MASTER DRAWING LIST

DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
D-UA-TCØ8-Ø-Ø	E	1	DECTAPE CONTROL
A-PL-TCØ8-Ø-Ø	E	1	DECTAPE CONTROL
D-BS-TCØ8-Ø-1	F	1	I/O CONTROL
D-BS-TCØ8-Ø-2	F	1	STATUS "A"
D-BS-TCØ8-Ø-3	E	1	TP GEN
D-BS-TCØ8-Ø-4	F	1	FLAGS
D-BS-TCØ8-Ø-5	C	1	CONTROL
D-BS-TCØ8-Ø-6	E	1	ERRORS
D-BS-TCØ8-Ø-7	B	1	MARK TRACK DECODE
D-BS-TCØ8-Ø-8	A	1	DTB/WB
D-BS-TCØ8-Ø-9	B	1	LPB
D-BS-TCØ8-Ø-1Ø	B	1	I/O BIS INVTS/IND DVRS
D-BS-TCØ8-Ø-11	C	1	I/O BUS DRIVE/RECEIVE
D-IC-TCØ8-Ø-12	B	1	I/O BUS CONNECTORS
K-(MU)-TCØ8-Ø-13 (PL)	F	2	MODULE UTILIZATION LIST
K-WL-TCØ8-Ø-14	T	1	WIRE LIST TCØ8
D-AD-7006394-Ø-Ø	C	1	WIRED ASS'Y TCØ8
A-PL-7006394-Ø-Ø	C	1	WIRED ASS'Y TCØ8
A-AT-7006394-Ø	U	1	AWT REVISION STATUS
D-DI-TCØ8-Ø-15	F	1	DECTAPE CONTROL
A-SP-TCØ8-Ø-16	B	1	CHECK-OUT PROCEDURE
D-TD-TCØ8-Ø-17		1	TCØ8 TIMING
D-IC-TCØ8-Ø-18	D	2	AC POWER WIRING
D-IC-TCØ8-Ø-19	B	1	DC POWER WIRING
D-IC-TCØ8-Ø-2Ø		1	CABLE CONFIGURATION
D-AR-TCØ8-Ø-21	C	1	CABINET LAYOUT
A-SP-TCØ8-Ø-22		2	ACCEPTANCE PROCEDURE
A-SP-TCØ8-Ø-23		49	ENGINEERING SPECS
D-AR-TCØ8-Ø-24		1	DECTAPE CAB LAYOUT
A-AL-TCØ8-Ø-25	A	1	ACCESSORY LIST

REVISIONS			
REV.	DATE	CHG. NO.	APP'D.
AF	1-73	00027	L.N
AH	3-75	00028	
AJ	DEC-76	00029	

DRN. G. GIANOULIS	DATE 6/13Ø9	
CHK'D R. cook	DATE	
ENG. D. LAZUKA	DATE	
PROJ. ENG. D. LAZUKA	DATE	
PROD. F. LASKEY	DATE	
FIRST USED ON		
SCALE		
SHEET 1 OF 1		

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE

DECTAPE CONTROL
6Ø HZ

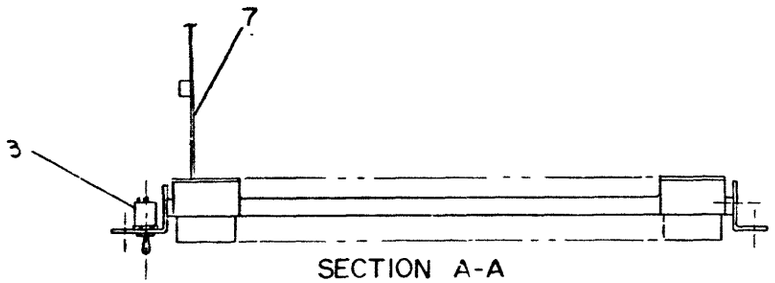
SIZE	CODE	NUMBER	REV.
A	ML	TCØ8-Ø	AJ

DIST.

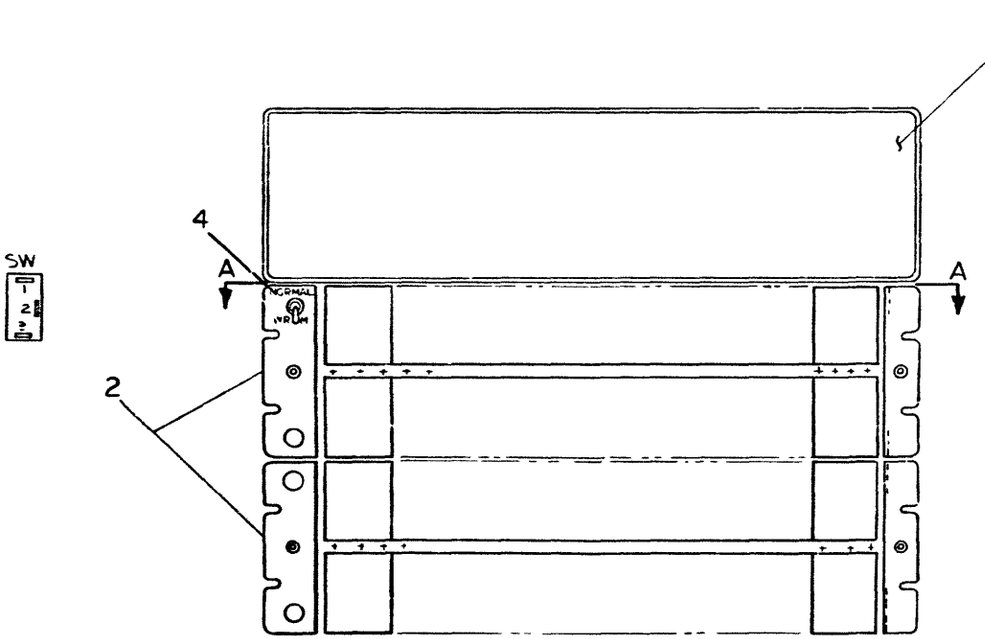
DEC FORM NO SRA 103

LEGEND	
NUMBER	VARIATION
TCØ8-Ø	60 HZ
TCØ8-A	50 HZ

WIRE TABLE					
ITEM NO	DESCRIPTION AWG	COLOR	CONNECTIONS FROM	TO	REMARKS
5	24	BLACK	SW-2	BJ.C2	
6	24	YEL	SW-3	BJ8V	



SECTION A-A



SW

REVISIONS			
LTR	CHANGE NO		REV
	TCØ8-COOO3		A
	TCØ8		B
	TCØ8 OCOI7		C
	TCØ8 OOOI9		D
	TCØ4 OOOIA		E

FIRST USED ON OPTION/MODEL
TCØ8

DO NOT SCALE DRAWING
UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .Ø8 | FRACTIONS ± 1/64 | ANGLES ± 1°
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS
MATERIAL
FINISH

QTY	DESCRIPTION	PART NO.	ITEM NO.
	PARTS LIST		

DRN		DATE 10/70
CHK		DATE 11/70
ENG		DATE
PROJ ENG		DATE
PROD		DATE

NEXT HIGHER ASSY: A-ML-TCØ8-Ø-Ø
SCALE: NONE
SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: DECTAPE CONTROL

SIZE	CODE	NUMBER	REV
D	DUA	TCØ8-Ø-Ø	F

DIST

DEC FORM 380
DRD 100

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

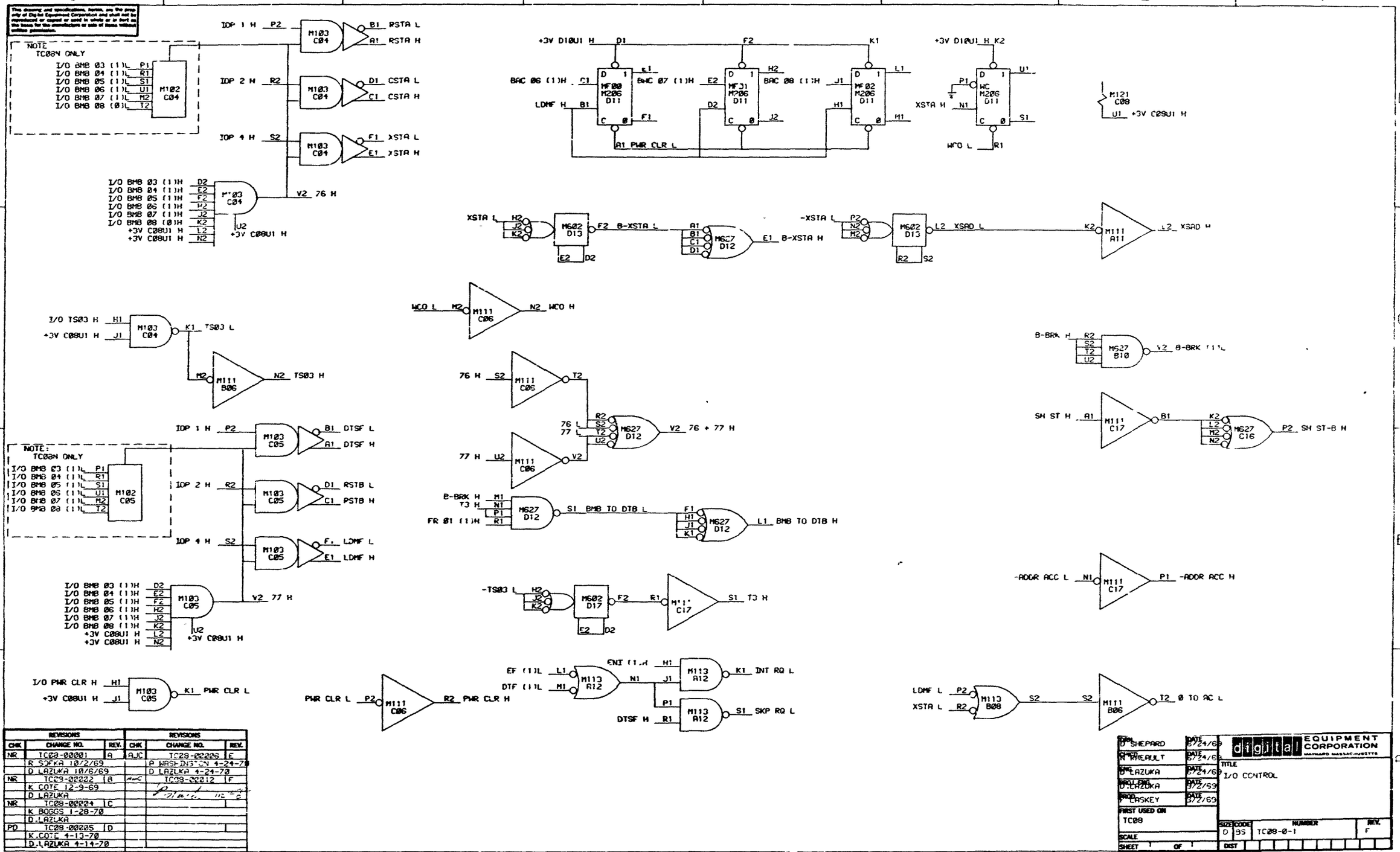
PARTS LIST

MADE BY G. MARINI	CHECKED P. COOK	SECTION
DATE 6/23/69	DATE 7/24/69	
ENG	PROD	ISSUED SECT.
DATE	DATE	

ITEM NO	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION TC08-0 012	TC08-A 012
1	D-AD-7006331-5-0	INDICATOR PANEL ASSY (TC08)	1	1
2	D-AD-7006334-0-0	WIRE ASSY (TC08)	1	1
3	1202279	SWITCH, TOGGLE	1	1
4	A-DC-5308493-0-0	P.C. CARD (TC08)	1	1
5	9107451-24	WIRE = 24 AWG, TRD TEF INS BLK	A/R	A/R
6	9107450-44	WIRE = 24 WG, TRD TEF INS YEL	A/R	A/R
7	D-UA-BC08C-0-0	CABLE, DUAL MYLAR M9803-(2)#031	5	5
*	D-UA-854-C-0	POWER CONTROL 854C	1	
*	D-UA-854-B-0	POWER CONTROL 854B		1
→	~~D-UA-783-0-1~~	~~783 POWER SUPPLY~~	~~1~~	
*	~~D-UA-783A-0-1~~	~~POWER SUPPLY TYPE 783A~~		~~1~~
*	E-AD-7005474-0-0	FAN ASS	1	1
*	D-AD-7005909-0-0	AC DIST PANEL	1	1
*	7005128	POWER CORD 25'	1	
*	1209340-1	Mat-N-Lok CONN	1	1
*	1209378-1	PIN, CONTACT	8	8
8	7CQ6223-0	INTERCONNECTING CABLE	1	1
*	D-UA-H721-0-0	POWER SUPPLY H721	1	1
*	~~D-UA-H721-A-0~~	~~POWER SUPPLY H721A~~		
*	NOT SHOWN ON ASSY			

TITLE	ASSY NO	SIZE	CODE	NUMBER	REV	ECO NO.
DECTAPE CONTROL	D-UA-TC08-0-0	A	PL	TC08-0-0	E	TC08-00024
	SHEET 1 OF 1	DIST	G			

DEC FORM NO
DRA 110



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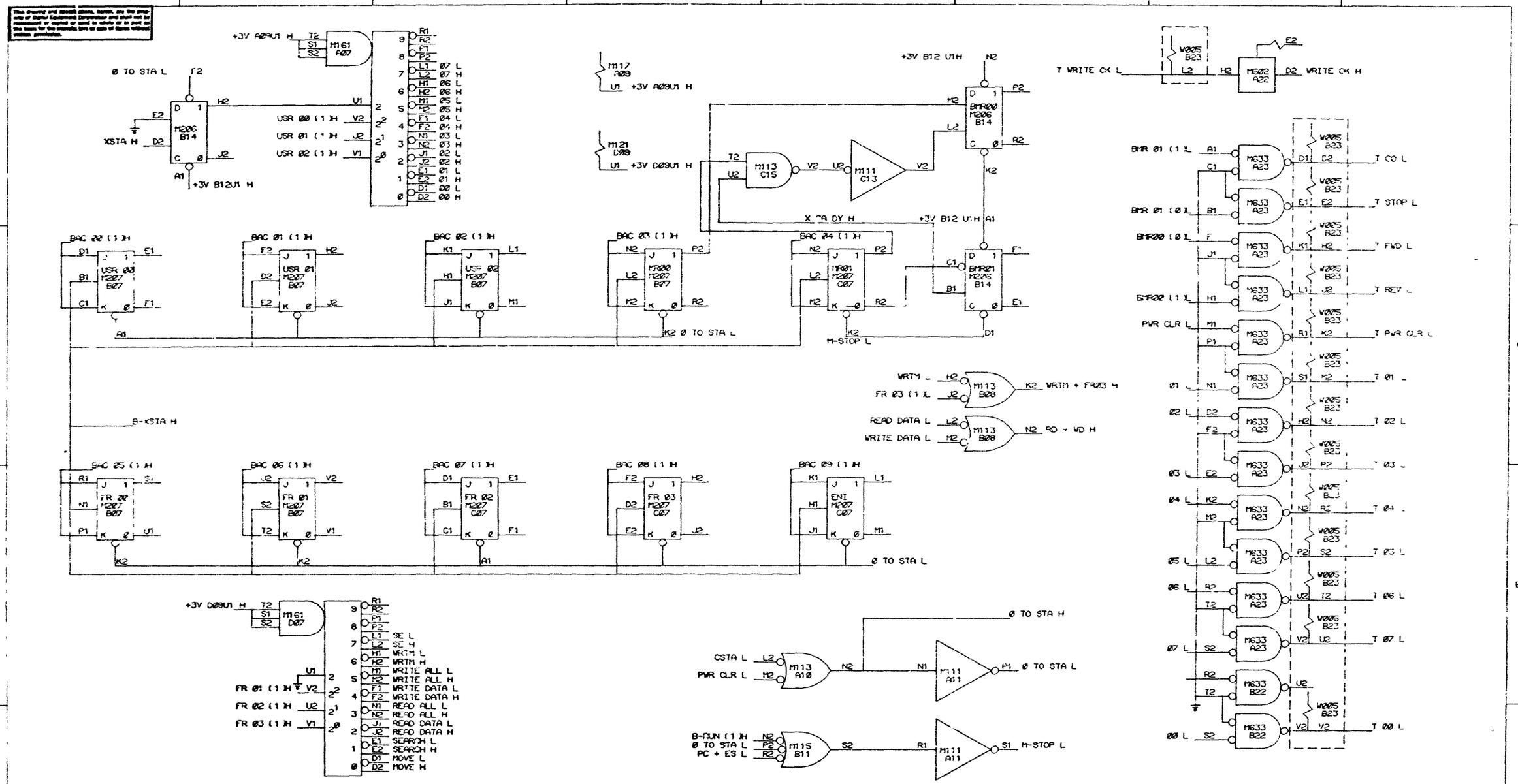
REVISIONS			REVISIONS		
CHK	CHANGE NO.	REV.	CHK	CHANGE NO.	REV.
NR	TC08-00001	A	AJC	TC28-00205	E
	R SZEKA 10/2/69			A WASHINGTON 4-24-70	
	D LAZUKA 10/6/69			D LAZUKA 4-24-70	
NR	TC28-00222	B	MMC	TC08-00212	F
	K COTE 12-9-69				
	D LAZUKA				
NR	TC08-00224	C			
	K BOGGS 1-28-70				
	D.LAZUKA				
PD	TC28-00205	D			
	K.COTE 4-13-70				
	D.LAZUKA 4-14-70				

