (1) on the Unibus address line, set the rocker switch that corresponds to that particular bit to the OFF position. A switch is in the OFF position when the rocker is depressed on the OFF side of the switch.

SIZE A	CODE SP	NUMBER D111-0-4	REV C
---------------	----------------	------------------------	--------------

DEC FORM NO DEC 16-(392)-1022-N370
DRA 108

SHEET 2 OF 9

ENGINEERING SPECIFICATION

CONTINUATION SHEET

TITLE

Example:

To select an address of 160010 switches 1 through 9 would be in the ON position, switch 0 would be OFF. Note that the number of switch does not correspond to the bit position on the Unibus, i.e., SW0 doesn't sample BUS A0.

1.2.0 Interrupt Vector Address

The D111 Vectors also fall into the floating interrupt vector space. The first vector of the floating scheme is address 3000. This would be the vector of the first D111 in a system that consisted of devices which did not precede the D111 in the floating vector scheme. In this floating vector scheme the D111-W precedes the D111. Each D111 in a system occupies two interrupt vectors.

1.2.1 Setting the Interrupt Vector

The vector is determined by the position of jumpers W9 through W14. During an interrupt sequence a BUS D line will be asserted as a logical (1) if a jumper is in place. As cited earlier the D111 occupies two vectors. Only the first vector need be considered and it must start on a zero boundary. The second vector is simply controlled by W9-W14 and BUS D 02 which is controlled by the hardware.

Example:

To select a set of vectors, 3000 and 3004, cut jumpers W9-W11 and W14. Jumpers W13 and W12 remain in.

1.3.0 Miscellaneous Jumpers--Modify only at customer's request with the exception of W15, W16 & W14-W9.

Drawing #	Jumper #	Function
5	W2	This jumper is normally OUT. If this jumper is in, the receiver logic will synchronize on one sync character instead of the recommended two.
6	W4	This jumper is normally IN. If this jumper is left out, Bits 1-3 of the RXCSR won't be cleared by Master Reset or BUSINIT. In some cases the connection with the Data Set may be required to be excluded from the effects of Master Reset or Bus Init.
4	W14	Sets Vector Bit 8 when installed
	W13	Sets Vector Bit 7 when installed
	W12	Sets Vector Bit 6 when installed
	W11	Sets Vector Bit 5 when installed
	W10	Sets Vector Bit 4 when installed
	W9	Sets Vector Bit 3 when installed

SIZE A	CODE SP	NUMBER D111-0-4	REV C
---------------	----------------	------------------------	--------------

DEC FORM NO DEC 16-(392)-1022-N370
DRA 108

SHEET 3 OF 9

ENGINEERING SPECIFICATION

CONTINUATION SHEET

TITLE

1.3.0

Drawing #	Jumper #	Function
6	W5	This jumper is normally IN. If this jumper is out pin UU of the Berg header (normally SEC REC or unused) will be disconnected from the EIA receiver. In other than the specified modems this pin may be connected to something other than SEC REC in which case it may be necessary to remove the jumper.
6	W6	This jumper is normally IN. If this jumper is out, pin FF of the Berg header will be disconnected from the EIA driver. This pin is normally connected to the SEC XMIT or an unused lead of the modem. In modems other than those specified, it may be necessary to remove this jumper.
4	W15	This jumper is normally IN. W15 should only be removed if the processor being used is a K111 without a KH11 option. For all other processors, this jumper is in.
4	W16	This jumper is normally OUT. Only in systems where the voltage on pin AU1 is at 8V RMS should this jumper be installed. A 0.05uF filter should also be installed in this case. Refer to the installation section of the D111 maintenance manual.

Note: If any of the miscellaneous jumpers have been changed with the exception of W15 and W16, new parameters must be entered into the diagnostic program through it's keyboard monitor.

1.4.0 Mounting Information

1.4.1 D111-DA

The D111-DA is compatible with all small peripheral controller slots (SPC) to date, with the exception of those internal to the K111.

SIZE A	CODE SP	NUMBER D111-0-4	REV C
---------------	----------------	------------------------	--------------

DEC FORM NO DEC 16-(392)-1022-N370
DRA 108

SHEET 4 OF 9

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

TITLE

Consideration must be given to the routing of the BC05-C cable or cables. If more than one DULL-DA is mounted in a system unit it would be desirable to have the system unit mounted as close as possible to the port in the cab provided for the cables.

Refer to drawing D-UA-DULL- β - β for the position of the module in a system unit.

1.4.2 DULL-EA
The DULL-EA is compatible only with the DD11-B unit. This system unit must have the appropriate ECO installed for correct operation. Slots 2 or 3 are the only slots which the DULL-EA can use in the DD11-B. To install a DULL-EA into a DD11-B refer to Drawing D-UA-DULL- β - β for the position of the modules. **INSURE THAT DD11-B ECO#3 IS INSTALLED IN THE DD11-B.** Extreme care should be used in the routing of the BC01-W modem cable. **INSTALL JUMPERS 202 AND 301 IN M970 ALL OTHER JUMPERS OUT.**

1.5.0 Power requirements and Unibus loading.

1.5.1 Each DULL places one bus load on the Unibus as defined by the peripherals and interfacing handbook, i.e., one BUS Receiver and 2 BUS Drivers per line.

1.5.2 DULL-DA power requirements
+5V @ 1.0 amps
+15V @ .04 amps
-15V @ .07 amps

1.5.3 DULL-EA power requirements
+5V @ 2.1 amps
+15V @ .07 amps
-15V @ .2 amps

1.6.0 Environmental Specifications
+10°C to +50°C with a relative humidity of from 20% to 95% (without condensation).

1.7.0 Preliminary Testing

1.7.1 Voltage Checks
With the DULL plugged into the back panel check the voltages at the following points. A 453 scope should suffice if it's calibrated.

SIZE	CODE	NUMBER	REV
A	SP	DULL- β -4	C

TITLE

IC & Pin	Voltage	Function
E16 β 1	+5V, +or -250 MV	TTL & MOS supply
E16 16	-12V, +or -600 MV	MOS & EIA level converter supply
*E12 14	+12V, +or -1V	EIA level converter supply

*Note: If W16 is in place, the voltage on E12 14 will be +8V, +1V or -500 MV.

1.7.2 Verification of address recognition logic
With the following test loop the correct operation of the address decoding logic can be verified.

```
STR: MOV @ #SWR, R#
      ADD #, (R#); executes the DATI, DATO
      JMP @ #STR; on the DULL adrs logic
```

```
STR: 200      13700
      177570
      62710
      000000
      137
      200
```

With this loop toggled in at address 200.

A. Load address 200.

B. Place the first register address of the DULL into the console SWR.

C. Press the start key.

D. With a scope monitor point E69#6 on the M7822, the following waveform should be observed. Note that the timing given may not be exactly accurate because of differences in systems.

A=300NS to 1.5 usec
B=500NS to 2 usec
C=300NS to 1.5 usec

SIZE	CODE	NUMBER	REV
A	SP	DULL- β -4	C

TITLE

1.7.3 Verification of the Unibus, Bus D line drivers
A. Press Halt
B. Press Start to issue CLR in the DULL
C. Examine the last DULL register, TXDBUF, (Sel. 6) The contents should read back as all ones. This proves that all DULL unibus D line drivers turn on.

1.7.4 Verification of Slave Sync inhibit delay
With same loop used in 1.7.2 load the PARCSR address (Sel. 2) into the console SWR.

A. Start the program. With the first scope probe verify the LD PARCSR one shot at E6812. This output should be low for at least 65#NS (Refer Fig. A).

B. Sync on channel one of the scope, with the second probe verify that BUS SSYN is being inhibited for at least 35#NS after the rising edge of the LD PARCSR pulse. (Refer Fig. A)

Figure A

(Channel 1) LD PARCSR (E6812) +3 OV >65#NS

(Channel 2) SSYN EN (E5905) +3 H#V >35#NS

A \approx 1#NS
B is greater than 350NS but less than 1.2 US

SIZE	CODE	NUMBER	REV
A	SP	DULL- β -4	C

TITLE

Repeat this same procedure for the LD PARCSR one shot, Fig. A and the timing information given is the same with the exception of the signal names and pin designations.

A. Load Address 200
B. Place the TXDBUF address into the SWR (Sel.6).
C. Place channel/scope probe on E68#4.
D. Place Channel 2 scope probe on E59#5.
E. Press Start and verify the timing as per Figure A.

1.7.5 Verification of Master Reset
Load diagnostic DEDU-AA, refer to the operating instructions of the diagnostic and select and loop on Test #8. Verify the output of the MSTRSTY one shot (E6413). This output should be true for 6 USMC. While this output is true, S SYN EN (E59#5) should be false.