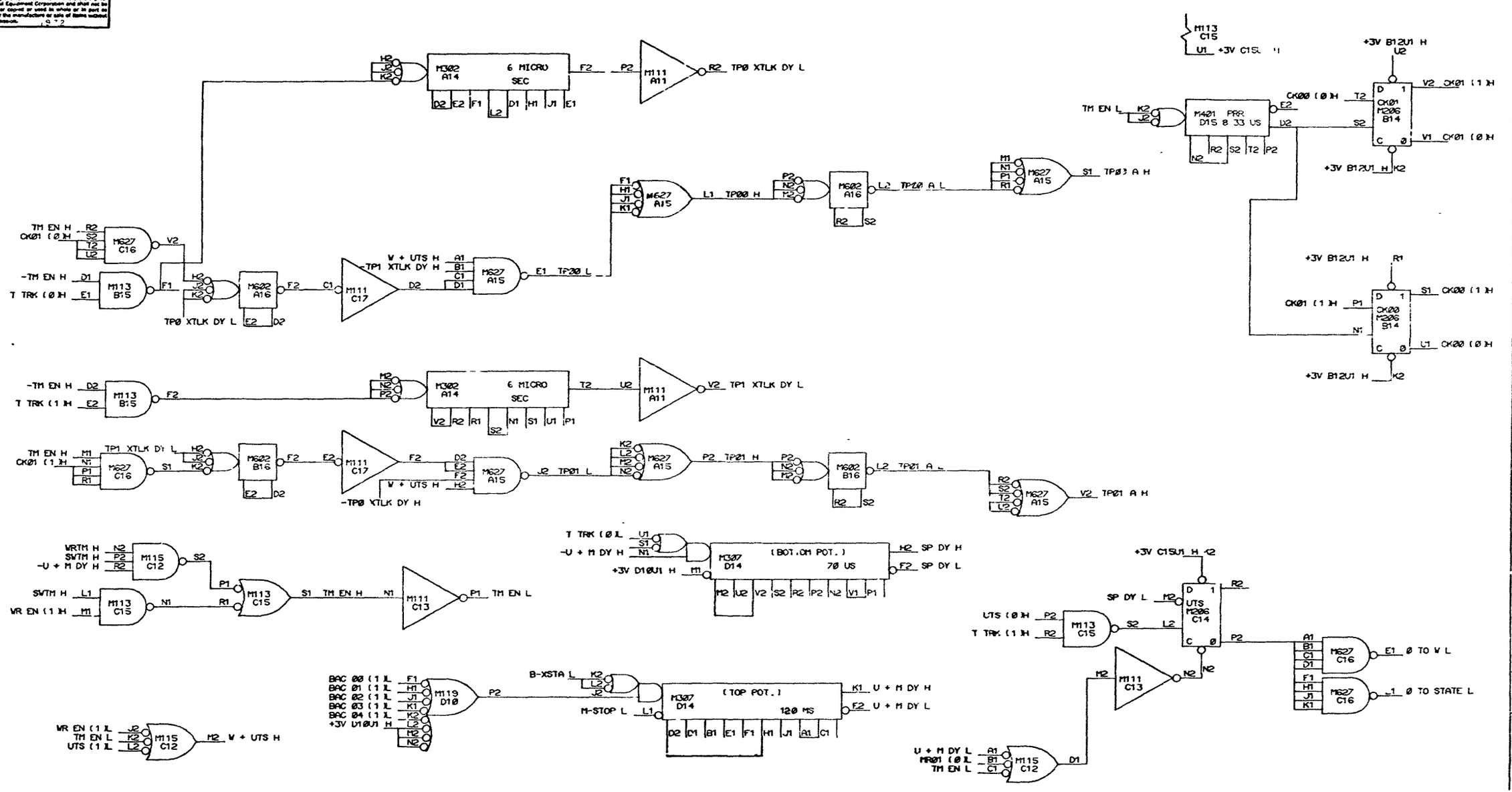
DRN D SHEPARD	DATE 5/24/69	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHKD N THERAULT	DATE 5/24/69	
ENG D LAZUKA	DATE 5/24/69	TITLE I/O CONTROL
DRFTNG D.LAZUKA	DATE 5/27/69	
PROD F CASKEY	DATE 5/27/69	
FIRST USED ON TC08		SIZE D / CODE 95 / NUMBER TC08-0-1 / REV. F
SCALE		
SHEET OF		DIST



REVISIONS		
CHK	CHANGE NO	REV
NR	TC08-00001	A
	R.SOFKA 10/2/69	
	D.LAZUKA 12/5/69	
	TC08-00002	B
	K.COTE	
	D.LAZUKA	
	TC08-00004	C
	J.BOOS	
	D.LAZUKA	
TC	TC08-00006	D

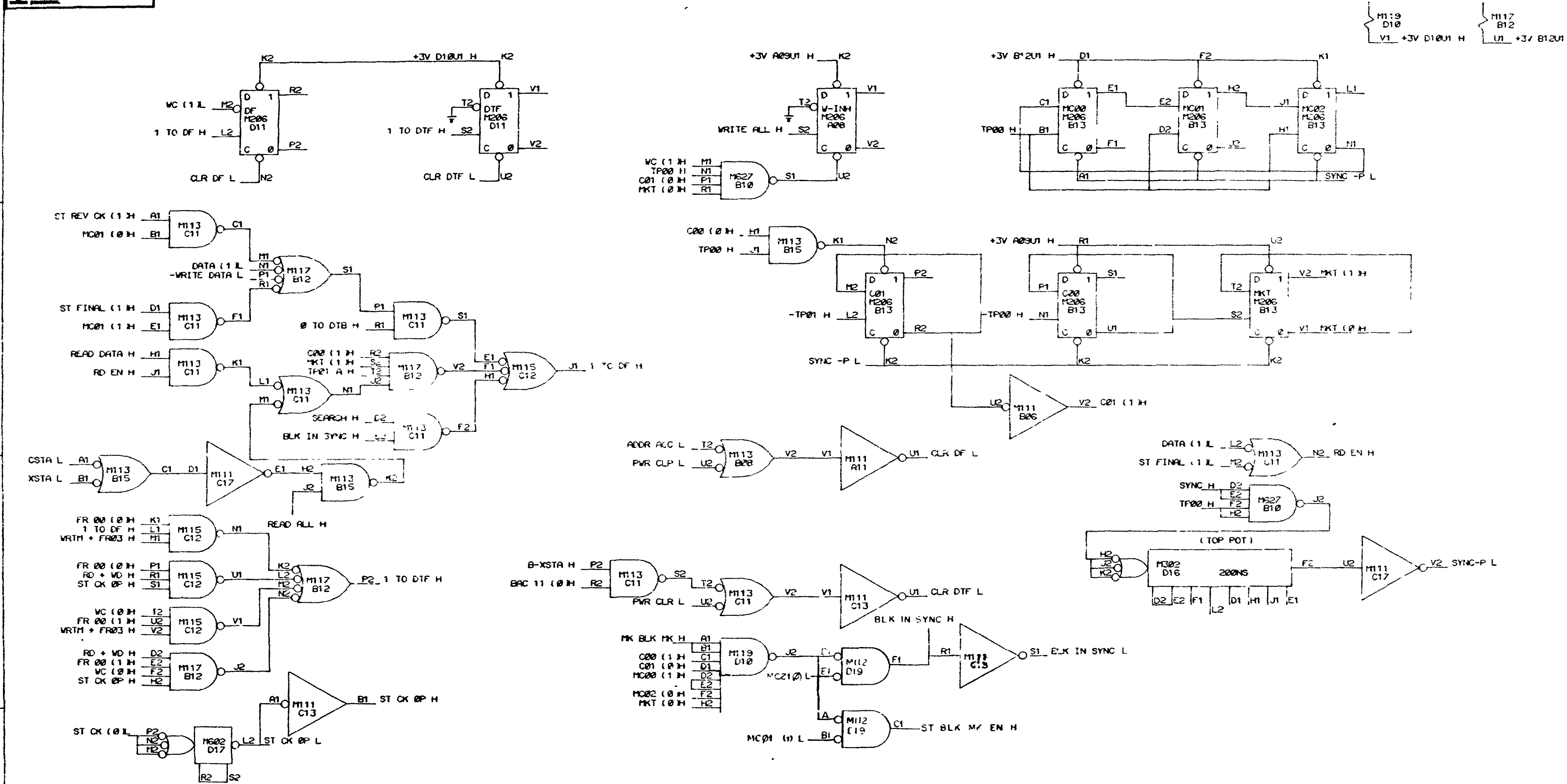
REVISIONS		
CHK	CHANGE NO	REV
CH	TC08-00015	E
S	MAR.OW 7/8/71	
L	MAR-I 7/9/71	
JK	TC08-00021	F

DWN D SHEPARD	DATE 5/24/69	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHKD N.R-EAULT	DATE 5/24/69	
ENG D.LAZUKA	DATE 5/24/69	TITLE STATUS "A"
PROJ. ENG D.LAZUKA	DATE 5/2/69	
PROD. T.LASKEY	DATE 5/2/69	
FIRST USED ON TC08		SIZE D / CODE BS / NUMBER TC08-0-2 / REV. F
SCALE		
SHEET 1 OF 1		DIST



REVISIONS			REVISIONS		
CHK	CHANGE NO.	REV	CHK	CHANGE NO.	REV
NR	TC08-00201	A	[illegible]	TC08-00020	E
	R SOFKA 10-2 69			[illegible]	
	D.LAZUKA 10-6-69				
	TC08-00005	B	[illegible]	TC08-00022	F
	A WASHINGTON			H POIRIER 3/30/72	
	D LAZUKA 4-14-70			[illegible] 5-31-72	
HJC	TC08-00006	C	[illegible]	TC08-00026	H
	A.WASHINGTON 4-24-70			[illegible] 8-24-72	
	D.LAZUKA 4-24-70			[illegible] 10/17/72	
GH	TC08-00012	D			
	ADS				
	D.LAZUKA 7/7/71				

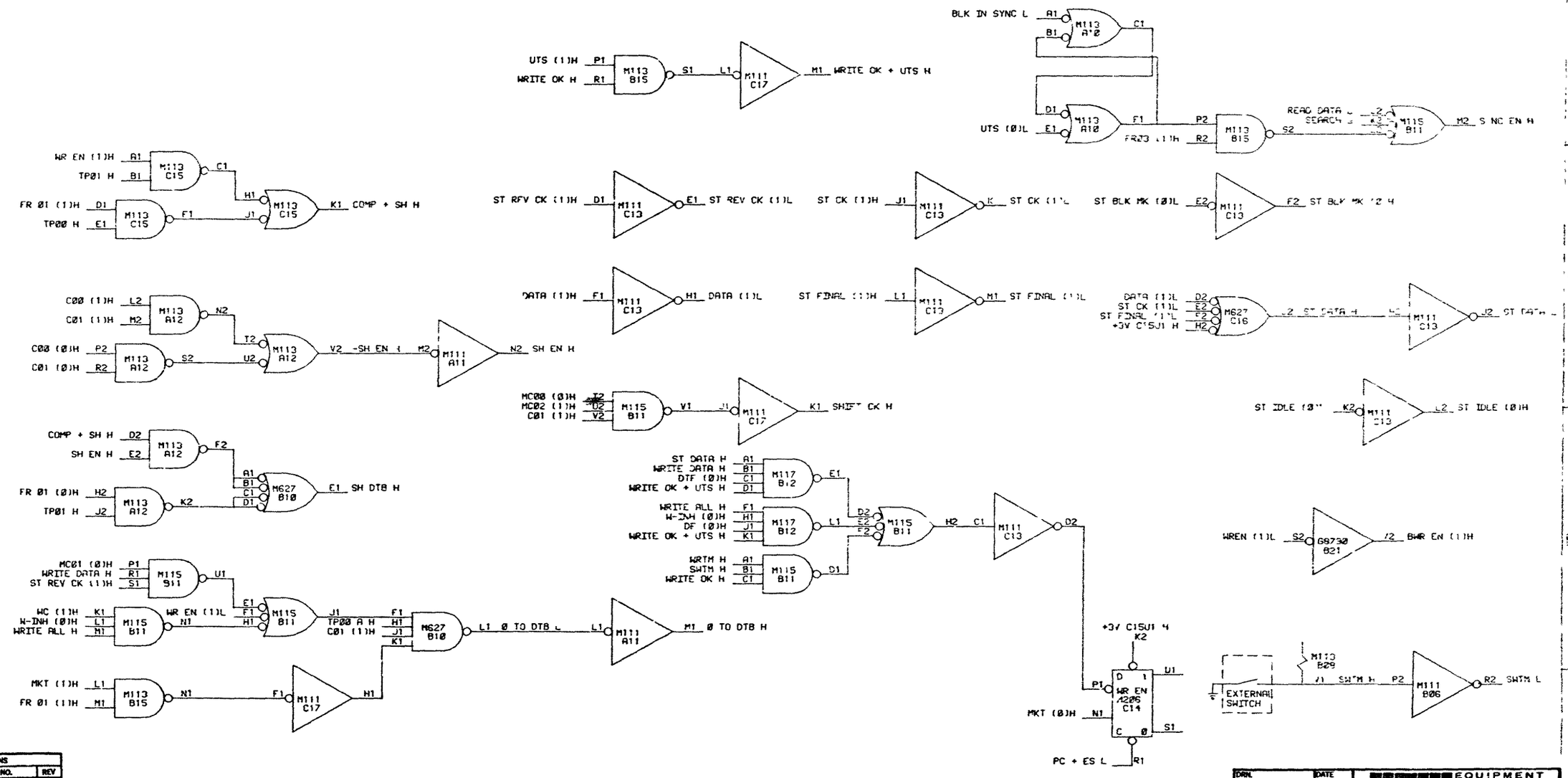
DRN. D.SHEPARD	DATE 6/24/69	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHK'D. N.RHEAULT	DATE 6/24/69	
ENG. D.LAZUKA	DATE 6/24/69	TITLE TP GEN
PROJ ENG. D.LAZUKA	DATE 9/6/68	
PROJ. F.LASKEY	DATE 9/2/68	
FIRST USED ON TC08		SIZE D CODE BS NUMBER TC08-0-3 REV H
SCALE		DIST
SHEET 1 OF 1		



CHK	CHANGE NO.	REV.
NR	TC08-00001	A
	R.SOFKA 10-2-69	
	D LAZUKA 10-6-69	
PD	TC08-00005	B
	A.WASHINGTON 4-8-70	
	D LAZUKA 4-14-70	
GH	TC08-00008	C
	I PETERS 7/9/70	
	D LAZUKA 7/9/70	
	TC08-00018	D
	[illegible]	
	[illegible]	

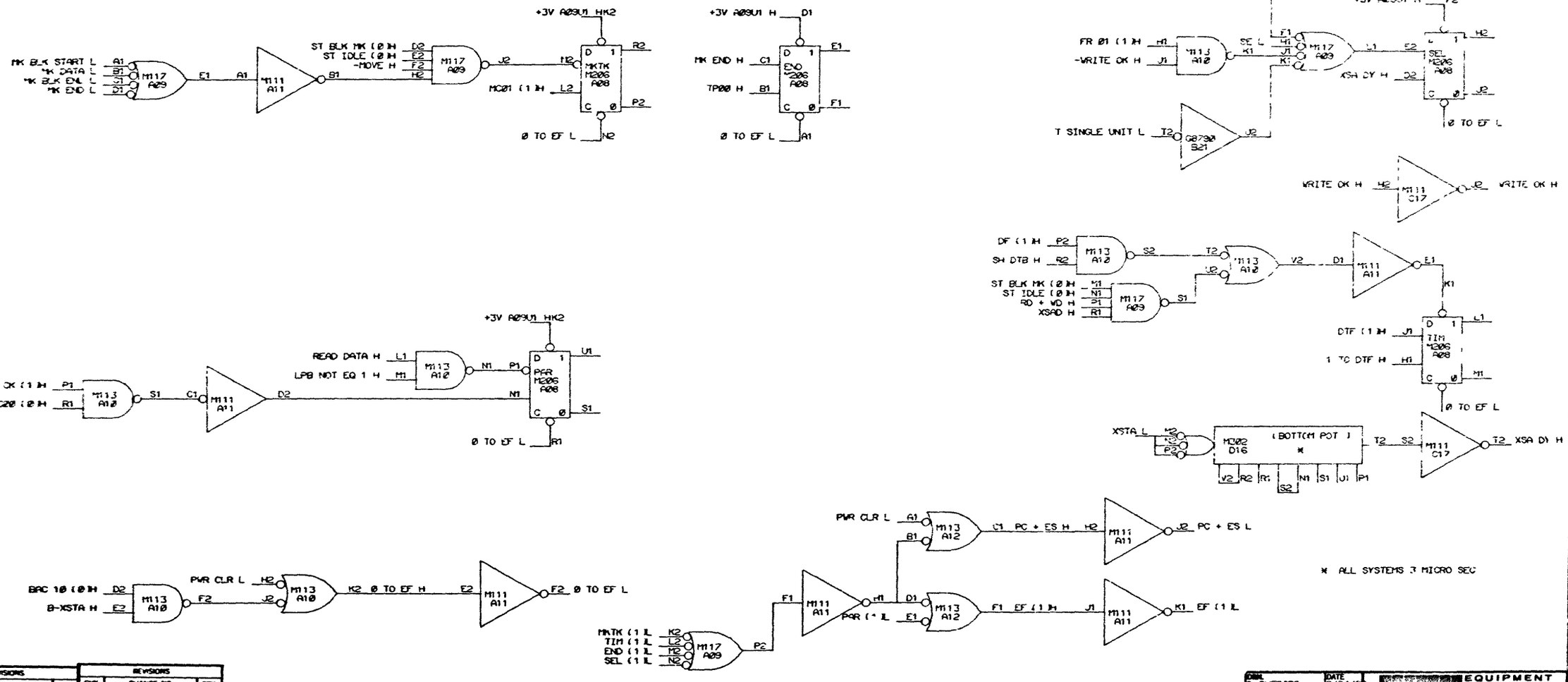
CHK	CHANGE NO	REV
[illegible]	TC08-00073	E
	[illegible]	
	KIPK	
	[illegible]	

DRN. D SHEPARD	DATE 6/24/69	EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHKD. N RHEAULT	DATE 6/24/69	TITLE
ENG. D LAZUKA	DATE 6/24/69	FLAGS
PROJ. ENG. D LAZUKA	DATE 9/2/69	
PROD. F LASKEY	DATE 9/2/69	
FIRST USED ON TC08		SIZE D CODE BS NUMBER TC08-0-4 REV. E
SCALE		
SHEET 1 OF 1		DIST



REVISIONS		
CHK	CHANGE NO.	REV
NR	TC28-00701	A
	R. SUFKA 10/2/69	
	D.LAZUKA 10/2/69	
AC	TC09-00009	B
	N LEVERE 7-29-70	
	L NASHI 8-1-70	
	TC09-00014	C

DRN D SHEPARD	DATE 5/24/69	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHKD N RAEAULT	DATE 5/24/69	
ENG D LAZUKA	DATE 5/24/69	TITLE CONTROL
PROJ ENG D LAZUKA	DATE 5/2/69	
PROD P LASKEY	DATE 5/2/69	
FIRST USED ON TC08		SIZE D CODE 95 NUMBER TC08-0-5 REV C
SCALE		DIST
SHEET 1 OF 1		



REVISIONS			REVISIONS		
CHK	CHANGE NO	REV	CHK	CHANGE NO	REV
NR	TC08-00001	A	-	TC08-00021	E
	R OFFA 12-2-68				
	D LAZ KA 12-5-68				
PD	TC08-00005	B			
	A WASHINGTON 4-8-71				
	D LAZKA				
GH	TC08-00014	C			
	K WALSH 5-7-71				
	L MANN 5-7-71				
GH	TC08-00017	D			
	N CODE 7/28/71				
	L MANN 7/28/71				

DSNR D SHEPARD	DATE 6/24/69	EQUIPMENT CORPORATION
CHK'D N RHEAULT	DATE 6/24/69	
ENG D LAZUKA	DATE 6/24/69	TITLE ERRORS
PROJ. ENG. D LAZUKA	DATE 9/2/69	
PROD. F LASKEY	DATE 9/2/69	
FIRST USED ON TC08		SIZE D CODE BS NUMBER TC08-3-6 REV. E
SCALE		DIST
SHEET 1 OF 1		