1.8.0 Testing with diagnostics.

1.8.1 DULL-DA
With the BC05-C cable connected to the M7822 module and the opposite end of the cable terminated by the H315 test connector, start testing with DEDU-AA. All diagnostics from DEDU-AA to DEDU-FA should run in the external mode. At least 3 passes of each diagnostic should be made. This concludes DULL-DA testing, remove the H315 connector and plug the BC05-C into the modem.

1.8.2 DULL-EA
Starting with DEDU-AA through DEDU-FA, run all diagnostics with the diagnostic running in the internal maintenance mode. At least 3 passes of each diagnostic should be made. Connect the Berg connector of the BC01-W into the M97# module. If the modem is not a Bell 3#3 or 3#1, special cables might be required to connect to the modem. This must be done through the local office and is not part of the DULL-EA installation.

If the modem in question is something other than those cited, installation testing is concluded here.

With the cited modems, plug the Burndry connector of the BC01-W into the SYNC connector of the data set. This concludes DULL-EA testing.

SIZE	CODE	NUMBER	REV
A	SP	DULL- β -4	C

TITLE

1.9.0 Systems Test

1.9.1 Using the DECX11 DUL1 module DUA_ , run all DUL1's on the system. Up to 8 DUL1's may be exercised on a system. At least 3 passes of each DUL1 should be made.

2.0 Customer Acceptance

2.1.0 DUL1-DA

Customer acceptance is based on the satisfactory conclusion of Steps 1.8.1 and 1.9.1.

2.1.1 DUL1-EA

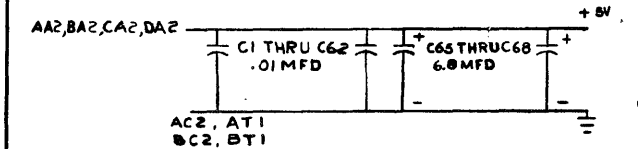
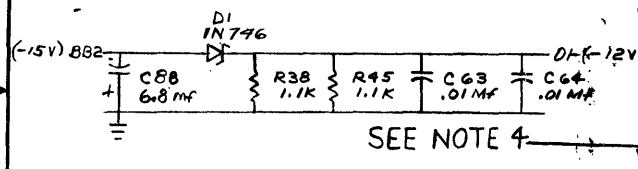
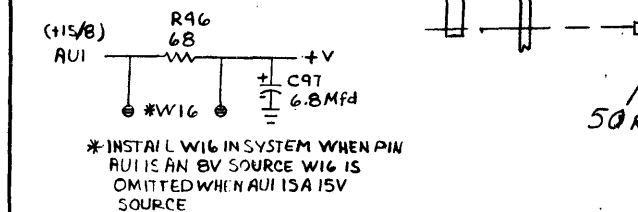
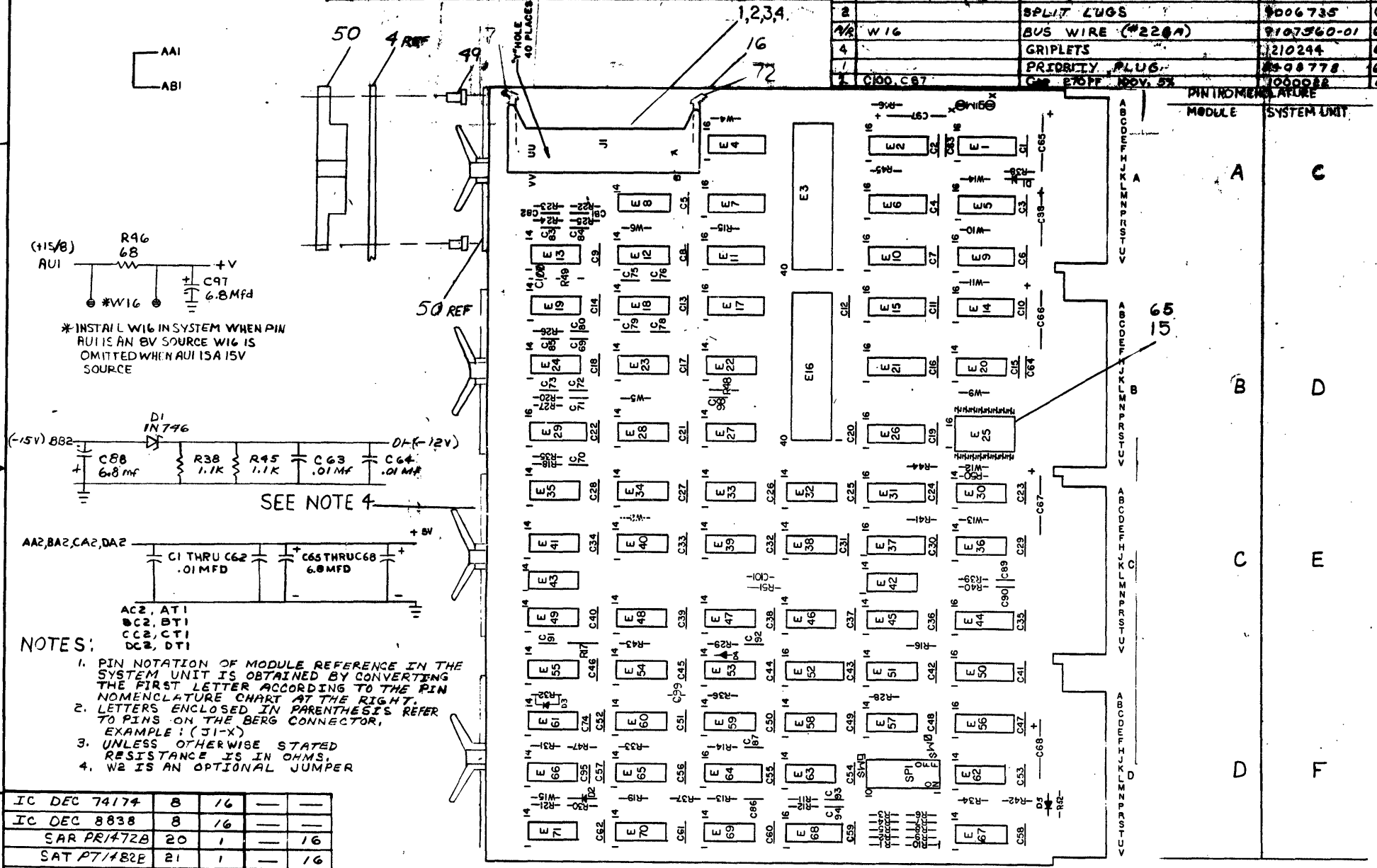
Customer acceptance is based on the satisfactory conclusion of Steps 1.8.2 and 1.9.1.

SIZE
ACODE
SPNUMBER
DUL1-Ø-4REV
C

The drawing and specifications herein are the property of Digital Equipment Corporation and shall not be reproduced or copied in whole or in part, or the basis for the manufacture or sale of items without written permission. COPY RIGHT © 1973 DIGITAL EQUIPMENT CORPORATION

REF. DES.	DESCRIPTION	PART NO.	ITEM NO.	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.	
1	WIRING	9107278-11	66	1 R47	RES. 8.2K 1/4W 5%	1303179	55	
1	CAP. 330 PF 100V 5%	1000023	67	2 R48, R49	RES. 1.1K 1/4W 5%	1301475	56	
1	CAP. 1800 PF 100V 5%	1002424	68	1 R46	RES. 68 OHM 1/4W 5%	1300219	57	
1	WIRE #30 AWG	9107540-55	69	1 R14	RES. 30K 1/4W 5%	1302394	58	
1	CAP. 220 PF 100V 5%	1000021	70	1 R52	RES. 4.7K 1/4W 5%	1300447	59	
1	LEFT LATCH	1209941-03	71	4 D2, D3, D4, D5	DIODE D664	1100114	60	
1	RIGHT LATCH	1209941-04	72	1	SWITCH COVER	1211284-06	61	
				2	SPLIT LUGS	9006735	62	
				1/2	WIG	BUS WIRE (#22GA)	9107560-01	63
				4		GRIPLETS	1210244	64
				1		PRIORITY PLUG	9008778	65
				2		CAP. 270 PF 100V 5%	1000022	66