750 OHMS 1/4 5%
330 OHMS 1/4 5%
.01UF
+5VDC

RDMK (1)H — CS2 — DF2 — DF1 — DH2
Ø TO V L
TP01 H

W09 — CL1 — W08 — CK2 — W07 — CM2 — W06 — DU2 — W05 — CT2 — W04 — DE2 — W03 — DV2 — W02 — DJ2 — W01

+3V H

ST IDLE (1)H — DD2 — DC1 — CV2
Ø TO STATE L
SH ST-B H

CR2 ST BLK MK — DS1 ST REV CK — DK2 DATA — DL2 ST FINAL — DR1 ST CK — CN2 ST IDLE — +3V H

ST IDLE (1)H
ST BLK MK E N H — CP2
ST BLK MK (1)H
MK BLK START H — TP00 L — CN1 — CM1 SH ST H

MK BLK START H
ST REV CK (1)H
DATA (1)H
MK BLK END H
MK BLK END H
ST FINAL (1)H
ST CK (1)H
SHIFT CK H — DR2

W01 (1)L
W05 (1)L — CK1 W01-W05 H

W01 (1)H
W03 (Ø)H
W04 (Ø)H
W05 (Ø)H
W06 (1)H
W07 (Ø)H
W08 (Ø)H
W09 (Ø)H — CF1 MK BLK START L — CJ2 MK BLK START H

W01-W05 H
W02 (1)H
W03 (Ø)H
W04 (Ø)H
W05 (Ø)H
W06 (Ø)H
W07 (Ø)H
W08 (1)H
W09 (Ø)H — CH2 MK END L — CF2 MK END H

W01-W05 H
W03 (1)H
W04 (Ø)H
W06 (1)H
W07 (Ø)H
W08 (Ø)H
W09 (1)H
SYNC EN H — DH1 — DM2 SYNC L — DN2 SYNC H

W01-W05 H
W02 (1)H
W03 (Ø)H
W04 (Ø)H
W06 (1)H
W07 (Ø)H
W08 (1)H
W09 (Ø)H — CJ1 MK DATA SYNC L — CH1 MK DATA SYNC H

W01-W05 H
W02 (Ø)H
W03 (1)H
W04 (Ø)H
W06 (1)H
W07 (Ø)H
W08 (Ø)H
W09 (1)H — CU2 MK DATA L — DP2 MK DATA H

W01-W05 H
W02 (Ø)H
W03 (1)H
W04 (Ø)H
W06 (1)H
W07 (Ø)H
W08 (1)H
W09 (Ø)H — DV1 MK BLK END L — DU1 MK BLK END H

730 OHMS 1/4 5%
330 OHMS 1/4 5%
.01UF
+3V H
+5VDC

W01-W05 H
W02 (Ø)H
W03 (1)H
W04 (Ø)H
W06 (1)H
W07 (1)H
W08 (1)H
W09 (Ø)H — CD2 MK BLK MK L — CE2 MK BLK MK H

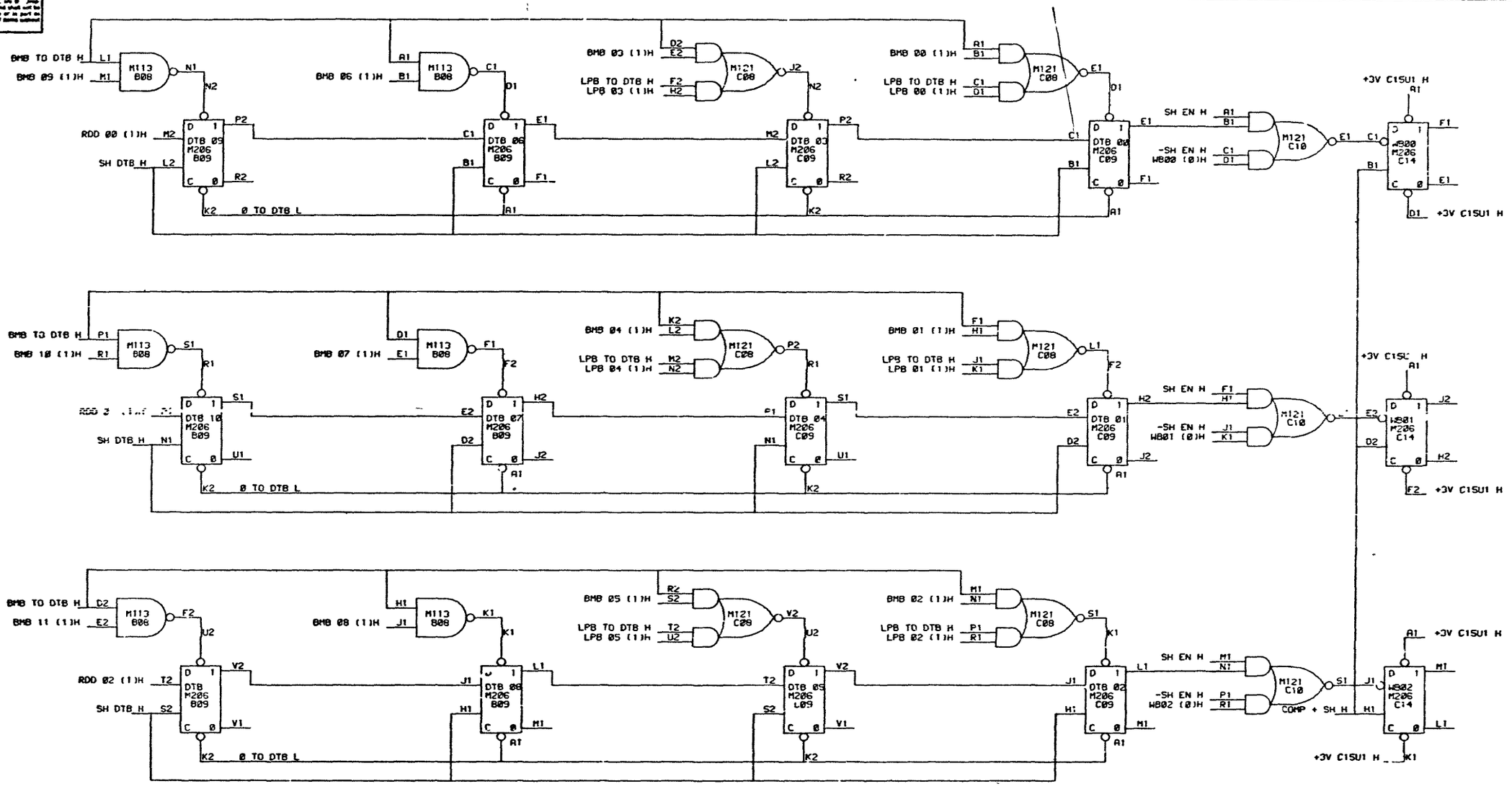
M228
C18
D18

W01-W05 H
W01 (1)H
W02 (1)H
W03 (1)H
W04 (Ø)H
W05 (Ø)H
W06 (1)H
W07 (Ø)H — DT2 MK BLK SYNC L — DS2 MK BLK SYNC H

W08 (Ø)L
W09 (1)L — CU1

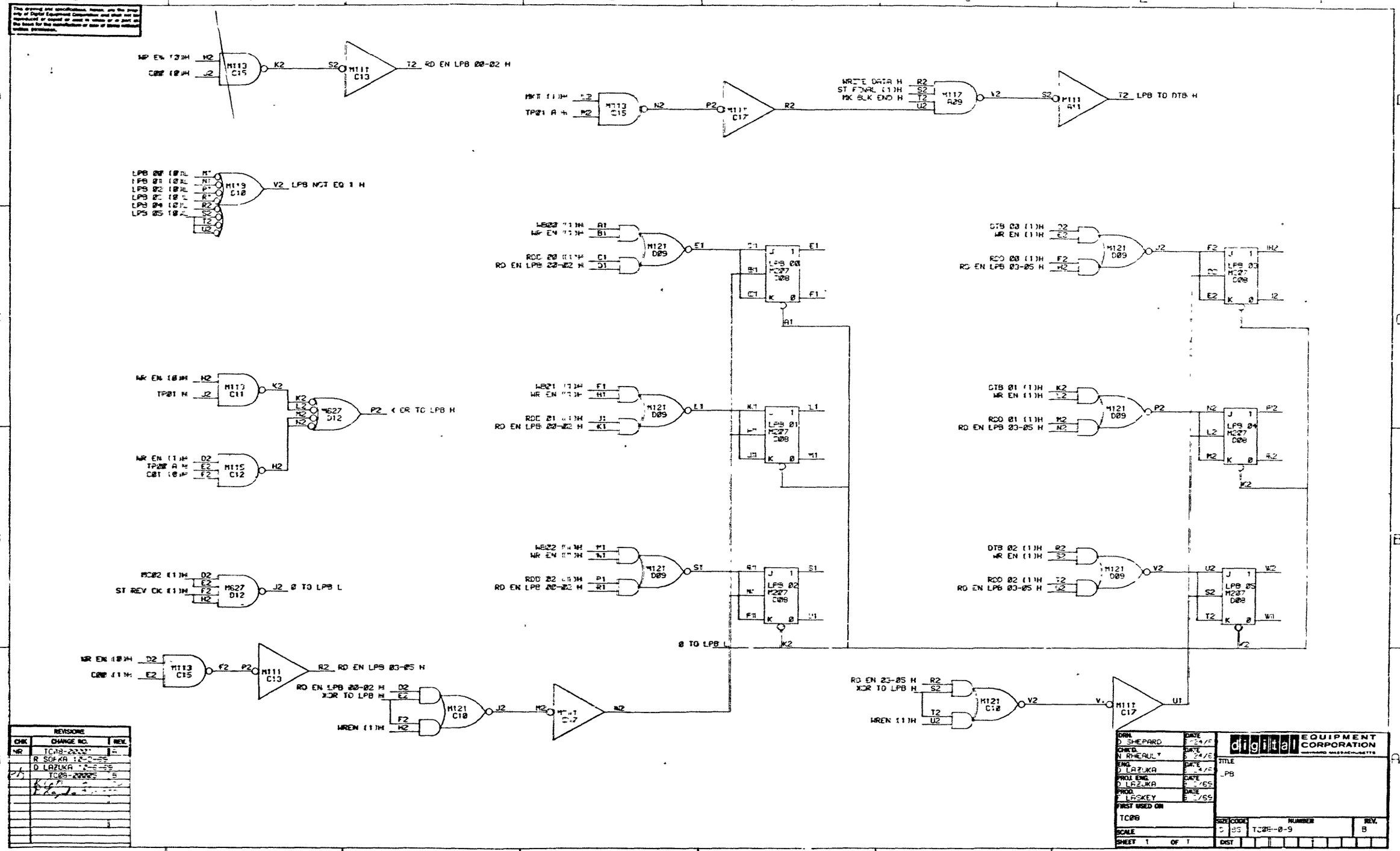
REVISIONS		
CHK	CHANGE NO.	REV.
CH	TCØ8-00018	A
	N. LEGERE	
	TCØ8-00023	B
	KIRK	

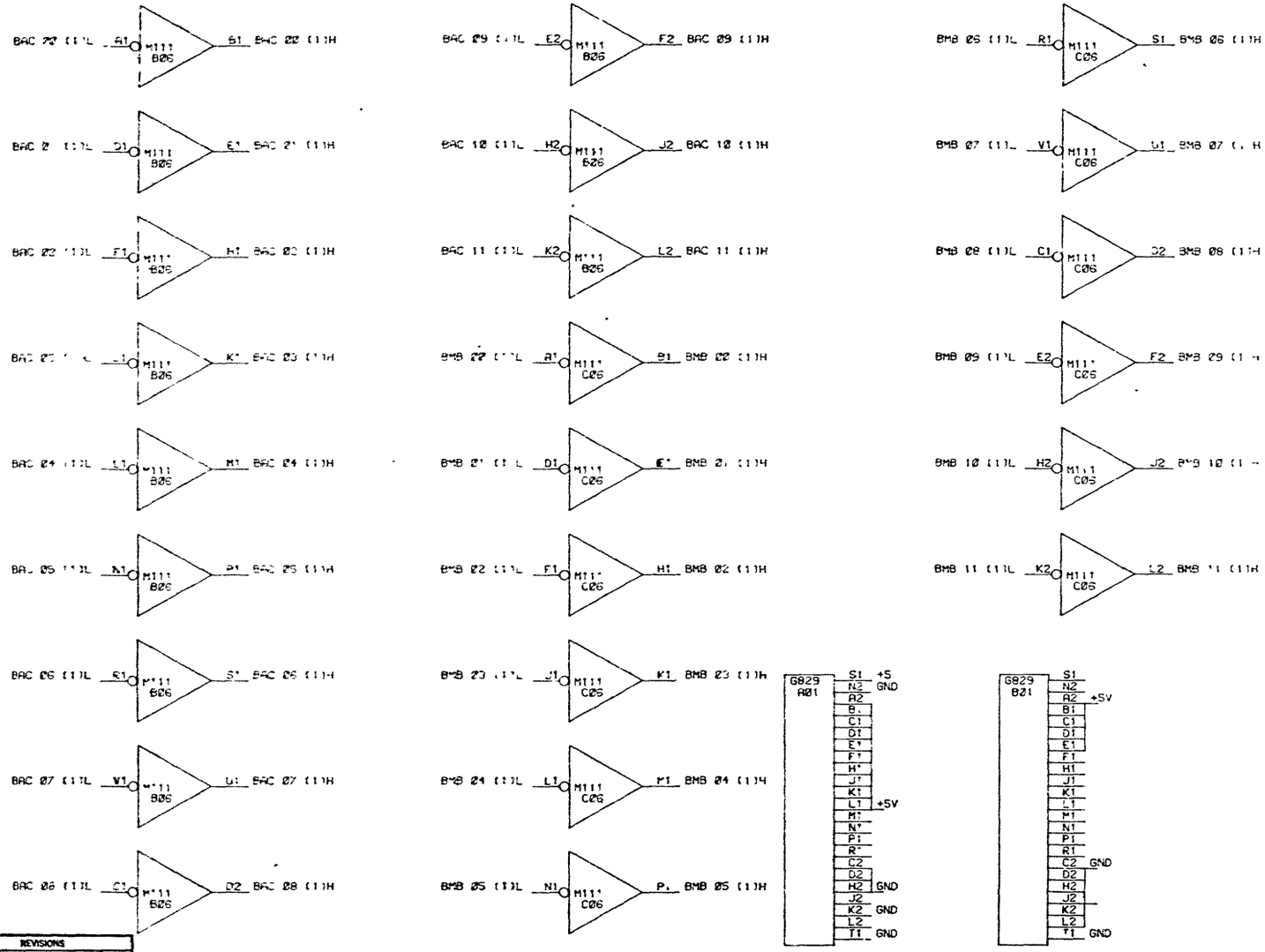
DRN D SHEPARD	DATE 5-2-69	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHK'D N REAULT	DATE 5-23-69	
ENG D LAZUKA	DATE 9-2-69	TITLE MARK TRACK DECODE
PROJ ENG D LAZUKA	DATE 9-2-69	
PROD P LASKEY	DATE 9-2-69	
FIRST USED ON TCØ8		SIZE D CODE BS NUMBER TCØ8-Ø-7 REV. B
SCALE		DIST
SHEET 1 OF 1		

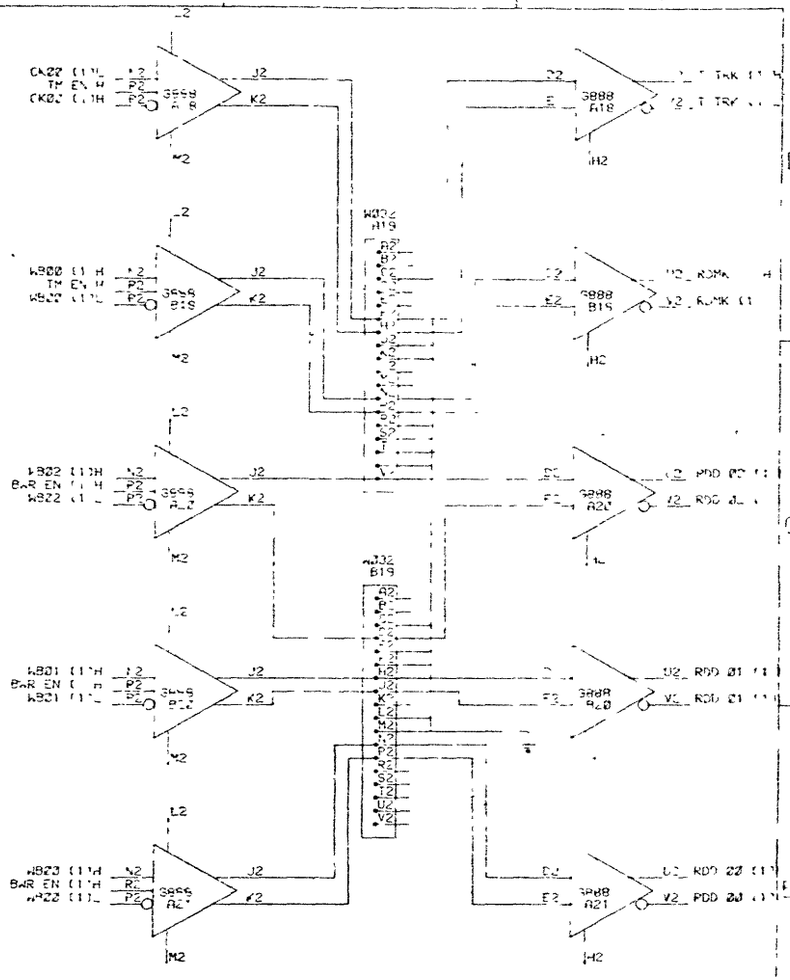


REVISIONS		
CHK	CHANGE NO.	REV.
	TC03-00001	A

DRN D SHEPARD	DATE 6/24/69	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHKD N RHEAULT	DATE 6/24/69	
ENG D LAZUKA	DATE 6/24/69	TITLE DTB/WB
PROJ ENG D LAZUKA	DATE 9/2/69	
PROD F LASKEY	DATE 9/2/69	
FIRST USED ON TC09		
SCALE		SIZE D CODE BS NUMBER TC08-0-0 REV A
SHEET 1 OF 1		DIST

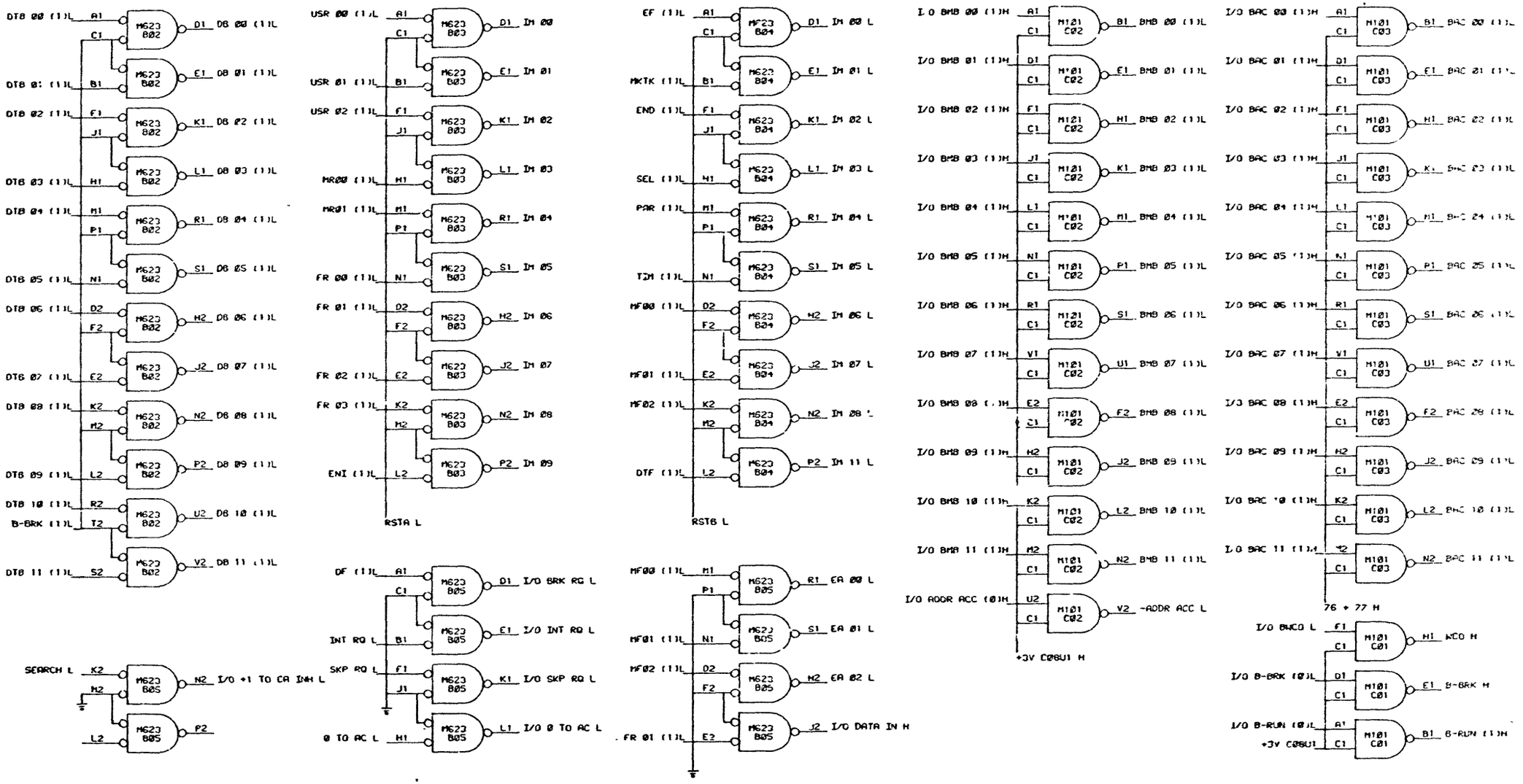

M113 C15
M111 C13
T2 RD EN LPB 00-02 H
M117 A09
M111 A11
T2 LPB TO DTB H
M119 C10
V2 LPB NOT EQ 1 H
M121 D09
LPB 00 M227 D08
LPB 01 M227 D08
LPB 02 M227 D08
LPB 03 M227 D08
LPB 04 M227 D08
LPB 05 M227 D08
M115 C12
M627 D12
P2 ER TO LPB H
J2 0 TO LPB L
M111 C17
M121 C18
R2 RD EN LPB 03-05 H
RD EN LPB 00-02 H XOR TO LPB H
WREN (1)H
0 TO LPB L
REVISIONS
CHK
CHANGE NO.
REV.
TC08-0000*
R SOFKA
D LAZUKA
TC08-0000S
B
digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS
D SHEPARD
N RHEAULT
D LAZUKA
P LASKEY
FIRST USED ON
TC08
SCALE
SHEET 1 OF 1
TITLE
LPB
SIZE
CODE
NUMBER
REV.
TC08-0-9
B
DIST





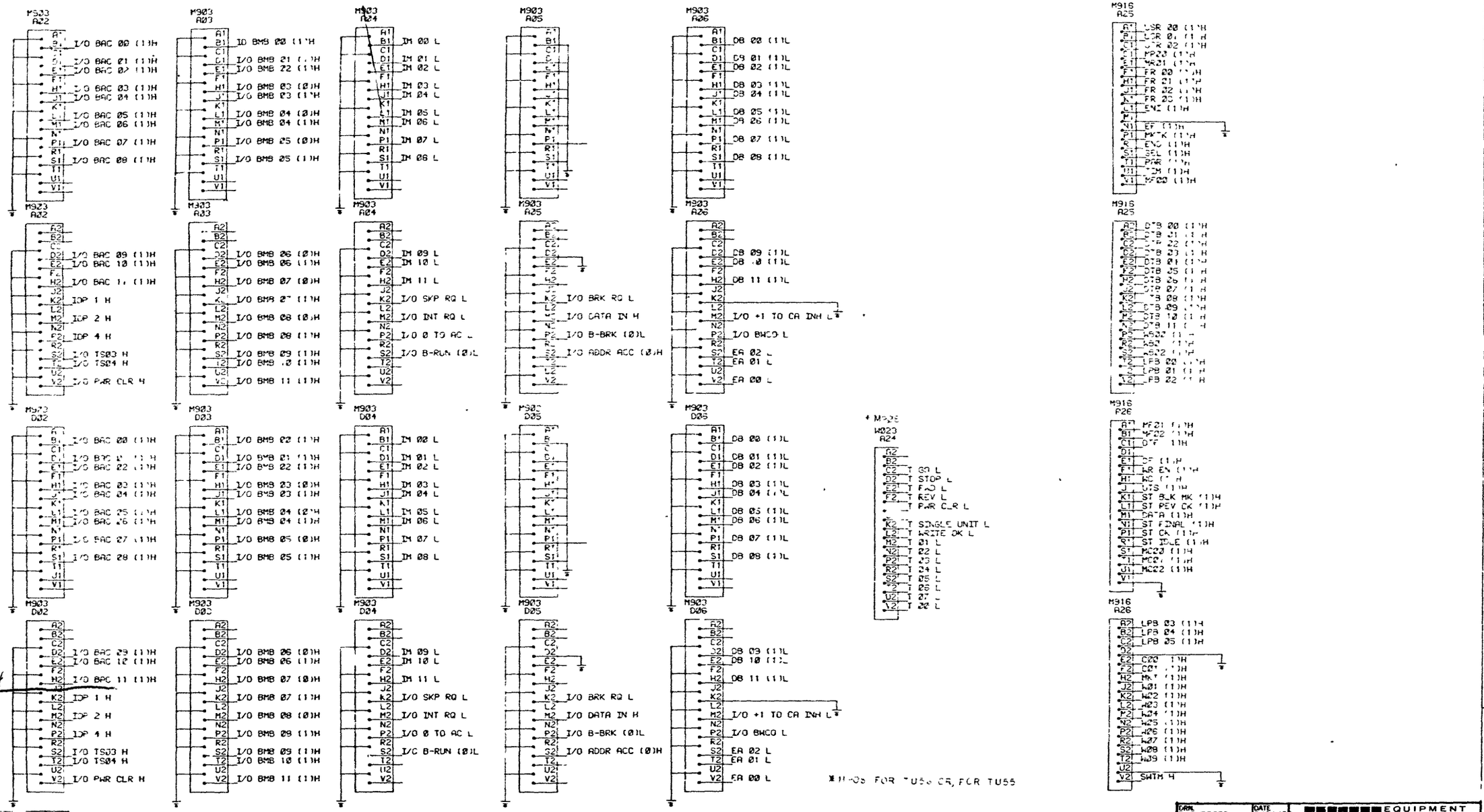
REVISIONS		
CHK	CHANGE NO.	REV.
PD	TC28-00005	A
TK	COTC 4-15-82	
D	LAZUKA 4-14-82	
#1	TC28-002 1	B
	Larry Hanke 5-7-84	

DRN. D SHEPARD	DATE 5/24/84	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. N PHEAULT	DATE 5/24/84	
ENG. C LAZUKA	DATE 5/4/84	TITLE 2 K BIS IN/TS READ WRITE AMPS
PROJ. ENG. C LAZUKA	DATE 5/24/84	
PROD. F LASKEY	DATE 5/24/84	
FIRST USED ON TC08		SIZE C CODE 80 NUMBER TC28-0-10 REV. B
SCALE		
SHEET 1 OF		DIST



REVISIONS		
CHK	CHANGE NO.	REV.
NR	TC08-00001	A
	R SOFKA 10-2-69	
	D LAZUKA	
NR	TC08-00004	B
	K BOSS 1-28-70	
	D LAZUKA	
	TC08-00005	C

DRWN D SHEPARD	DATE 3/24/69	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHKD R HEAULT	DATE 3/24/69	TITLE I/O S/S DRIVE/RECIEVE
ENG D LAZUKA	DATE 3/24/69	
PROJ ENG D LAZUKA	DATE 4/2/69	
MGR CASKEY	DATE 4/2/69	
FIRST USED ON TC08		SIZE D CODE BS NUMBER TC08-0-11 REV. C
SCALE		DIST.
SHEET 1 OF 1		



REVISIONS		
CHK	CHANGE NO.	REV
NR	TC08-00001	P
	R SOFKA 13-2-69	
	D LAZUKA	
	TC03-00004	B
	[illegible]	[illegible]
	[illegible]	[illegible]
	[illegible]	[illegible]
	[illegible]	[illegible]

DRN D.SHEPARD	DATE 5/24/69	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D N.RHEAULT	DATE 5/24/69	TITLE I/O BUS+CONNECTORS
ENG D LAZUKA	DATE 5/24/69	
PROJ. ENG. D LAZUKA	DATE 5/2/69	
PROD. F LASKEY	DATE 5/2/69	
FIRST USED ON TC08		SIZE D CODE IC NUMBER TC08-0-12 REV. -
SCALE		
SHEET 1 OF 1		DIST

DWG NO	REV
MU K-PL-TC08-0-13	F

REVISIONS			
CHK	CHANGE NO.	REV.	
	TC08-00002	A	D LAZUKA
	TC08-00004	B	D LAZUKA
FV	TC08-00006	C	LAZUKA
	TC08-00014	D	NARI
	TC08 00021	E	NARHI
DM	TC08-00023	F	

DRN.		DATE
CHK'D		DATE
ENG.		DATE
PROJ. ENG.		DATE
PROD.		DATE
FIRST USED ON		
SCALE	NONE	
SHEET	1 OF 9	

digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

TITLE
MODULE UTILIZATION + PARTS LIST

SIZE	CODE	NUMBER	REV.
K	MU PL	TC08-0-13	F

MODULE UTILIZATION LIST TC08 REV1 7-JUL-71 21112 PAGE: 1

LOC	TYPE	SECT	DWG-SHEET-COORDS	SECT	DWG-SHEET-COORDS	UNUSED MODULE SECTIONS
A01	G821	S1	TC10-1-30,135			
A02	M903	A1	TC12-1-163,20	A2	TC12-1-120,20	
A03	M903	A1	TC12-1-163,55	A2	TC12-1-120,55	
A04	M903	A1	TC12-1-163,90	A2	TC12-1-120,90	
A05	M903	A1	TC12-1-163,125	A2	TC12-1-120,125	
A06	M903	A1	TC12-1-163,160	A2	TC12-1-120,160	
A07	M161	R1	TC02-1-164,85			
A08	M206	E1	TC06-1-147,170	W2	TC06-1-150,300	
		L1	TC06-1-90,300	P2	TC06-1-147,130	
		S1	TC06-1-83,120	V2	TC04-1-170,170	
A09	M117	E1	TC06-1-150,40	J2	TC06-1-153,100	V1
		L1	TC06-1-156,275	P2	TC06-1-30,152	
		S1	TC06-1-103,237	U1	TC02-1-188,130	
		V2	TC09-1-193,220			
A10	M113	C1	TC05-1-180,230	F1	TC05-1-160,230	V1 U1
		F2	TC06-1-47,40	K1	TC06-1-155,250	
		K2	TC06-1-42,70	N1	TC06-1-89,97	
		N2	TC02-1-54,170	S1	TC06-1-83,30	
		S2	TC06-1-113,230	V2	TC06-1-111,260	
A11	M111	B1	TC06-1-147,65	D2	TC06-1-80,55	
		E1	TC06-1-138,286	F2	TC06-1-39,110	
		W1	TC06-1-37,175	J2	TC06-1-52,236	
		K1	TC06-1-35,236	L2	TC01-1-147,260	
		M1	TC05-1-51,140	N2	TC05-1-109,105	
		P1	TC02-1-51,204	R2	TC03-1-185,145	
		S1	TC02-1-33,204	T2	TC09-1-180,250	
		U1	TC04-1-97,175	V2	TC03-1-115,145	
A12	M113	C1	TC06-1-55,200	F1	TC06-1-38,200	V1 U1
		F2	TC05-1-92,47	K1	TC01-1-40,160	
		K2	TC05-1-80,40	N1	TC01-1-38,135	
		N2	TC05-1-120,47	S1	TC01-1-30,160	

MODULE UTILIZATION LIST TC08 REV1 7-JUL-71 21112 PAGE: 2

LOC	TYPE	SECT	DWG-SHEET-COORDS	SECT	DWG-SHEET-COORDS	UNUSED MODULE SECTIONS
A12	M113	S2	TC05-1-110,40	V2	TC05-1-112,70	
A14	M302	F2	TC03-1-188,100	T2	TC03-1-118,100	
A15	M527	E1	TC03-1-143,110	J2	TC03-1-99,110	V1 U1
		L1	TC03-1-190,145	P2	TC03-1-102,145	
		S1	TC03-1-165,225	V2	TC03-1-94,225	
A16	M502	F2	TC03-1-140,60	L2	TC03-1-162,185	
A18	G888	J2	TC10-1-190,240	U2	TC10-1-190,300	
A19	W032	A2	TC10-1-137,270			A1
A20	G888	J2	TC10-1-130,240	U2	TC10-1-130,300	
A21	G888	J2	TC10-1-70,240	U2	TC10-1-70,300	
A22	M502	E2	TC02-1-190,270			P2
A23	M633	D1	TC02-1-160,270	W2	TC02-1-100,270	
		K1	TC02-1-140,270	N2	TC02-1-80,270	
		R1	TC02-1-120,270	J2	TC02-1-60,270	
A24	W023	A2	TC12-1-70,200			
A25	M916	A1	TC12-1-164,250	A2	TC12-1-120,250	
A26	M916	A1	TC12-1-76,250	A2	TC12-1-32,250	
B01	G821	S1	TC10-1-30,170			
B02	M623	D1	TC11-1-176,30	W2	TC11-1-116,30	V1 U1
		K1	TC11-1-156,30	N2	TC11-1-96,30	
		R1	TC11-1-136,30	U2	TC11-1-76,30	
B03	M623	D1	TC11-1-176,90	W2	TC11-1-116,90	V1 U1 U2
		K1	TC11-1-156,90	N2	TC11-1-96,90	
		R1	TC11-1-136,90			

LOC	TYPE	SECT	DWG-SHEET-COORDS	SECT	DWG-SHEET-COORDS	UNUSED	MODULE	SECTIONS
B04	M623	D1	TC11-1-176,150	M2	TC11-1-116,150	V1	U1	U2
		K1	TC11-1-156,150	N2	TC11-1-96,150			
		R1	TC11-1-136,150					
B05	M623	D1	TC11-1-62,90	M2	TC11-1-42,150	V1	U1	U2
		K1	TC11-1-42,90	N2	TC11-1-42,30			
		R1	TC11-1-62,150					
B06	M111	B1	TC10-1-176,30	D2	TC10-1-32,30	V2		
		E1	TC10-1-158,30	F2	TC10-1-176,100			
		H1	TC10-1-140,30	J2	TC10-1-158,100			
		K1	TC10-1-122,30	L2	TC10-1-140,100			
		M1	TC10-1-104,30	N2	TC01-1-110,50			
		P1	TC10-1-86,30	R2	TC05-1-40,300			
		S1	TC10-1-68,30	T2	TC01-1-30,260			
		U1	TC10-1-50,30					
B07	M207	E1	TC02-1-140,20	M2	TC02-1-140,60			
		L1	TC02-1-140,100	P2	TC07-1-140,140			
		S1	TC02-1-88,20	V2	TC02-1-88,60			
B08	M113	C1	TC08-1-190,107	F1	TC08-1-132,107	U1		
		F2	TC08-1-76,47	K1	TC08-1-76,107			
		K2	TC02-1-118,210	N1	TC08-1-190,47			
		N2	TC02-1-158,210	S1	TC08-1-132,47			
		S2	TC01-1-33,230	V1	TC05-1-45,278			
		V2	TC04-1-150,150					
B09	M206	E1	TC08-1-170,120	M2	TC08-1-112,120			
		L1	TC08-1-54,120	P2	TC08-1-170,60			
		S1	TC08-1-112,60	V2	TC08-1-56,60			
B10	M627	E1	TC05-1-83,70	J2	TC04-1-90,260	V1	U1	P2
		L1	TC05-1-54,100	S1	TC04-1-160,150			
		V2	TC01-1-120,280					
B11	M115	D1	TC05-1-66,170	M2	TC05-1-76,193			
		J1	TC05-1-57,70	M2	TC05-1-160,295			
		N1	TC05-1-52,40	S2	TC02-1-36,170			
		U1	TC05-1-65,47	V1	TC05-1-100,140			
B12	M117	E1	TC05-1-86,170	J2	TC04-1-54,35	V1		
		L1	TC05-1-76,170	P2	TC04-1-73,62			
		S1	TC04-1-140,59	U1	TC04-1-192,309			
		V2	TC04-1-119,81					
B13	M206	E1	TC04-1-170,220	M2	TC04-1-170,245			

LOC	TYPE	SECT	DWG-SHEET-COORDS	SECT	DWG-SHEET-COORDS	UNUSED	MODULE	SECTIONS
B13	M206	L1	TC04-1-170,270	P2	TC04-1-130,180			
		S1	TC04-1-170,220	V2	TC04-1-130,260			
B14	M206	E1	TC02-1-140,210	P2	TC02-1-177,210	L1	M2	
		S1	TC03-1-130,300	V2	TC03-1-176,300			
B15	M113	F1	TC03-1-140,30	F2	TC03-1-116,31	V1	U1	V2
		K1	TC04-1-146,160	N1	TC05-1-40,40	N2	K2	C1
		S1	TC05-1-170,140	S2	TC05-1-158,260			
B16	M602	F2	TC03-1-102,60	L2	TC03-1-100,185			
B18	G888	J2	TC10-1-160,240	U2	TC10-1-160,300			
B19	M332	A2	TC10-1-85,270			A1		
B20	G888	J2	TC10-1-100,240	U2	TC10-1-100,300			
B21	G879	P1	TC05-1-0,0	P1	TC06-1-0,0			
B22	M633	U2	TC02-1-40,270			N2	M2	R1
						K1	D1	
B23	M305	D2	TC02-1-172,286	E2	TC02-1-162,286	F2		
		M2	TC02-1-152,286	J2	TC02-1-142,286			
		K2	TC02-1-132,286	L2	TC02-1-192,255			
		M2	TC02-1-122,286	N2	TC02-1-112,286			
		P2	TC02-1-102,286	R2	TC02-1-92,286			
		S2	TC02-1-82,286	T2	TC02-1-72,286			
		U2	TC02-1-62,286	V2	TC02-1-42,286			
C02	M101	B1	TC11-1-186,210	E1	TC11-1-176,210			
		F2	TC11-1-176,210	H1	TC11-1-166,210			
		J2	TC11-1-96,210	K1	TC11-1-156,210			
		L2	TC11-1-86,210	M1	TC11-1-146,210			
		N2	TC11-1-76,210	P1	TC11-1-136,210			
		R2	TC11-1-66,210	S1	TC11-1-126,210			
		T2	TC11-1-56,210	U1	TC11-1-116,210			
		V2	TC11-1-46,210					
C03	M101	B1	TC11-1-186,270	E1	TC11-1-176,270	V2	T2	R2
		F2	TC11-1-176,270	H1	TC11-1-166,270			

LOC	TYPE	SECT	DWG-SHEET-COORDS	SECT	DWG-SHEET-COORDS	UNUSED	MODULE	SECTIONS
C03	M101	J2	TC11-1-98,270	K1	TC11-1-156,270			
		L2	TC11-1-88,270	M1	TC11-1-146,270			
		N2	TC11-1-76,270	P1	TC11-1-136,270			
		S1	TC11-1-126,270	U1	TC11-1-116,270			
C04	M103	B1	TC01-1-170,70	K1	TC01-1-125,30	V1	N1	
C05	M103	B1	TC01-1-70,60	K1	TC01-1-30,30	V1	N1	
C06	M111	B1	TC10-1-122,100	D2	TC10-1-140,180			
		E1	TC10-1-104,100	F2	TC10-1-122,180			
		H1	TC10-1-86,100	J2	TC10-1-104,180			
		K1	TC10-1-68,100	L2	TC10-1-86,180			
		M1	TC10-1-50,100	N2	TC01-1-127,110			
		P1	TC10-1-32,100	R2	TC01-1-30,90			
		S1	TC10-1-176,190	T2	TC01-1-110,120			
		U1	TC10-1-158,190	V2	TC01-1-90,120			
C07	M207	E1	TC02-1-88,100	H2	TC02-1-88,140	V2	S1	
		L1	TC02-1-88,180	P2	TC02-1-140,180			
C08	M121	E1	TC08-1-190,227	J2	TC08-1-190,167	V1		
		L1	TC08-1-132,227	P2	TC08-1-132,167			
		S1	TC08-1-76,227	U1	TC01-1-180,260			
		V2	TC08-1-76,167					
C09	M206	E1	TC08-1-170,240	H2	TC08-1-112,240			
		L1	TC08-1-54,240	P2	TC08-1-170,180			
		S1	TC08-1-112,180	V2	TC08-1-56,180			
C10	M121	E1	TC08-1-176,277	J2	TC09-1-30,103	V1	U1	
		L1	TC08-1-118,277	P2	TC06-1-175,252			
		S1	TC08-1-62,277	V2	TC09-1-32,230			
C11	M113	C1	TC04-1-130,35	F1	TC04-1-130,35	V1	U1	
		F2	TC04-1-106,82	K1	TC04-1-120,35			
		K2	TC09-1-110,50	N1	TC04-1-114,58			
		N2	TC04-1-130,260	S1	TC04-1-130,82			
		S2	TC04-1-74,127	V2	TC04-1-70,150			
C12	M115	D1	TC03-1-35,223	H2	TC09-1-90,50			
		J1	TC04-1-119,105	M2	TC03-1-30,40			

LOC	TYPE	SECT	DWG-SHEET-COORDS	SECT	DWG-SHEET-COORDS	UNUSED	MODULE	SECTIONS
C12	M115	N1	TC04-1-84,35	S2	TC03-1-80,37			
		U1	TC04-1-74,35	V1	TC04-1-64,35			
C13	M111	B1	TC04-1-44,60	D2	TC05-1-73,216			
		E1	TC05-1-140,140	F2	TC05-1-140,260			
		H1	TC05-1-120,140	J2	TC05-1-117,299			
		K1	TC05-1-140,220	L2	TC05-1-97,290			
		M1	TC05-1-120,220	N2	TC03-1-51,246			
		P1	TC03-1-69,95	R2	TC09-1-37,60			
		S1	TC04-1-54,200	T2	TC09-1-187,80			
		U1	TC04-1-67,175	V2	TC02-1-165,185			
C14	M206	E1	TC08-1-170,330	H2	TC08-1-112,300	V2		
		L1	TC08-1-56,300	P2	TC03-1-65,260			
		S1	TC05-1-35,240					
C15	M113	C1	TC05-1-130,47	F1	TC05-1-140,40	V1		
		F2	TC09-1-40,37	K1	TC05-1-142,70			
		K2	TC09-1-190,50	N1	TC03-1-70,30			
		N2	TC09-1-190,140	S1	TC03-1-72,60			
		S2	TC03-1-65,235	U1	TC03-1-194,260			
		V2	TC02-1-158,152					
C16	M827	E1	TC03-1-59,290	J2	TC05-1-120,260	V1	U1	
		L1	TC03-1-50,290	P2	TC01-1-100,290			
		S1	TC03-1-100,30	V2	TC03-1-150,31			
C17	M111	B1	TC01-1-130,260	D2	TC03-1-137,82	V2	L2	U1
		F2	TC03-1-99,82	H1	TC05-1-37,76	E1		
		J2	TC06-1-124,295	K1	TC05-1-97,165			
		M1	TC05-1-167,155	N2	TC09-1-27,130			
		P1	TC01-1-60,260	R2	TC09-1-177,170			
		S1	TC01-1-55,157	T2	TC06-1-70,300			
C18	M228		TC07-1-0,0					
D02	M903	A1	TC12-1-75,20	A2	TC12-1-32,20			
D03	M903	A1	TC12-1-75,55	A2	TC12-1-32,55			
D04	M903	A1	TC12-1-75,90	A2	TC12-1-32,90			
D05	M903	A1	TC12-1-75,125	A2	TC12-1-32,125			

MODULE UTILIZATION LIST TC08 REV1 7-JUL-71 21:12 PAGE: 7

LOC	TYPE	SECT	DWG-SHEET-COORDS	SECT	DWG-SHEET-COORDS	UNUSED MODULE SECTIONS
D05	M903					
D06	M903	A1	TC12-1-75,160	A2	TC12-1-32,160	
D07	M161	R1	TC02-1-34,70			
D08	M207	E1	TC09-1-136,180	H2	TC09-1-136,290	
		L1	TC09-1-95,180	P2	TC09-1-96,290	
		S1	TC09-1-56,180	V2	TC09-1-56,290	
D09	M121	E1	TC09-1-145,150	J2	TC09-1-145,260	V1
		L1	TC09-1-105,150	P2	TC09-1-103,260	
		S1	TC09-1-65,150	U1	TC02-1-170,130	
		V2	TC09-1-65,260			
D10	M110	J2	TC04-1-57,150	P2	TC03-1-50,100	U1
		V1	TC04-1-192,285	V2	TC09-1-160,50	
D11	M206	E1	TC01-1-180,140	H2	TC01-1-180,170	
		L1	TC01-1-180,200	P2	TC04-1-170,50	
		S1	TC01-1-180,230	V2	TC04-1-170,100	
D12	M627	E1	TC01-1-147,150	J2	TC09-1-60,50	V1 U1
		L1	TC01-1-77,165	P2	TC09-1-104,73	
		S1	TC01-1-80,125	V2	TC01-1-100,144	
D13	M602	F2	TC01-1-150,130	L2	TC01-1-150,210	
D14	M307	M2	TC03-1-80,160	K1	TC03-1-49,150	
D15	M401	E2	TC03-1-178,260			
D16	M302	T2	TC06-1-73,259			F2
D17	M602	F2	TC01-1-58,135	L2	TC04-1-38,40	
D18	M228		TC07-1-0,0			
D19	M112	A1	TC04-			K1, N1, S1, U1, W1 F1, R1, N1, S1, V2
		F1	TC04			