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1	DI	DIODE 1N4004	1104860	14
1	DS5	I.C. SOCKET	1209838	15
1	41	CONN (BERG HEADER)	1209941	16
1	SPI	SWITCH DIP	1211184-06	17
1	R22, R24, R25, R26, R27, R28, R29	RES 180 OHM 1/4W 5%	1300229	18
2	R31, R23	RES 220 OHM 1/4W 5%	1300271	19
1	R30	RES 300 OHM 1/4W 5%	1300309	20
7	R7, R8, R9, R10, R11, R12, R13, R14	RES 1K 1/4W 5%	1300385	21
21	R1, R2, R3, R4, R5, R15, R16, R17, R18, R19	RES 10K 1/4W 5%	1300478	22
8	R6, R10	RES 100 1/4W 5%	1301322	23
1	R30	RES 800 1/4W 5%	1301890	24
5	E2, E3, E3B, E4B, E5	I.C. DEC 7400	1905575	25
1	E41	I.C. DEC 7410	1905576	26
4	E40, E50, E63, E71	I.C. DEC 7402	1909004	27
7	E20, E31, E32, E33, E34, E35, E36, E37	I.C. DEC 7404	1909687	28
1	E38	I.C. DEC 74152	1909061	29
1	E6C	I.C. DEC 314	1909704	30
4	E2, E3, E5, E59, E62	I.C. DEC 0801	1909705	31
4	E1, E4, E5, E57	I.C. DEC 0242	1909712	32
3	E61, E10, E47	I.C. DEC 7404	1909831	33
8	E2, E3, E4, E5, E21, E26, E31, E37	I.C. DEC 74153	1909837	34
1	E42	I.C. DEC 7402	1910046	35
1	E47	I.C. DEC 7437	1910091	36
7	E2, E27, E28, E29, E30, E42, E46	I.C. DEC 7408	1910155	37
2	E12, E70	I.C. DEC 1400	1910322	38
2	E18, E24	I.C. DEC 1400	1910323	39
3	E29, E44, E60	I.C. DEC 74123	1910436	40
3	E4, E7, E11	I.C. DEC 74175	1910851	41
1	E17	I.C. DEC 74174	1910852	42
1	E23	I.C. DEC 7427	1910878	43
2	E44, E50, E56	I.C. DEC 0807	1911118	44
4	E1, E5, E9, E14	I.C. DEC 0838	1911117	45
1	E66	I.C. DEC 11890	1911113	46
1	E3	SAT PT 1482B	2111557	47
1	E16	SAR PR 1472B	2111556	48
8		EYELET (GSA-7 STIMPSON)	9008732	49
4		HANDLE (MAGENTA)	9008337-06	50
10	W5, W5, W6, W9-W15	INSULATED JUMPER	9009185	51
1	C89	CAP 1000 PF 100V 5%	1000022	52
1	R19	RES 7.5K 1/4W	1301422	53
1	E49	I.C. DEC 7474	1905547	54



- NOTES:
- PIN NOTATION OF MODULE REFERENCE IN THE SYSTEM UNIT IS OBTAINED BY CONVERTING THE FIRST LETTER ACCORDING TO THE PIN NOMENCLATURE CHART AT THE RIGHT. LETTERS ENCLOSED IN PARENTHESES REFER TO PINS ON THE BERG CONNECTOR. EXAMPLE: (J1-X)
 - UNLESS OTHERWISE STATED RESISTANCE IS IN OHMS.
 - W2 IS AN OPTIONAL JUMPER.

IC TYPE	GND	+5V	+V	-12V
IC DEC 74174	8	16		
IC DEC 8838	8	16		
SAR PR1472B	20	1	16	
SAT PT1482B	21	1	16	
IC DEC 1488	7		14	1
IC DEC 8837	8	16		
IC DEC 74153	8	16		
IC DEC 11380	1	8		
IC DEC 74175	8	16		
IC DEC 74123	8	16		
IC DEC 7442	8	16		
IC DEC 314	1	8		

REV	DESCRIPTION	DATE
1	ORIGINAL	11/17/72
2	REVISED	1/10/73
3	REVISED	2/15/73
4	REVISED	3/15/73
5	REVISED	4/15/73
6	REVISED	5/15/73
7	REVISED	6/15/73
8	REVISED	7/15/73
9	REVISED	8/15/73
10	REVISED	9/15/73
11	REVISED	10/15/73
12	REVISED	11/15/73
13	REVISED	12/15/73
14	REVISED	1/15/74
15	REVISED	2/15/74
16	REVISED	3/15/74
17	REVISED	4/15/74
18	REVISED	5/15/74
19	REVISED	6/15/74
20	REVISED	7/15/74
21	REVISED	8/15/74
22	REVISED	9/15/74
23	REVISED	10/15/74
24	REVISED	11/15/74
25	REVISED	12/15/74
26	REVISED	1/15/75
27	REVISED	2/15/75
28	REVISED	3/15/75
29	REVISED	4/15/75
30	REVISED	5/15/75
31	REVISED	6/15/75
32	REVISED	7/15/75
33	REVISED	8/15/75
34	REVISED	9/15/75
35	REVISED	10/15/75
36	REVISED	11/15/75
37	REVISED	12/15/75
38	REVISED	1/15/76
39	REVISED	2/15/76
40	REVISED	3/15/76
41	REVISED	4/15/76
42	REVISED	5/15/76
43	REVISED	6/15/76
44	REVISED	7/15/76
45	REVISED	8/15/76
46	REVISED	9/15/76
47	REVISED	10/15/76
48	REVISED	11/15/76
49	REVISED	12/15/76
50	REVISED	1/15/77
51	REVISED	2/15/77
52	REVISED	3/15/77
53	REVISED	4/15/77
54	REVISED	5/15/77
55	REVISED	6/15/77
56	REVISED	7/15/77
57	REVISED	8/15/77
58	REVISED	9/15/77
59	REVISED	10/15/77
60	REVISED	11/15/77
61	REVISED	12/15/77
62	REVISED	1/15/78
63	REVISED	2/15/78
64	REVISED	3/15/78
65	REVISED	4/15/78
66	REVISED	5/15/78
67	REVISED	6/15/78
68	REVISED	7/15/78
69	REVISED	8/15/78
70	REVISED	9/15/78
71	REVISED	10/15/78
72	REVISED	11/15/78
73	REVISED	12/15/78
74	REVISED	1/15/79
75	REVISED	2/15/79
76	REVISED	3/15/79
77	REVISED	4/15/79
78	REVISED	5/15/79
79	REVISED	6/15/79
80	REVISED	7/15/79
81	REVISED	8/15/79
82	REVISED	9/15/79
83	REVISED	10/15/79
84	REVISED	11/15/79
85	REVISED	12/15/79
86	REVISED	1/15/80
87	REVISED	2/15/80
88	REVISED	3/15/80
89	REVISED	4/15/80
90	REVISED	5/15/80
91	REVISED	6/15/80
92	REVISED	7/15/80
93	REVISED	8/15/80
94	REVISED	9/15/80
95	REVISED	10/15/80
96	REVISED	11/15/80
97	REVISED	12/15/80
98	REVISED	1/15/81
99	REVISED	2/15/81
100	REVISED	3/15/81

FIRST USED ON OPTION MODEL: DUII

ETCH BOARD REV: E

REVISIONS:

REV	DESCRIPTION	DATE	
0662	INLTS	11/17/72	
IN746A	NA	1/10/73	
D664	IN3606	2/15/73	
DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