MODULE PARTS LIST TC08 REV1 7-JUL-71 21:12 PAGE: 1

TYPE	USED	SECT USED	SECT LEFT	DESC
G821	1	1	1	
G879	0	SPEC	MOD	
G888	5	10	0	READER/WRITER
M101	2	23	7	DIODE GATE
M103	2	4	4	
M111	5	65	15	
M113	6	98	14	DIODE GATE
M115	2	16	0	8-3 INPUT NAND GATES
M117	2	14	2	6-4 NAND GATES
M119	1	4	1	8-INPUT NAND GATES
M121	3	20	4	X OR GATES
M161	2	2	0	BINARY TO OCTAL/DECIMAL DECODER
M206	7	39	3	SIX FLIP-FLOPS
M207	3	16	2	FLIP-FLOP
M228	1	SPEC	MOD	
M302	2	3	1	ONE SHOT DELAY
M307	1	2	0	
M401	1	1	0	CLOCK
M502	1	1	1	NEGATIVE INPUT CONVERTER
M602	4	8	0	PULSE GENERATOR
M623	4	21	11	DIODE GATE
M627	4	23	9	6-4 NAND GATES
M633	2	7	5	DIODE GATE
M903	10	20	0	
M916	2	4	0	CONNECTOR BOARD
W005	1	14	1	CLAMP LOAD
W023	1	1	0	CONNECTOR BOARD
W032	2	2	2	CONNECTOR BOARD
M112	1	2	8	NOR GATE

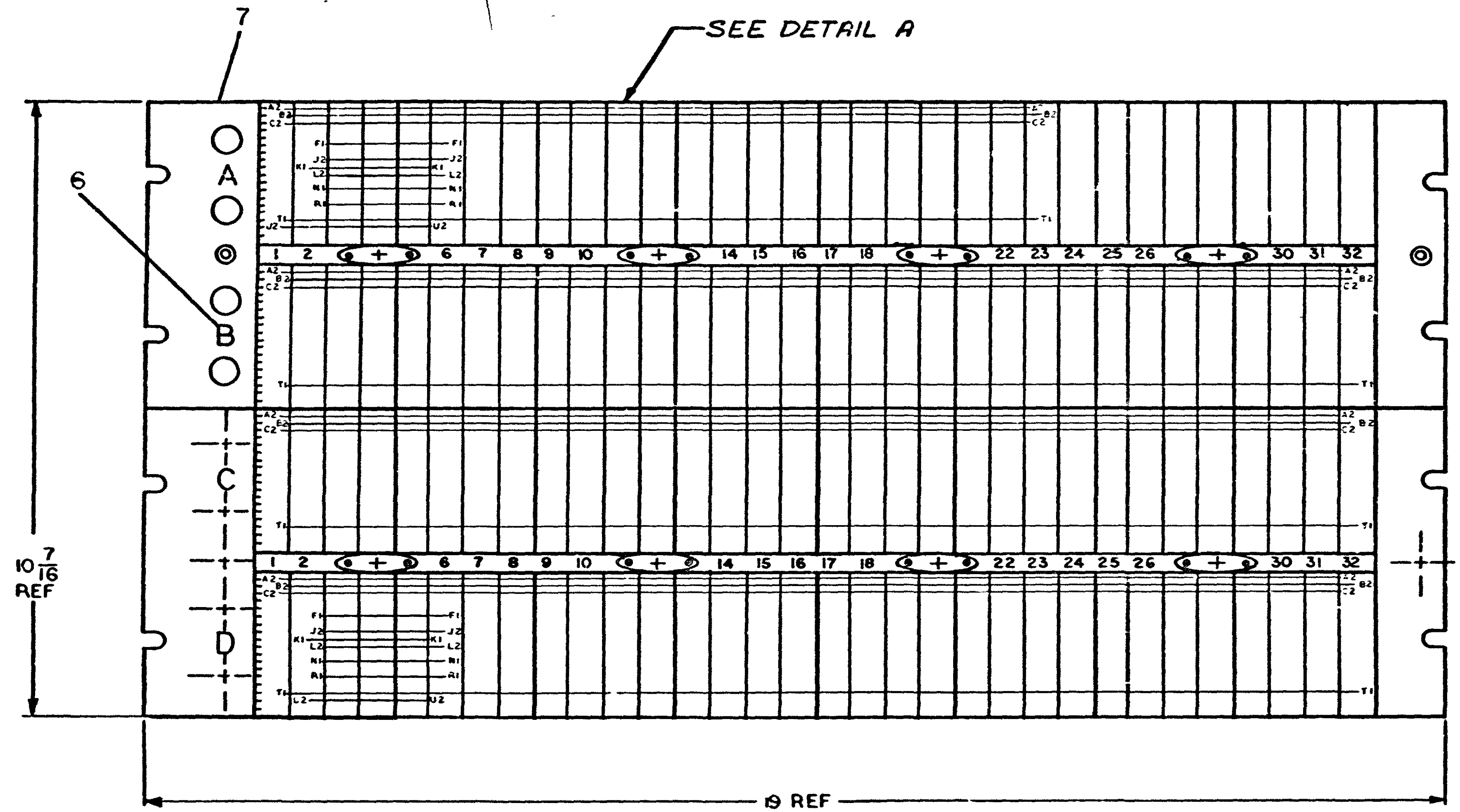
DRWG NO	REVLTR
K-WL-TCØ8-Ø-14	T

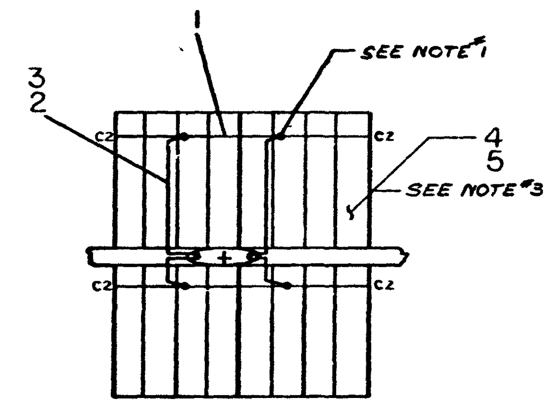
REV LTR	ECO NO	DATE	ENG
A	TCØ8-00004	[illegible]	[illegible]
B	TCØ8-00012	[illegible]	[illegible]
C	TCØ8-00004	[illegible]	[illegible]
D	TCØ8-00007	3-22-71	[illegible]
E	TCØ8-00006	4-24-71	[illegible]
F	00008	7-7-71	[illegible]
H	TCØ8-00009	[illegible]	[illegible]
J	[illegible]	[illegible]	[illegible]
K	TCØ8-00012	11-12 71	[illegible]
L	TCØ8 00014	[illegible]	[illegible]
M	TCØ8	6-10-71	[illegible]
N	TCØ8 00016	6 11 71	[illegible]
P	TCØ8-00018	8-25-71	[illegible]
R	TCØ8 00021	[illegible]	[illegible]
S	00023 TCØ8-00026	9-23-71	[illegible]
T		10 24 71	[illegible]

REVISIONS

DRAWN [illegible]	DATE 6/12/69	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS	TITLE WIRE LIST TCØ8
CHECKED [illegible]	DATE [illegible]		FOR TAPE* FILE*
ENG [illegible]	DATE [illegible]		
PROJ ENG [illegible]	DATE [illegible]	ASSY NO	SIZE K / CODE WL / DWG. NO. TCØ8-Ø-14 / REV LTR —
PROD [illegible]	DATE 9/16/69	SCALE NONE / SHEET 1 OF 1	DIST

NOTES:
1. CONNECTIONS ON ITEMS #1 & #2 TO BE SOLDERED AND LOCATED AT MINIMUM PRACTICAL HEIGHT ABOVE BOARD.
2. ALL CONN BLOCKS TO BE GROUNDED TO GND LUGS AS SHOWN.
3. USE YELLOW WIRE (ITEM #4) FOR MACHINE WRAPPED & BLUE WIRE (ITEM #5) FOR HAND WRAPPED WIRING.





DETAIL A
8 PLACES
SEE NOTE #2

FIRST USED ON OPTION/MODEL: TC08	QTY	DESCRIPTION	PART NO	ITEM NO.
		PARTS LIST		

UNLESS OTHERWISE SPECIFIED — DIMENSIONS IN INCHES — TOLERANCES: DECIMALS ±.005, FRACTIONS ±1/64, ANGLES ±0°30' — REMOVE BURRS AND BREAK SHARP CORNERS

NEXT HIGHER ASSY: D-UA-TC08-0-0
SCALE: NONE
SHEET 1 OF 1

digital EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: WIRED ASSY TC08

SIZE: D — CODE: AD — NUMBER: 7006394-0-0 — REV. C

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY G. GIANOULIS	CHECKED R Cowell	SECTION
DATE 6/12/69	DATE 6/27/69	1
ENG	PROD	ISSUED SECT.
DATE	DATE	1

ITEM NO	DWG NO. / PART NO.	DESCRIPTION	QUANTITY/VARIATION
1	9008428	BUS STRIP	A/R
2	9107560-1	22 AWG BUS WIRE	A/R
3	9107256-09	#22 TUBING, TEFLON, WHITE	A/R
4	9105740-44	30 AWG SOLID KYNAR INS WIRE YELLOW	A/R
5	9105740-66	30 AWG SOLID KYNAR INS WIRE BLUE	A/R
6	A-DC-7406371-0-0	LOGIC FRAME DECALS	A/R
7	D-AD-5404491-0-0	H911 MTG PANEL	2
8	5508153-01	BAR, ATTACHING	1
9	K-WL-TCØ8-Ø-14	WIRE LIST TCØ8	REF
10	A-WT-7006394-0	AWT REVISION STATUS	REF
11	5508153-02	BAR, ATTACHING	1
12	9006073-01	SCREW, PPH 10-32 x 1/2	4
13	9006669	WASHER, FLAT	4
14	A-DC-7411881-01	DECAL, LOGIC ASSY	1
15	3700040-0-0	PACKAGING INSTRUCTIONS	REF
16	9905016-4	COMPRESS-O-CARTON	1

TITLE	ASSY NO	SIZE	CODE	NUMBER	REV	ECO NO
WIRED ASSY TCØ8	D-AD-7006394-0-0	A	PL	7006394-0-0	C	TCØ8-100C29
	SHEET 1 OF 1	DIST				

DEC FORM NO
DRA 110A

AUTOMATIC WIRE TESTER (AWT) REVISION STATUS

DRAWING NUMBER	INIT REL																								REV
	T9	T	T																						U
K-WL-TC08-0-14	T	T	T																						
D-AD-7006394-0-0	A	B	C																						

NUMBER 7006394-0

SIZE A | CODE WT

REVISIONS

CHK	CHANGE NO.	REV.
-	TC08-00028 ORIGINATED	T
	TC08-00029	U

DRN		DATE 3-17-75
CHK'D	[signature]	DATE 3-18-75
ENG	[signature]	DATE 3-19-75
PROJ ENG	[signature]	DATE 3-19-75
PROD	[signature]	DATE 3-19-75
FIRST USED ON		
SCALE	— 11 —	
SHEET	1 OF 1	

EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

TITLE

TC08

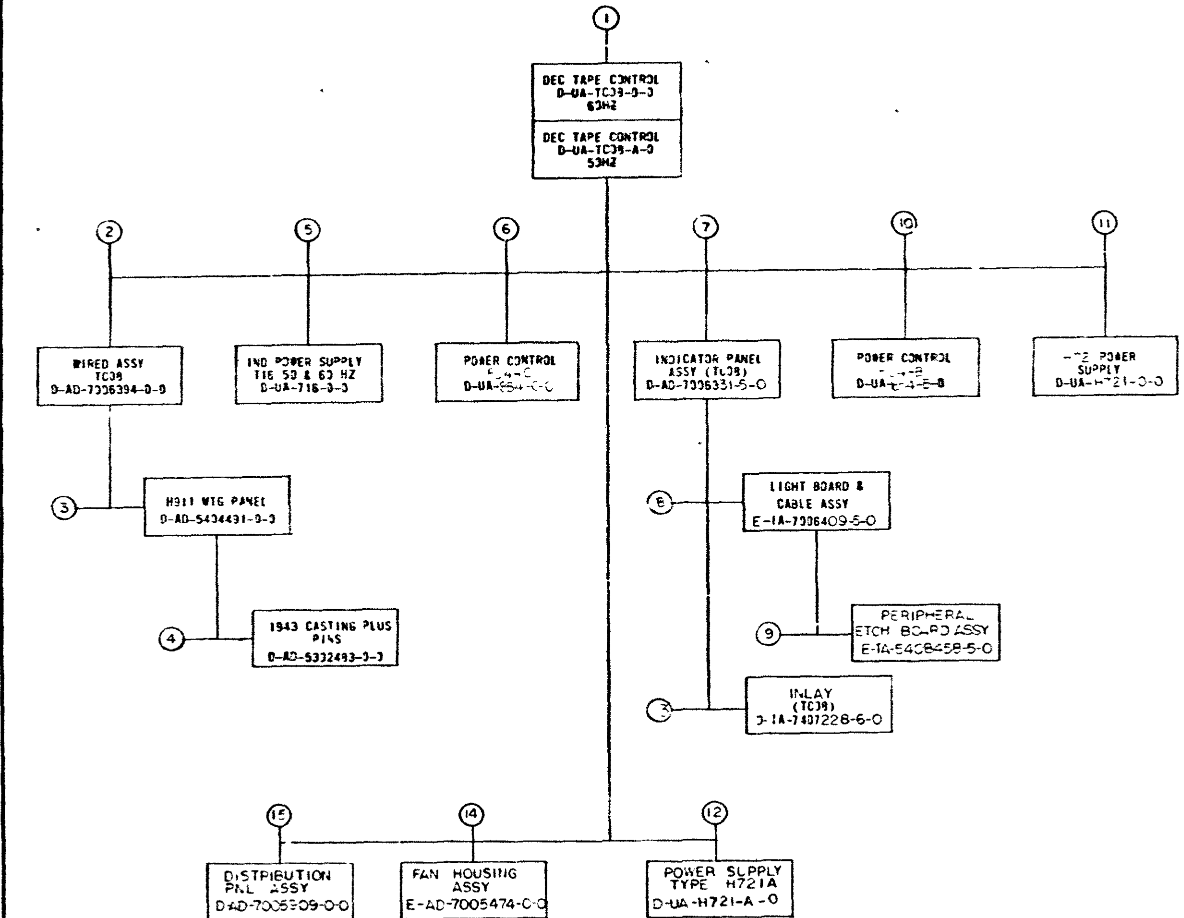
AWT REVISION STATUS

SIZE	CODE	NUMBER	REV
A	WT	7006394-0	U

DIST

DRA 123

DEC 16-13251-1097-N174



MECHANICAL

FIND NO	DESCRIPTION	PART NO	PROD	CUST	F C
1	DEC TAPE CONTROL	D-UA-TC08-0-0			
	DEC TAPE CONTROL	D-UA-TC08-A-0			
	DEC TAPE CONTROL (PL)	A-PL-TC08-0-0			
	CABLE DUAL MYLAR M903-(2) W031	D-UA-BC08C-0-0			
2	WIRED ASSY TC08	D-AD-7006394-0-0			
	WIRED ASSY TC08 (PL)	A-PL-7006394-0-0			
	LOGIC FRAME DECALS	A-DC-7406371-0-0			
3	H911 MTG PANEL	D-AD-5404491-0-0			
	H911 MTG PANEL (PL)	A-PL-5404491-0-0			
4.	1943 CASTING PLUS PINS	D-AD-5302493-0-0			
	1943 CASTING PLUS PINS (PL)	A-PL-5302493-0-0			
	1943 FRAME CASTING	E-MD-1202895-0-0			
5	IND POWER SUPPLY 716	D-UA-716-0-0			
	IND POWER SUPPLY 716 (PL)	A-PL-716-0-0			
6	POWER CONTROL 654-C	D-UA-654-C-0			
	POWER CONTROL 654-C (PL)	A-PL-654-C-0			
7	INDICATOR PANEL ASSY (TC08)	D-AD-7006331-5-0			
	INDICATOR PANEL ASSY (TC08) (PL)	C-PL-7006331-5-0			
8	LIGHT BOARD & CABLE ASSY	E-IA-7006409 5-0			
9	PERIPHERAL ETCH BOARD ASSY	E-IA-5408458-5-0			
10	POWER CONTROL 654-B	D-UA-654-B-0			
	POWER CONTROL 654-B (PL)	A-PL-654-B-0			
11	H721 POWER SUPPLY	D-UA-H721-0-0			
	H721 POWER SUPPLY (PL)	A-PL-H721-0-0			
12	POWER SUPPLY TYPE H721A	D-UA-H721-A-0			
	POWER SUPPLY TYPE H721A (PL)	A-PL-H721-A-0			
13	INDICATOR PANEL (TC08)	E-IA-7407228 6 0			
	IND PANEL SILK SCREEN	C-SS-7407228-0 6			
	IND PANEL SILK SCREEN	C-SS-7407235-0-2			
14	FAN HOUSING ASSY	[illegible]			
	FAN HOUSING ASSY (PL)	[illegible]			
15	DISTRIBUTION PANEL ASSY	D-AD-7005909-0-0			
	DIST PANEL ASSY (PL)	A-PL-7005909-0-0			

ELECTRICAL

FIND NO	DESCRIPTION	PART NO	PROD	CUST	F C
1	DEC TAPE CONT	A-ML-TC08-0			
	DEC TAPE CONT	A-ML-TC08-A			
	I O CONTROL	D-BS-TC08-0-1			
	STATUS A'	D-BS-TC08-0-2			
	TP GEN	D-BS-TC08-0-3			
	FLAGS	D-BS-TC08-0-4			
	CONTROL	D-BS-TC08-0-5			
	ERRORS	D-BS-TC08-0-6			
	MARK TRACK DECODE	D-BS-TC08-0-7			
	DTB WB	D-BS-TC08-0-8			
	LPB	D-BS-TC08-0-9			
	I O BIS INVTS IND DVRS	D-BS-TC08-0-10			
	I O BUS DRIVE RECEIVE	D-BS-TC08-0-11			
	I O BUS CONNECTORS	D-BS-TC08-0-12			
	MODULE UTILIZATION LIST	K-MU-TC08-0-13			
	MODULE UTILIZATION LIST	K-PL-TC08-0 13			
	WIRE LIST TC08	K-WL-TC08-0-14			
	CHECKOUT PROCEDURE	[illegible] TC08 0 16			
	TIMING DIAGRAM	D TD TC08 0 17			
	POWER WIRING	[illegible] TC08-0-18			
	[illegible]	[illegible] TC08-0 19			
	[illegible]	[illegible]			
	[illegible] LAYOUT	[illegible]			
	ACCEPTANCE PROCEDURE	[illegible]			
	ENGINEERING SPECS	[illegible]			
	DECTAPE CAB LAYOUT	[illegible]			
	ACCESSORY LIST	[illegible]			
2	WIRE [illegible]	[illegible]			
	WIRE [illegible] (PL)	[illegible]			

QTY	DESCRIPTION	PART NO	ITEM NO

PARTS LIST

FIRST USED ON OPTION/MODEL: TC08

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL: —

FINISH: —

DRN / CHK'D / ENG / PROJ ENG / PROD — DATE

NEXT HIGHER ASSY: A-ML-TC08-0

SCALE — SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: DECTAPE CONTROL

SIZE: D CODE: DI NUMBER: TC08-0-15 REV: [illegible]

REVISIONS (CHANGE NO / REV / CHK): TC08-00002 A D LAZUKA; TC08-00003 B D LAZUKA; TC08 00014 D NARHI; TC08-00017 E NARHI; TC08 00019 F NARHI; TC08-00024 NARHI

DEC FORM NO DRD 100

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

DATE 9-29-69

TITLE TC08 & TC08N CHECKOUT PROCEDURES

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
A	———	TC08-00005 TC08-00018	LAZUKA	3-27-70	[illegible]	4-14-70
B			NARHI	12-14-70	[illegible]	[illegible]

A. EQUIPMENT REQUIREMENTS

1. TC08 Back Panel
2. TC08 Indicator System
3. TC08 or TC08N Module Kit
4. TC08 and TC08N Logic Prints
5. Set of TC01 Maindec's
6. 783 Power Supply or Equivalent
7. 716 Indicator Supply
8. Minimum of 1 TU55 or TU56 Transport
9. Dual Trace Scope

B. PRELIMINARY CHECKS

1. With all other modules removed, plug in the G821 power regulator and connect the power OK indicator across pins BØ1M2 and BØ1M2.
2. Inspect panel for discrepancies such as power bus shorts, broken module blocks, broken wires, bent or pushed in pins, and correct installation of the WRTM - normal switch.
3. By using a Mate-N-Lok connector, connect power to the regulator and apply power to the empty panel and check power bus for correct voltage.
4. Connect the 716 power supply to the indicator system and install cables. Power up the empty logic panel and the indicator system. All indicators except those that are deliberately tied to ground should be ON.

C. PRELIMINARY CHECKS AND SETUP

1. Plug in all modules and cables.
2. Test power clear for correct operation.

ENG	APPD	SIZE	CODE	NUMBER	REV
D. Lazuka		A	SP	TC08-0-16	B

DEC FORM NO DRA 107A

SHEET 1 OF 4

CONTINUATION SHEET

TITLE TC08 & TC08N CHECKOUT PROCEDURE

7. By removing the G888 in slot A18 and adding a temporary jumper between D14K2 and D14U1, and also changing address 13 of the previous program to ALL ZERO'S!! The program may be used to fine the SP DY which should now be set to the value noted on the prints. After the SP DY is set, remove the jumper, insert the G888 back into slot A18, and replace the original contents of address 13 (ØØØ4). NOTE THE LOWER SWITCH ON REV B M307 SHOULD BE SET TO POSITION 4
8. By adding the following instructions to the previous program, a tape rocking program can be produced. Start program at location 16.

```
ØØ16   76ØØ    CLA
ØØ17   1Ø23    TAD
ØØ2Ø   6766     DTLA
ØØ21   5ØØØ    JMP START
ØØ22   74Ø2     HLT I/O SKIP
ØØ23   Ø2ØØ
```

9. By using the following program the write timing and mark track clock may be enabled:

```
Start  6ØØØ    1ØØ4    TAD
       ØØØ1     6766    DTLA
       ØØØ2     6764    DTXA
       ØØØ3     5ØØ2    JMP .-1
       ØØØ4     Ø26Ø
```

Place unit 8 on-line and write enabled. Place WRTM normal switch in the WRTM position. Start the program. The clock should be set to the valve noted on the prints.

D. BASIC TESTING

1. The TC01 basic exerciser (Maindec-08-D3RB-D) provides a comprehensive test procedure. The tests also follow in a logical sequence of testing. If this sequence is followed, checkout time and problems will be held to a minimum.
2. After all tests of the basic exerciser have been run correctly, the DECtape formatter (DEC-08-EUFA-D) should be run.
3. DECtrex 1 (Maindec-08-D3RA-D) should be made to run error free.
4. The DECtape Library System (DEC-08-SUA1-LA) should now be tried. And made to run correctly.

Dave Lazuka	SIZE	CODE	NUMBER	REV
	A	SP	TC08-0-16	B

DEC FORM NO DRA 108A

SHEET 3 OF 4

CONTINUATION SHEET

TITLE TC08 & TC08N CHECKOUT PROCEDURE

3. Key in the following instructions

LOCATION	CODE	MNEUMONIC
ØØØØ	76Ø4	LAS
ØØØ1	ØØ1Ø	AND (ØØ17)
ØØØ2	1Ø11	TAD (676Ø)
ØØØ3	3ØØ5	DCA
ØØØ4	1Ø12	TAD (Ø4ØØ)
ØØØ5	7402	HLT
ØØØ6	5ØØØ	JMP START
ØØØ7	7402	HLT I/O SKIP
ØØ1Ø	ØØ17	
ØØ11	676Ø	
ØØ12	Ø4ØØ	

This program will execute IOT instructions to device 76 or 77 IOPS 1, 2, or 4 under control of AC switch bits 8-11.

4. The IOT decoding should not be tested. By watching the outputs of the IOT decoders with a scope and placing the IOP in the switch register.
5. Place ØØØ4 in the switch and set the XSA DY to the value noted on the prints.
6. Key in the following program:

```
Start  ØØØØ    76Ø4    LAS
       ØØØ1     7Ø4Ø    CMA
       ØØØ2     3Ø15    DCA
       ØØØ3     2Ø14    ISZ
       ØØØ4     5ØØ3    JMP .-1
       ØØØ5     2Ø15    ISZ
       ØØØ6     5ØØ3    JMP .-3
       ØØØ7     1Ø13    TAD
       ØØ1Ø     6764    DTXA
       ØØ11     5ØØØ    JMP (START)
       ØØ12     7402    HLT I/O SKIP
       ØØ13     Ø4ØØ
       ØØ14     ØØØØ
       ØØ15     ØØØØ
```

This program causes the direction bit to X ORed at a rate determined by the contents of the switch register. This program generates U M and also tires the U&M DY which should now be set to the value noted on the prints. NOTE THE UPPER SWITCH ON REV B M307 SHOULD BE SET TO POSITION 1

D. Lazuka	SIZE	CODE	NUMBER	REV
	A	SP	TC08-0-16	B

DEC FORM NO DRA 108A

SHEET 2 OF 4

CONTINUATION SHEET

TITLE TC08 & TC08N CHECKOUT PROCEDURE

E. ELEVATED TEMPERATURE TESTING

1. The control must run DECtrex 1 for ONE hour error free at 55° centigrade.

F. LIFE TESTING

1. With all of the transports being shipped with the system, DECtrex 1 should be run for a minimum of ONE hour per transport.

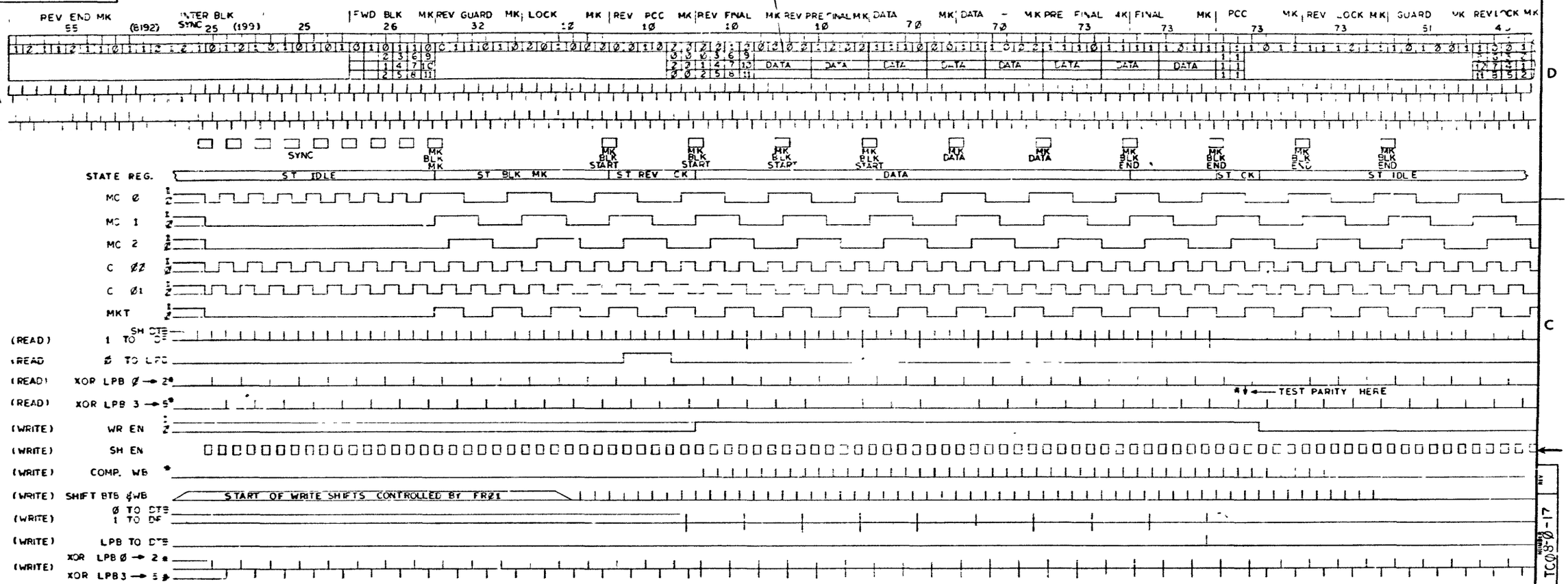
G. CLEANUP AND ADDITIONAL TESTS

1. Checkout of the control is now complete.
2. Most DECtape systems are shipped in a cabinet and the system must be run after its installation in the cabinet before acceptance.

Dave Lazuka	SIZE	CODE	NUMBER	REV
	A	SP	TC08-0-16	B

DEC FORM NO DRA 108A

SHEET 4 OF 4



NOTE: * SIGNAL DOES NOT EXIST AS SUCH BUT IS A GRAPHIC REPRESENTATION OF IT TIME AND FUNCTION.

REVISIONS | REV | CHANGE NO | CHK

QTY	DESCRIPTION	PART NO	ITEM NO

PARTS LIST

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINISH SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

		DATE
DRN		7/16/67
CHK'D		
ENG		
PROJ ENG		
PROD		

FIRST USED ON

SCALE

SHEET OF

digital EQUIPMENT CORPORATION

TITLE: TCØ8 TIMING

SIZE	CODE	NUMBER	REV
D	TC	TCØ8-Ø-17	

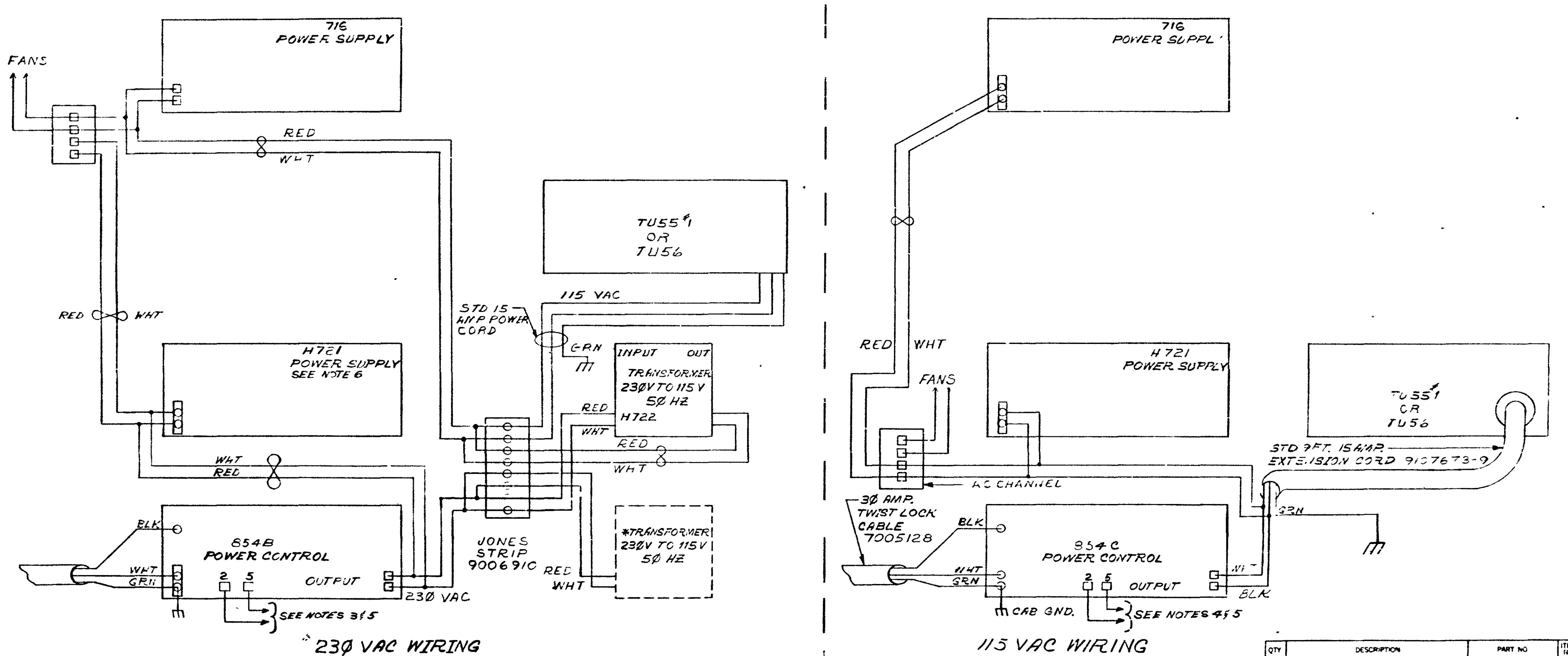
DIST

DEC-Ø8RM-INO DND 302A

D IC TC08-0-18

NOTES:

1. ALL WIRE TO BE #14 AWG STRD TEF INS.
2. * (ASTERISK) USED WHEN MORE THAN 2 TU55'S INSTALLED.
3. 230 VAC UNDER COMPUTER CONTROL
4. 115 VAC UNDER COMPUTER CONTROL
5. WIRE POWER CONTROL FOR REMOTE POWER TURN ON.
6. REWIRE JUMPERS IN H721 POWER SUPPLY FOR 230 VAC.