DRN: *Swilow* DATE: 11/17/72

CHKD: *Swilow* DATE: 1/10/73

APP: *Swilow* DATE: 2/15/73

PRO: *Swilow* DATE: 3/15/73

SCALE: NONE

SHEET 1 OF 6

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE: PGM SYNC INTERFACE

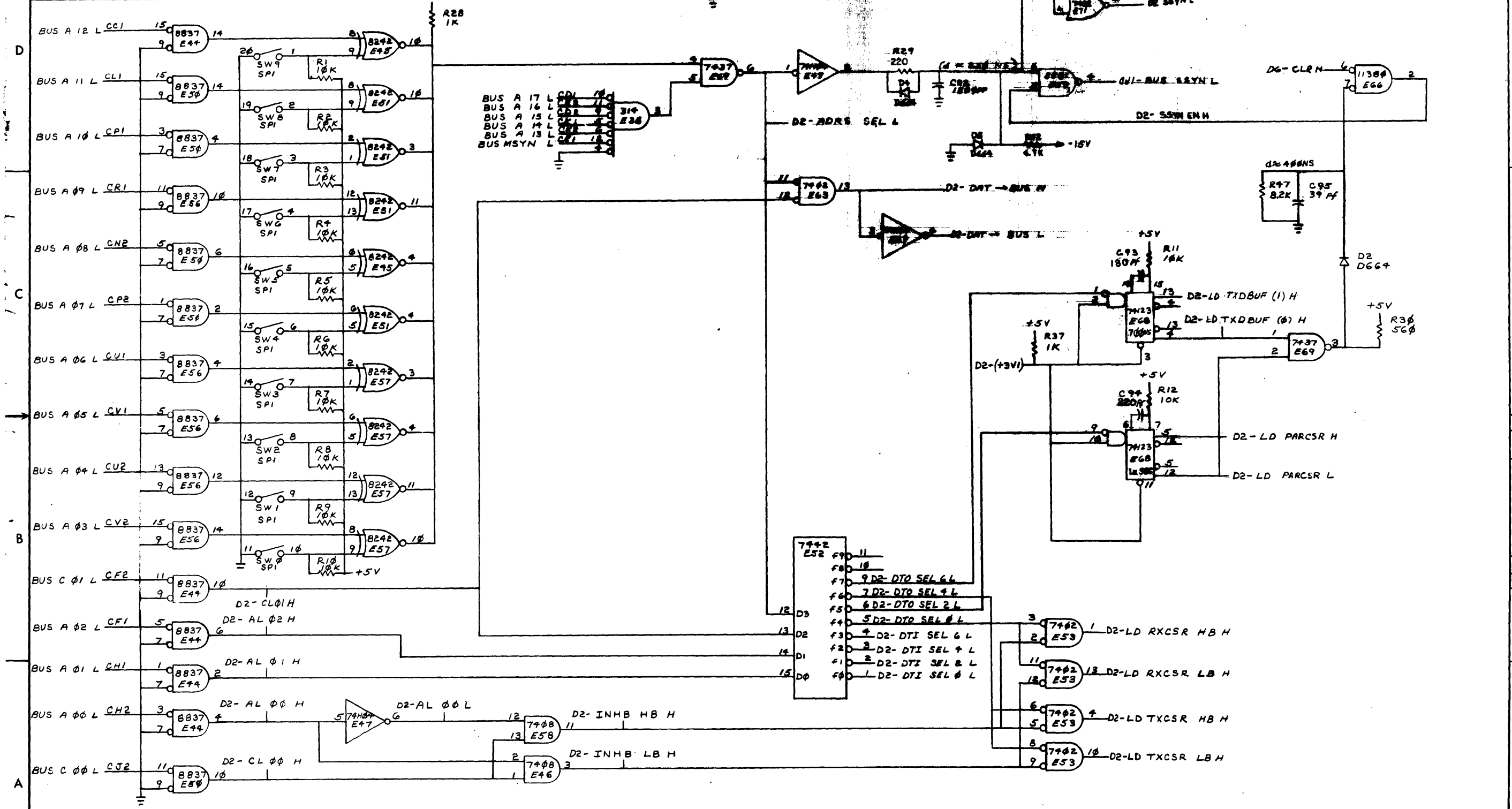
SIZE CODE: DCSM7822-0-1

NUMBER: 1

REV: N

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1973 DIGITAL EQUIPMENT CORPORATION"

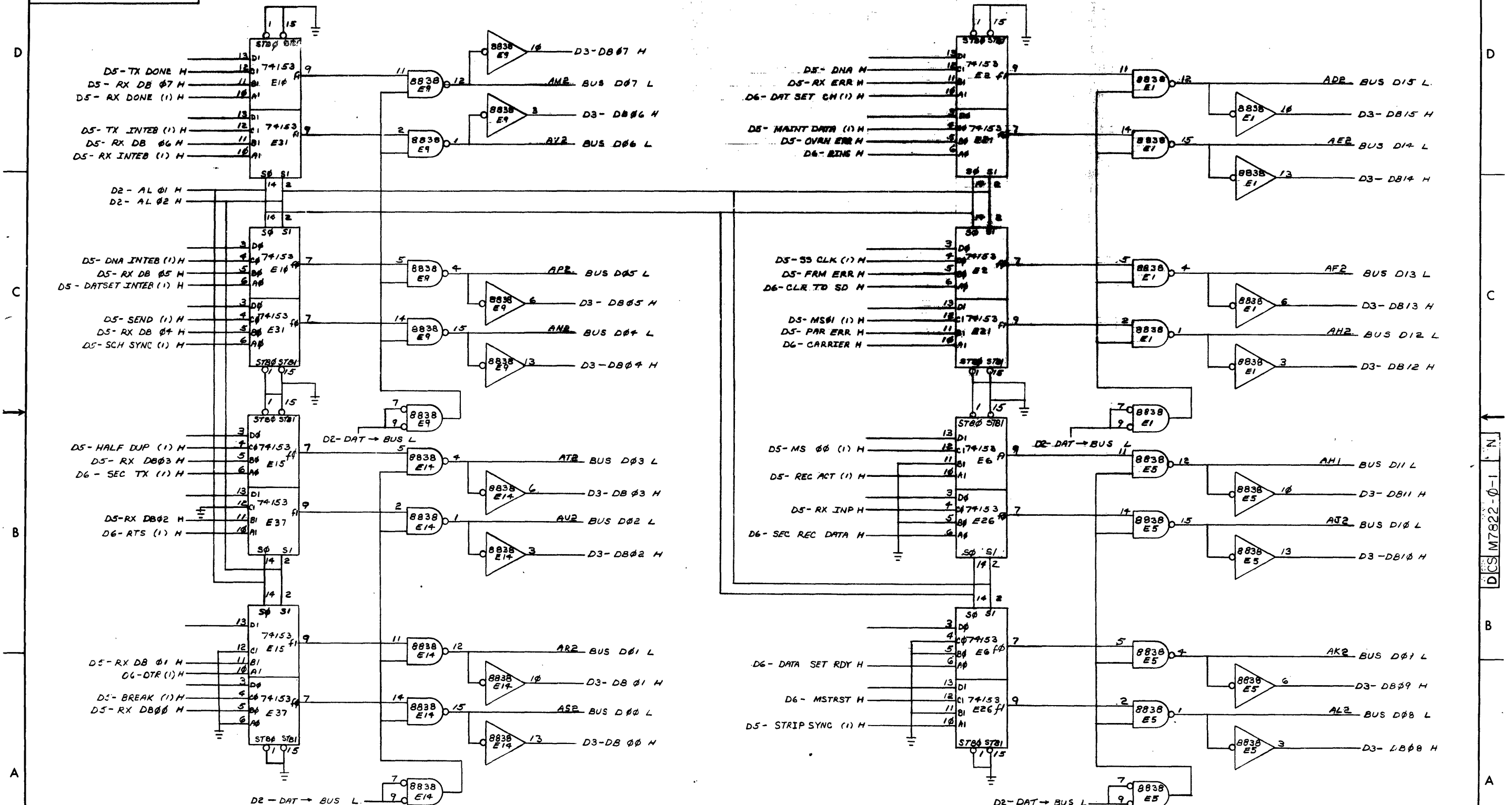
NOTE: A LOGICAL (1) ON THE UNIBUS ADRS LINES CORRESPONDS TO AN OPEN SW OF SPI OR ASW IN THE OFF POS.



REVISIONS		
CHK	CHANGE NO.	REV.

(ADDRESS SELECTION)		TITLE	(D2) SIZE CODE	NUMBER	REV.
PGM SYNC INTERFACE		DCS	M7822-0-1	N	
SCALE	SHEET 2 OF 6	DIST.			

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1973, DIGITAL EQUIPMENT CORPORATION.

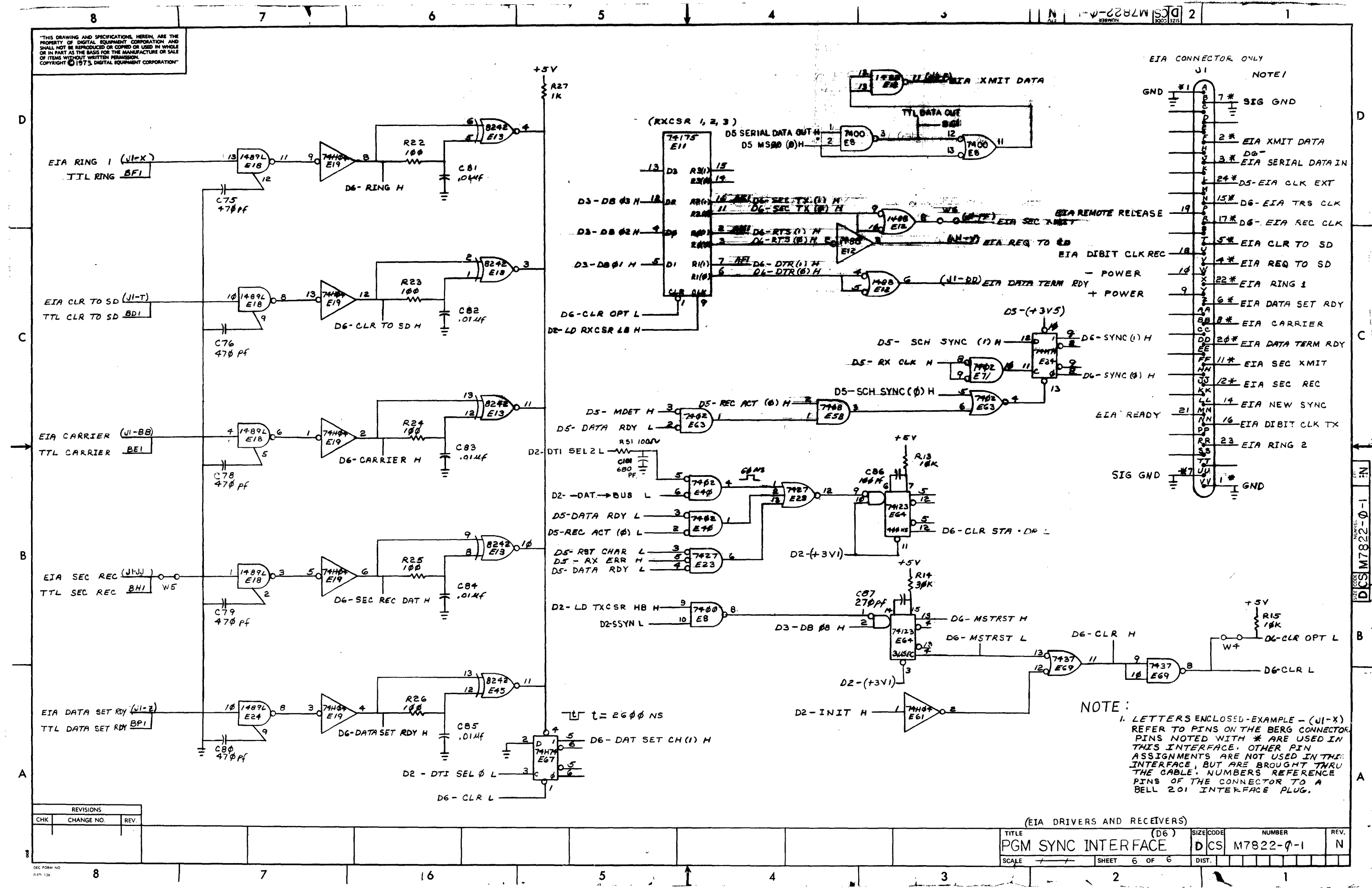


REVISIONS		
CHK	CHANGE NO.	REV.

(BUS MULTIPLEXORS, RECEIVERS AND DRIVERS)

TITLE	PGM SYNC INTERFACE	SIZE CODE	DCS	NUMBER	M7822-0-1	REV.	N
SCALE	+	SHEET	3	OF	6	DIST.	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1973, DIGITAL EQUIPMENT CORPORATION"



EIA CONNECTOR ONLY

NOTE 1

7*	SIG GND
2*	EIA XMIT DATA
3*	D6- EIA SERIAL DATA IN
24*	D5-EIA CLK EXT
15*	D6-EIA TRS CLK
17*	D6-EIA REC CLK
5*	EIA CLR TO SD
4*	EIA REQ TO SD
10	- POWER
9	+ POWER
22*	EIA RING 1
6*	EIA DATA SET RDY
8*	EIA CARRIER
20*	EIA DATA TERM RDY
11*	EIA SEC XMIT
12*	EIA SEC REC
14	EIA NEW SYNC
16	EIA DIBIT CLK TX
23	EIA RING 2
1	GND

NOTE:
 1. LETTERS ENCLOSED-EXAMPLE - (J1-X) REFER TO PINS ON THE BERG CONNECTOR. PINS NOTED WITH * ARE USED IN THIS INTERFACE. OTHER PIN ASSIGNMENTS ARE NOT USED IN THIS INTERFACE, BUT ARE BROUGHT THRU THE CABLE. NUMBERS REFERENCE PINS OF THE CONNECTOR TO A BELL 201 INTERFACE PLUG.

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		(D6)	SIZE CODE	NUMBER	REV.
PGM SYNC INTERFACE		DCS	M7822-0-1	N	
SCALE	SHEET	6 OF 6	DIST.		

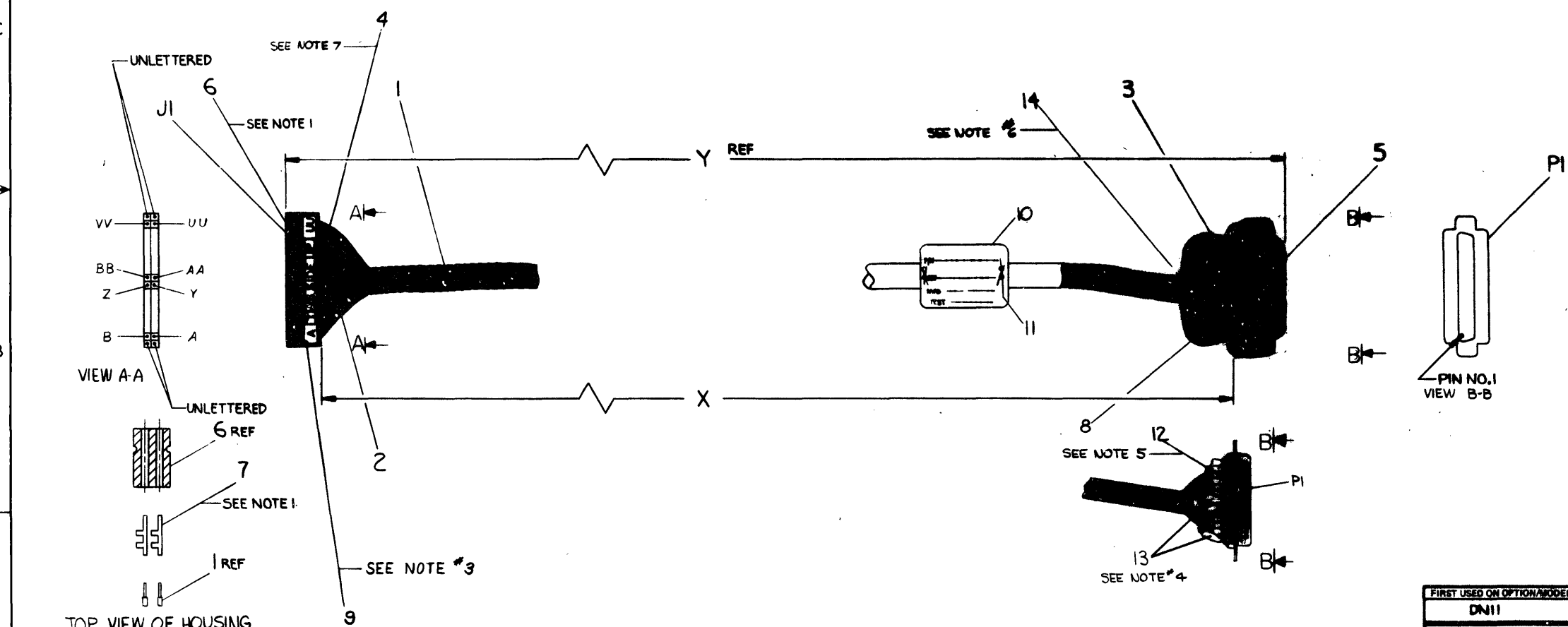
This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied in whole or in part as the basis for the manufacture or sale of items without written permission.

WIRE TABLE												
ITEM NO.	DESCRIPTION	FROM		TO		ITEM NO.	DESCRIPTION	FROM		TO		
		CONNECTION	WITH	CONNECTION	WITH			CONNECTION	WITH			
1	26	BLU/WHT	PI-1	* SOLDER	J1-VV	7	26	BRN/BRN	PI-16	SOLDER	J1-NN	7
		WHT/BLU	PI-2		J1-F			SLA	PI-17		J1-R	
		ORN/WHT	PI-3		J1-J			RED/SLA	PI-18		J1-U	
		WHT/ORN	PI-4		J1-Y			BLU/BLK	PI-19		J1-P	
		GRN/WHT	PI-5		J1-T			BLK/BLU	PI-20		J1-DD	
		WHT/GRN	PI-6		J1-Z			ORN/BLK	PI-21		J1-MM	
		BRN/WHT	PI-7	**	J1-UU			BLK/ORN	PI-22		J1-X	
		WHT/BRN	PI-8		J1-BB			GRN/BLK	PI-23		J1-RR	
		SLA/WHT	PI-9		J1-Y			BRN/RED	PI-24		J1-L	
		WHT/SLA	PI-10		J1-W			RED/ORN	PI-25		J1-C	
		BLU/RED	PI-11		J1-FF			SHIELD	PI-1	*	J1-A	
		RED/BLU	PI-12		J1-JJ			SHIELD	PI-7	**	J1-B	
		ORN/RED	PI-13		J1-D			BLK	PI-1	* SOLDER	PI-7	** SOLDER
		SLA/RED	PI-14		J1-LL			RED	PI-1	* SOLDER	J1-E	
1	26	SLA/GRN	PI-15	SOLDER	J1-N	7	2	26	RED	J1-E	7	

NUMBER	VARIATION	
	DIM X	DIM Y (PRECUT)
BC05C-25	25'±3"	25'±1.8"
BC05C-50	50'±2.2"	50'±1.8"
BC05C-09	9'±3"	9'±1.8"

- NOTES:**
- MANUFACTURING SHOULD USE MACHINE CRIMPER TOOL FOR CRIMPING PINS (ITEM #7) MUST BE HT68 FROM BERG ELECT
 - ONLY DEC PART #1210090-0-0 MAY BE USED AS J1.
 - PLACE ITEM #9 ("THIS SIDE UP" STICKER) ON LETTERED SIDE OF ITEM #6 (BERG HOUSING) AS SHOWN.
 - USE ITEM #13 (9107302-11) IN TWO PLACES (PI-1, PI-7) TO PREVENT SHORTING
 - USE ITEM #12 (9107295-11) ON ALL REMAINING SOLDER CUPS TO PREVENT SHORTING.
 - DUE TO ± TOLERANCES WITH DIFFERENT VENDORS, THE HOOD (ITEM #8) MAY VARY IN OUTSIDE DIAMETER CAUSING POTENTIAL STRAIN RELIEF GRIPPING PROBLEM. SHOULD THIS CONDITION BE PRESENT USE ITEM #4 (9107034) AT JUNCTION OF CABLE AND HOOD.
 - PLACE ITEM #4 (9107256) OVER SHIELD WIRE J1-A, J1-B, PI-1, PI-7.

N.B.
 * DENOTES THREE WIRES ARE SOLDERED INTO THE PI-1 SOLDER CUP
 ** DENOTES THREE WIRES ARE SOLDERED INTO THE PI-7 SOLDER CUP



A/R	DESCRIPTION	QTY	PART NO.	ITEM NO.
A/R	TAPE, DOUBLE SIDED		9007834	14
A/R	TUBING, 10 AWG, CLEAR		9107302-11	13
A/R	TUBING, 14 AWG, CLEAR		9107295-11	12
2	TIE WRAPS		9007031	11
1	CABLE, LABEL		9009532	10
1	LABEL, THIS SIDE UP		3611567	9
1	HOOD, #D851226-1 CINCH		1205885	8
29	SOCKET, #HT-68		1210089-5	7
1	HOUSING, #20303 BERG		1210090-0-0	6
1	PLUG, #DB-25P CINCH		1205886	5
A/R	TUBING, #22 AWG TEF BLK		9107256-00	4
A/R	WIRE, #26 AWG STRD TEF BLK		9107636-00	3
A/R	WIRE, #26 AWG STRD TEF RED		9107636-22	2
A/R	CABLE, 25 CONDUCTOR #26 AWG		9107736	1

REV.	CHANGE NO.	DATE	BY	CHK
A				
B				
C				
D				

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES. TOLERANCES: DECIMALS .XXX = .006, .XX = .02, .X = .1. REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY.

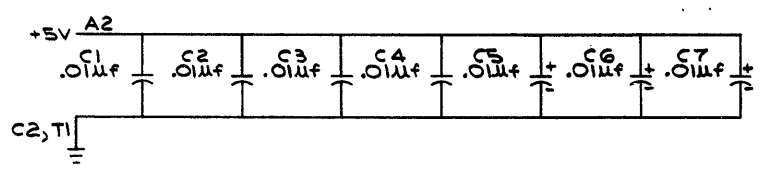
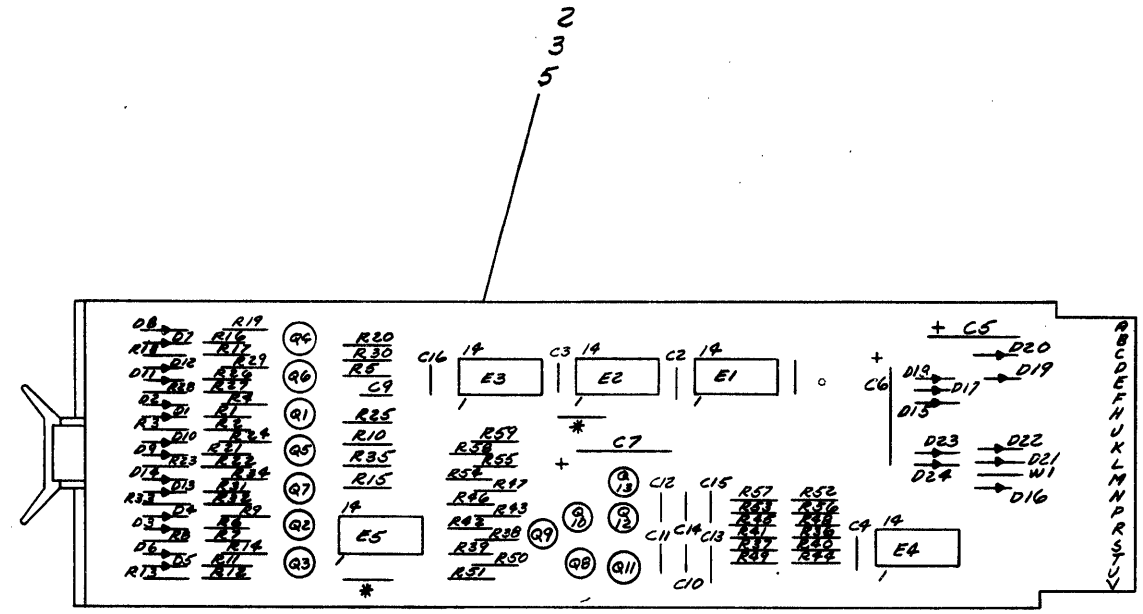
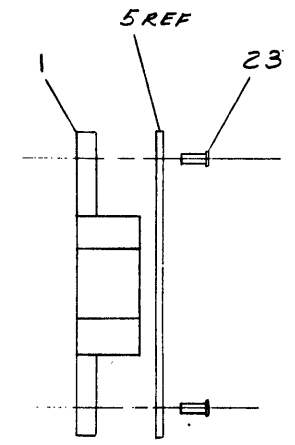
Digital Equipment Corporation
 WATFORD, MASSACHUSETTS

CABLE, MODEM BC05C

SIZE CODE: DUA, NUMBER: BC05C-0-0, REV: D

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied in whole or in part as the basis for the manufacture or sale of items without written permission.

NOTES:



QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
2	EYELET	GSA-7	9006732	23
1	E5	I.C. DEC 1488	1910322	22
1	E4	I.C. DEC 7417	1909929	21
1	E3	I.C. DEC 1489	1910323	20
2	E1, E2	I.C. DEC 7409	1909686	19
13	Q1-Q13	TRANS. DEC 3009B	1503100	18
6	R38, R42, R46, R50, R54, R58	RES. 47 1/4W 5%	1300202	17
12	R36, R37, R40, R41, R44, R45, R48, R49, R52, R53, R56, R57	RES. 330 1/4W 10%	1300293	16
7	R4, R9, R14, R19, R24, R29, R34	RES. 75K 1/4W 5%	1304841	15
7	R3, R8, R13, R18, R23, R28, R33	RES. 7.5K 1/4W 5%	1301422	14
7	R2, R7, R12, R17, R22, R27, R32	RES. 100 1/4W 10%	1300231	13
20	R1, R5, R6, R10, R11, R15, R16, R20, R21, R25, R26, R30, R31, R35, R39, R43, R47, R51, R55, R59	RES. 2.2K 1/4W 5%	1300417	12
8	D2, D4, D6, D8, D10, D12, D14, D16	DIODE D662	1100113	11
16	D1, D3, D5, D7, D9, D11, D13, D15, D17, D24	DIODE D664	1100114	10
6	C10-C15	CAP. 120 PF 100V 5% DM	1260019	9
2	C9, C16	CAP. 470 PF 100V 5% DM	1000024	8
3	C3-C7	CAP. 6.8 MFD 35V 20% TANT	1000067	7
4	C1-C4	CAP. .01 MFD 100V 20% WSL	1001610	6
1		ETCHED CIRCUIT BOARD	5009872	5
REF		MODULE ECO HISTORY	B-MH-M595-0-6	4
REF		ASSY DRILLING HOLE LA. JUT	D-AH-M595-0-3	3
REF		X-Y COORDINATE HOLE LOC.	K-CO-M595-0-4	2
1		HANDLE, FLIP CHIP MAGENTA	9008337-06	1

REV	DATE	DESCRIPTION
7	DEC 1488	N/A

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

IC PIN LOCATIONS

FIRST USED ON OPTION MODEL: **DF11-G**

ETCH BOARD REV: **B**

REVISIONS:

REV	DATE	DESCRIPTION
1	DEC 3009B	2N3646
2	D664	IN3606
3	D662	IN645

SEMICONDUCTOR CONVERSION CHART

DATE: 5-12-72
 DATE: 5-17-72
 DATE: 5-18-72
 DATE: 5-18-72
 DATE: 5-18-72

digital EQUIPMENT CORPORATION
 MAYNARD, MASSACHUSETTS

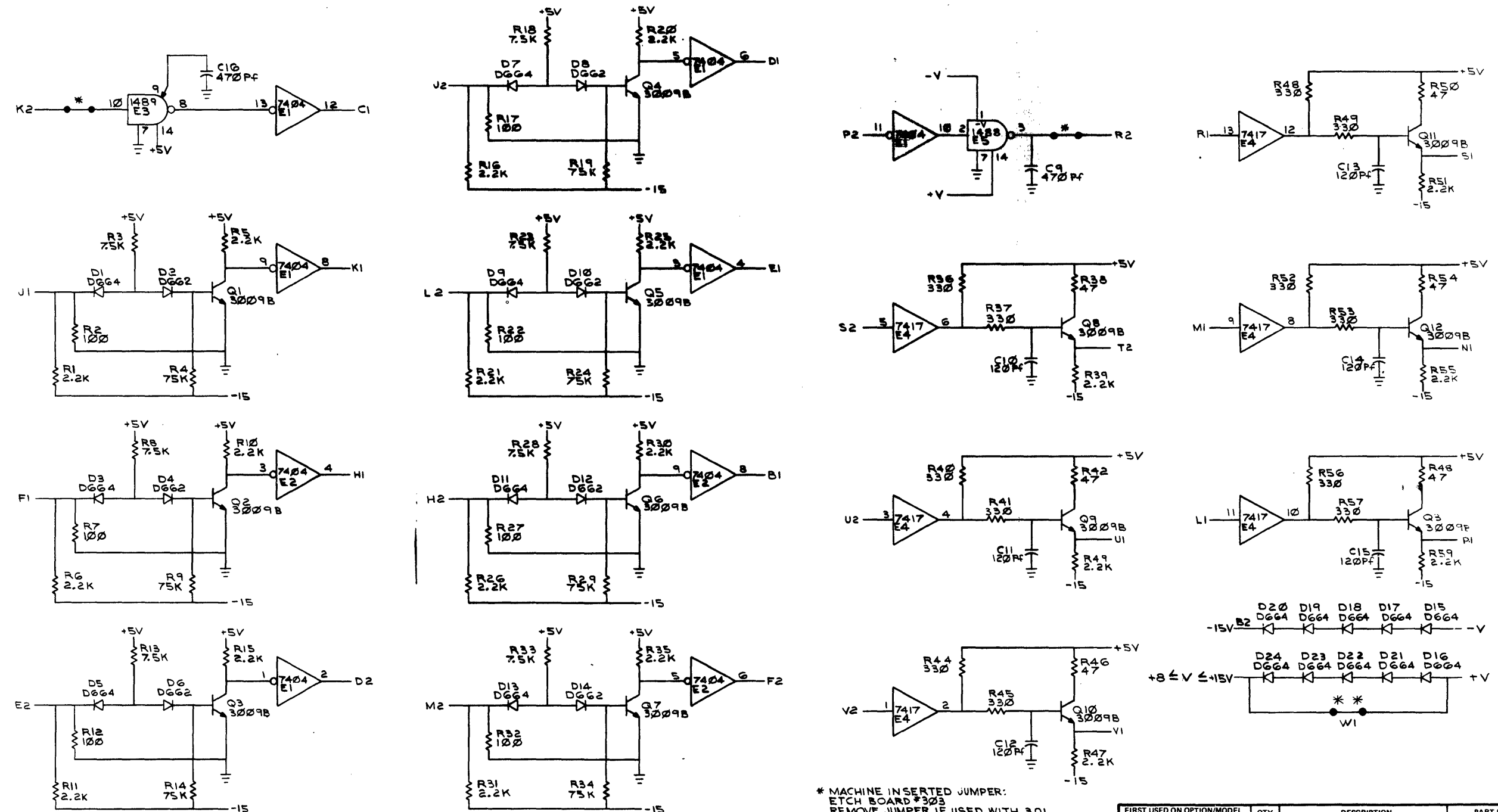
TITLE: **301/303 CONVERTER**

SIZE CODE: DICS NUMBER: M595-0-1 REV: A

SCALE: NONE SHEET: 1 OF 2

BRUNING 40-222 16629

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.



* MACHINE INSERTED JUMPER:
ETCH BOARD *303
REMOVE JUMPER IF USED WITH 301

** MAY BE REMOVED IF INPUT
VOLTAGE > +12 VOLTS

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
DF11-G		PARTS LIST		
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DRN. <i>R. Ferguson</i>	DATE 5-17-72	 digital EQUIPMENT CORPORATION <small>MAYNARD, MASSACHUSETTS</small>
DECIMALS		CHKD. <i>W. Cook</i>	DATE 5-29-72	
ANGLES		ENG. <i>R. Laine</i>	DATE 5-30-72	
.XXX = .005		PROJ. ENG. <i>R. Laine</i>	DATE 5-30-72	
.XX = .02		PROP. <i>R. P. Matis</i>	DATE 5-30-72	
.X = .1		TITLE 301/303 CONVERTER		
REMOVED BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		MATERIAL		
FINISH		NEXT HIGHER ASSY.		
SCALE		SIZE CODE		
SHEET 2 OF 2		NUMBER		
		D CS M595-0-1		
		REV. A		

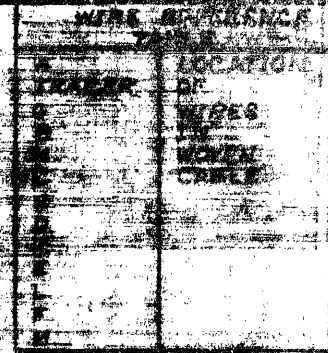
BRUNING 40-522 15640

REV	CHANGE NO	REVISIONS

DIC FORM NO. 102-B

The drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

FUNCTION	WIRE	CONNECTION
CLEAR TO SEND (CS)	C COND	PI - E
SEND REQUEST (SR)	D COND	PI - D
SEND DATA (SD)	E COND	PI - E
DATA SET READY (DSR)	F COND	PI - F
RING INDICATOR (RI)	F SHIELD	PI - F
LOCAL TEST (LT)	G COND	PI - G
SERIAL CLOCK TRANSMIT (SCT)	H COND	PI - H
SERIAL CLOCK TRANSMIT (SC)	J COND	PI - J
RECEIVE DATA (RD)	K COND	PI - K
SERIAL CLOCK RECEIVE (SCR)	L COND	PI - L
ACK LOCK (AL)	M COND	PI - M
DATA TERMINAL READY (DTR)	N SHIELD	PI - N
	C SHIELD	PI - C
	D SHIELD	PI - D
	E SHIELD	PI - E
	G SHIELD	PI - G
	H SHIELD	PI - H
	J SHIELD	PI - J
	K SHIELD	PI - K
	L SHIELD	PI - L
	A	
	B	



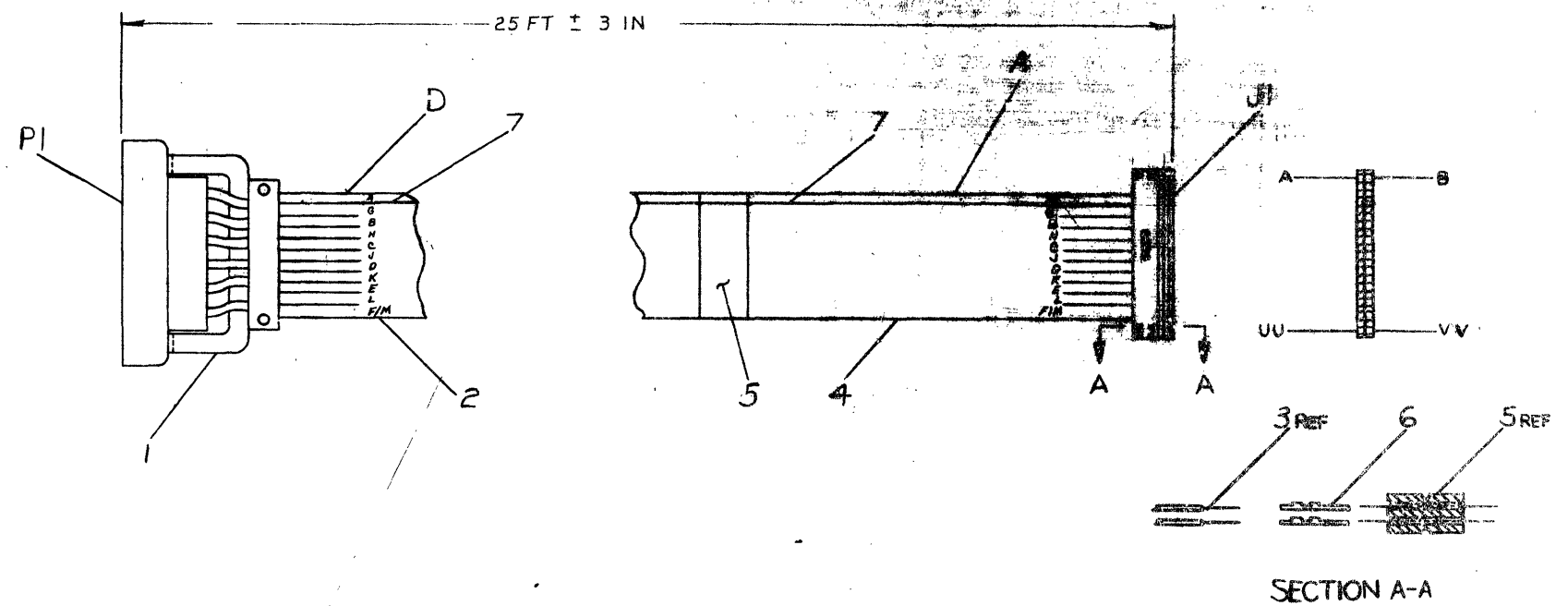
STRUTTED PAIR WIRE 6 IN. LONG WILL BE ATTACHED TO EACH CONDUCTOR OF EACH WIRE (1 WIRE TO INNER CONDUCTOR, 1 WIRE TO THE SHIELD). THE WIRES WILL THEN BE CRIMPED TO THE BERG PINS AS INDICATED.

WHEN SUPPLIED BY A VENDOR THIS CABLE WILL BE FULLY TESTED BY VENDOR, TESTED AND INSPECTED BY INCOMING INSPECTION PRIOR TO ACCEPTANCE.

THIS IS THE CABLE DESCRIBED BY PURCHASE SPECIFICATION 12-00019. A COLORED TRACER WILL BE WOVEN INTO THE CABLE BETWEEN WIRES W AND G.

RG185 A/U CAN BE USED TO DIRECTLY REPLACE RG 180/U.

NO SUBSTITUTIONS OTHER THAN THOSE SPECIFIED IN THIS PRINT, MAY BE MADE WITHOUT PRIOR APPROVAL.



DESCRIPTION	QTY.	PART NO.	ITEM NO.
A/R COLORED TRACER			7
A/R BERG PINS		12-10087-	6
A/R INSULATION			5
A/R WIRE 26/28 AWG TWP			4
1 CONN BERG		12-10093-0-0	3
A/R CABLE COAX RG180 B/U			2
1 BURNDY MO12 MXP-17TC			1

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES.		TOLERANCES		DATE		DATE		DATE		DATE	
DECIMALS	ANGLES										
.XXX - .005	2.0° 20'										
.XX - .02											
.X - .1											
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY											
MATERIAL											
FINISH											

REV	CHANGE NO.	DATE	BY
1	BCOIW-0001A	7-19-72	SMITH

DEC FORM NO. DRD 100-A

DUA BCOIW-0-0

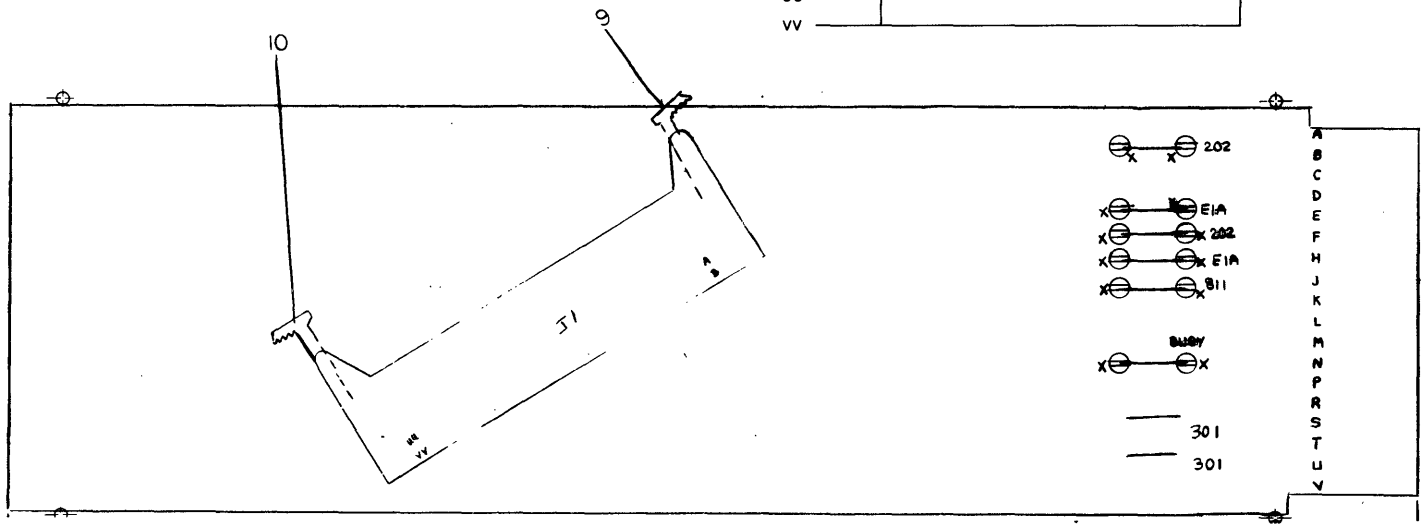
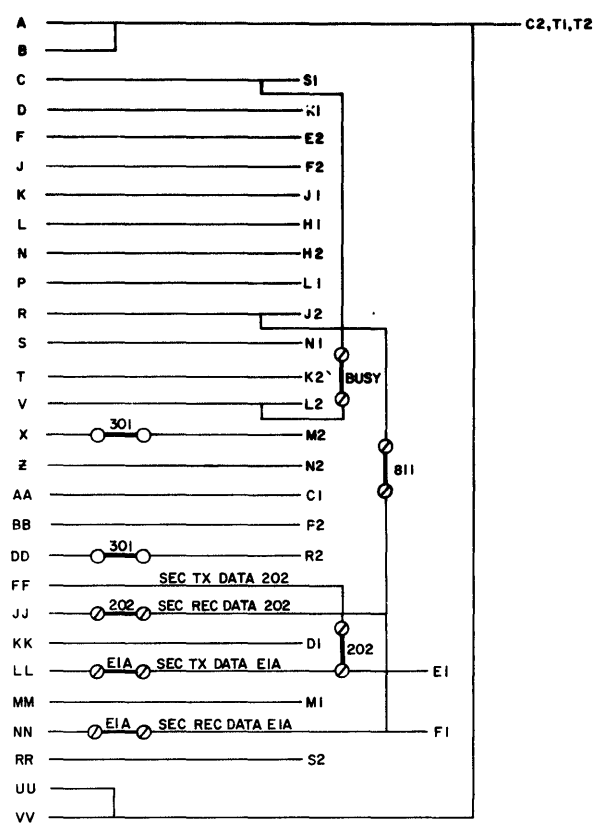
EQUIPMENT CORPORATION
MAYFORD MASSACHUSETTS

HIGH SPEED MODEM CABLE

SIZE CODE: **DUA BCOIW-0-0** NUMBER: **A**

THIS SCHEMATIC IS FURNISHED ONLY FOR TEST AND MAINTENANCE PURPOSES. THE CIRCUITS ARE PROPRIETARY IN NATURE AND SHOULD BE TREATED ACCORDINGLY. COPYRIGHT 1971 BY DIGITAL EQUIPMENT CORPORATION.

- I. FUNCTIONS OF MODEM JUMPERS (WHEN INSTALLED)
- A. EIA — SECONDARY TRANSMIT & RECEIVE DATA LINES TO EIA PINS 14 & 16
 - B. 202 — SECONDARY TRANSMIT & RECEIVE DATA LINES TO EIA PIN 11 & 12
 - C. 301 — ALLOW OPERATION OF RING AND DATA TERMINAL READY FUNCTIONS WITH BELL 303 SERIES
 - D. 811 — BELL 811B RESTRAINT FUNCTION IS MONITORED BY SECONDARY RECEIVE
 - E. BUSY — BELL 811B FORCE BUSY FUNCTION ANDED WITH REQUEST TO SEND
2. 301 — REMOVE FOR BELL 301 USE ONLY



QTY	REP. DESIGNATION	DESCRIPTION	DWG PART NO.	REV
1		LEFT LATCH	1209941-03	10
1		RIGHT LATCH	1209941-04	9
1		HANDLE, FLIP CHLP - MAGENTA	9008337-06	8
12		SPLIT LUGS	9006735	7
2		RYBLETs	9006732	6
1	J1	CONN LOP RT ANG HEADER	1209941	5
1		ETCHED CIRCUIT BOARD	5009752	4
		MODULE BOD HISTORY	B-MH-M970-0-6	3
		ASSY/DRILLING HOLE LAYOUT	D-AR-M970-0-5	2
		X-Y COORDINATE HOLE LOCATION	K-CO-M970-0-4	1

REVISIONS CHG NO REV DATE BY PROJ	DATE	12-5-71	TRANSISTOR & DIODE CONVERSION CHART		TITLE digital CABLE INTERFACE BD, #1 EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS PRINTED CIRCUIT REV.
	DATE	12-5-71	DEC	EIA	
	DATE	12-5-71	DEC	EIA	
	DATE	12-5-71	DEC	EIA	

DIGITAL EQUIPMENT CORPORATION M970-0-1