QTY	DESCRIPTION	PART NO	ITEM NO

PARTS LIST

REV	CHANGE NO	CHK.
A	TC08-0009	FV
B	TC08-00014	
C	TC08-00017	NARHI
D	TC08-00019 8-31-71	L NARHI

FIRST USED ON OPTION/MODEL: TC08

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES DECIMALS ±.005 FRACTIONS ±1/64 ANGLES ±0°30' FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL —//—

FINISH —//—

NEXT HIGHER ASSY

SCALE —//—   SHEET 1 OF 2

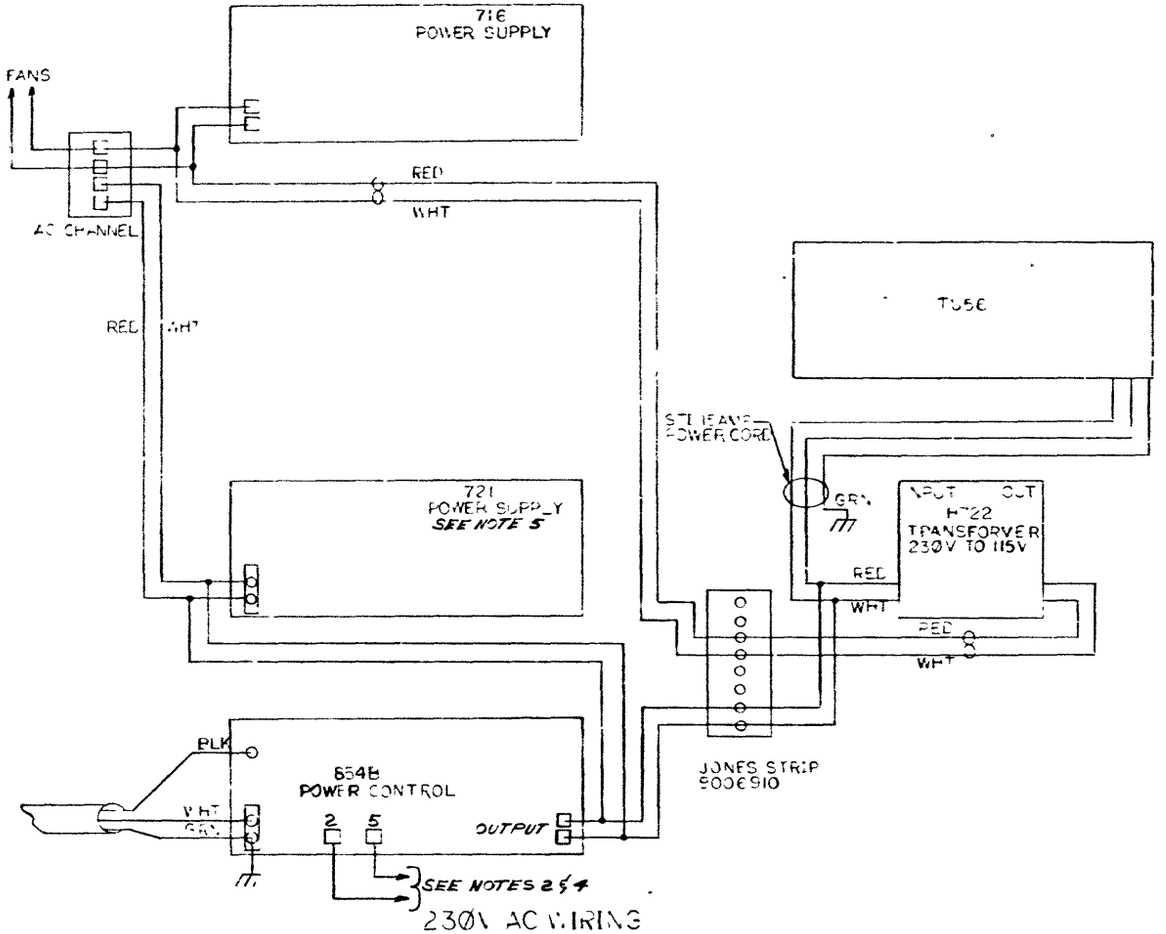
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: TC08 SYSTEM AC. POWER WIRING (TU55 AND TU56)

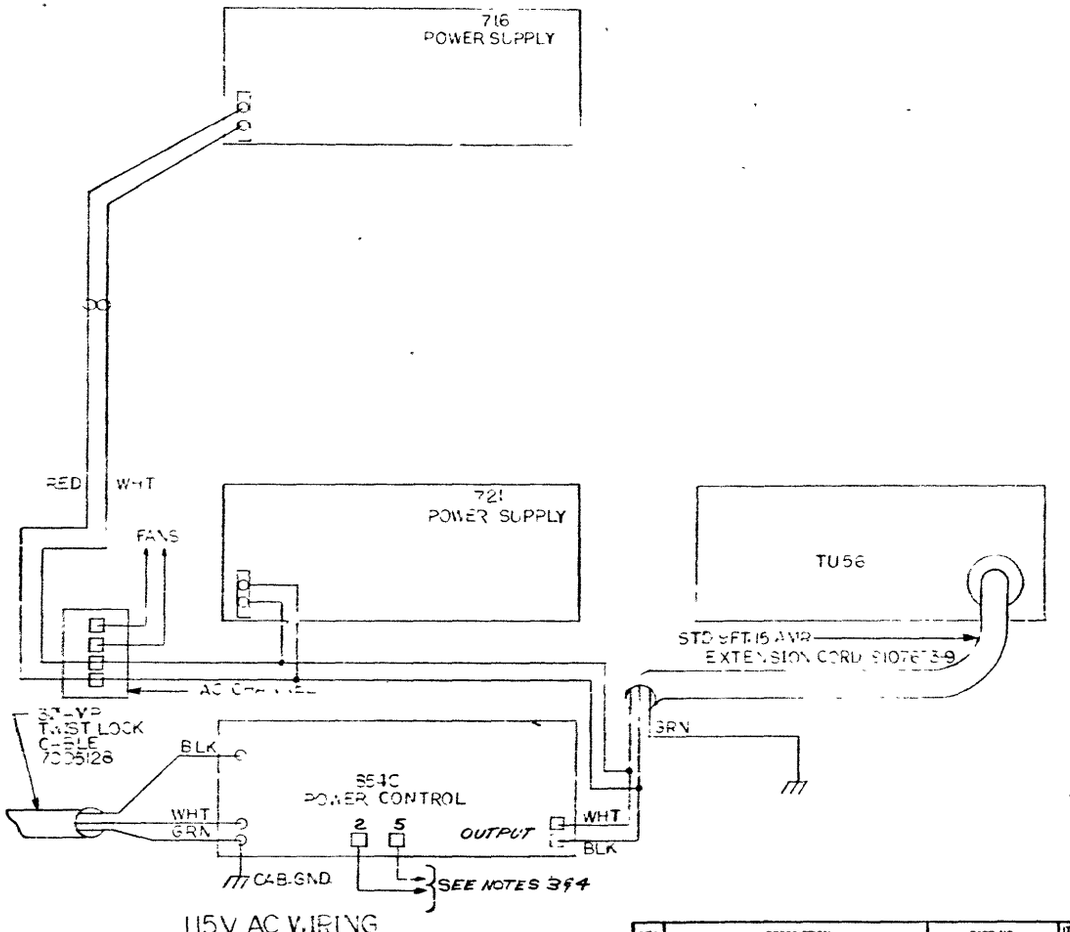
SIZE D CODE IC NUMBER TC08-0-18 REV D

DEC FORM NO DPD 100

NOTES
1. ALL WIRE TO BE 14 AWG STRANDED TEFLON
2. 230 VAC UNDER COMPUTER CONTROL
3. 115 VAC UNDER COMPUTER CONTROL
4. WIRE POWER CONTROL FOR REMOTE POWER TURN ON.
5. REWIRE JUMPERS ON 721 POWER SUPPLY FOR 230 VAC.



230V AC WIRING



115V AC WIRING

QTY	DESCRIPTION	PART NO.	ITEM NO

PARTS LIST

FIRST USED ON OPTION/MODEL: TC38

DO NOT SCALE DRAWING
UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

DRWN — DATE
CHK'D — DATE
ENG — DATE
PROJ ENG — DATE
PROD — DATE
NEXT HIGHER ASSY

SCALE
SHEET 2 OF 2

digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

TITLE: TC38 SYSTEM AC POWER WIRING (TU56 ONLY)

SIZE D | CODE | NUMBER TC38-0-16 | REV D

DIST

REVISIONS: REV | CHANGE NO | CHK

DEC FORM NO DRD 300

NOTES
1. ALL WIRES TO BE #14 AWG STRD TEF INS.
2. +10 USED ONLY FOR TU55'S

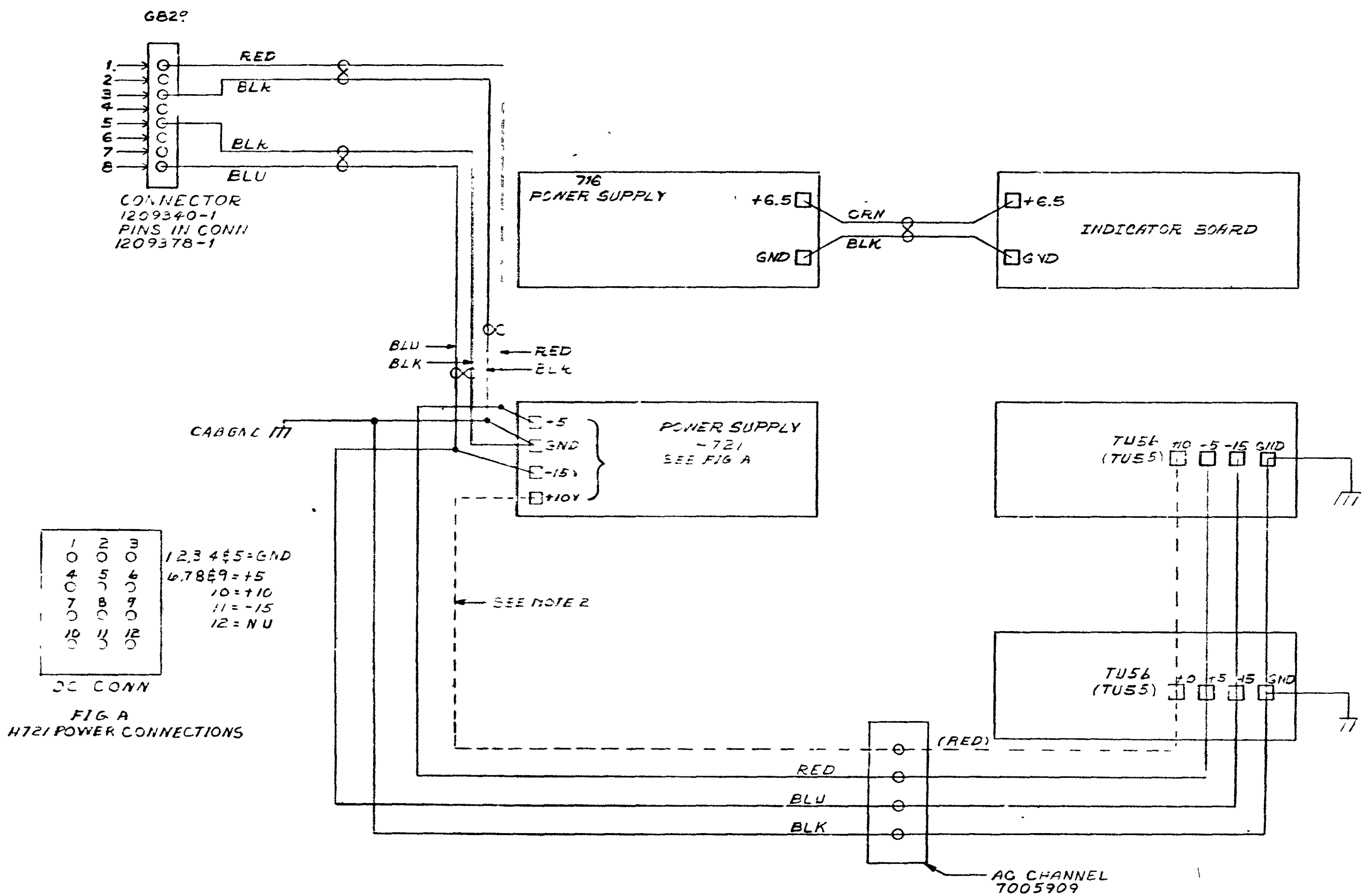


FIG A
H721 POWER CONNECTIONS

FIRST USED ON OPTION/MODEL: TC08

DO NOT SCALE DRAWING
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES: DECIMALS ±.005, FRACTIONS ±1/64, ANGLES ±0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL
FINISH

NEXT HIGHER ASSY: D-UA-TC08-0-0

digital EQUIPMENT CORPORATION

TITLE: TC08 SYSTEM D.C. POWER WIRING (TU55 OR TU56)

SIZE D | CODE IC | NUMBER TC08-0-19 | REV B

SHEET 1 OF 1

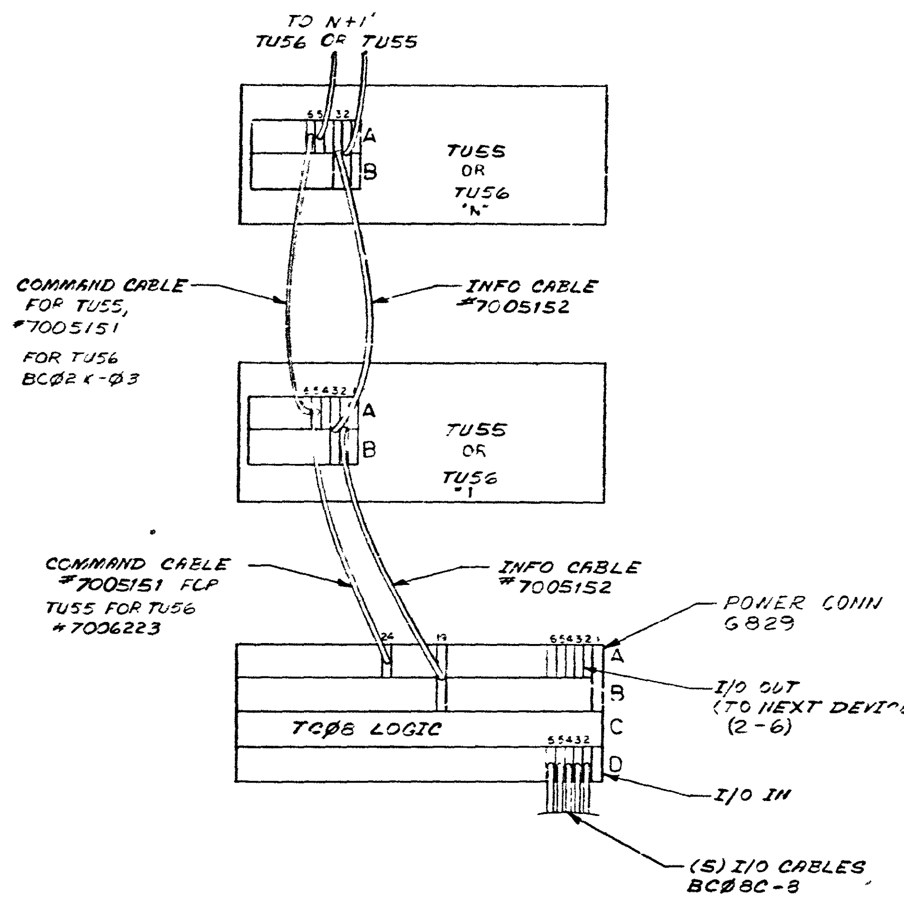
NOTE:
1. WHEN INTERMIXING TU55'S WITH TU56'S, TU56'S MUST ALWAYS BE FIRST AFTER THE TC08 WHEN CABLING UP THE SYSTEM, EG TC08 → TU56 → TU55 NOT TC08 → TU55 → TU56

CONNECTION TABLE FOR
TU55/TU56 TO TU55/TU56

CABLE TYPE	FROM		TO	
	TU55	TU56	TU55	TU56
7005152	AB02 AB03	AB10 OR AB11	AB02 OR AB03	AB10 OR AB11
7005151	A05 OR A06	A06 OR A07	A05 OR A06	A06 OR A07
BC02X 03	NOT USED	A06 OR A07	NOT USED	A06 OR A07

CONNECTION TABLE FOR
TU55/TU56 TO TC08

CABLE TYPE	TU55 LOCATION	TU56 LOCATION	TC08 LOCATION
7005152	AB02 OR AB03	AB12 OR AB11	AB19
7005151	A05 OR A06	A06 OR A07	A24
7006223	NOT USED	A06 OR A07	A24



QTY	DESCRIPTION	PART NO	ITEM NO

PARTS LIST

FIRST USED ON OPTION/MODEL: TC08

DO NOT SCALE DRAWING
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0 30
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS
MATERIAL
FINISH

NEXT HIGHER ASSY: A-ML-TC08-0-0

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: TC08 SYSTEM CABLE CONFIGURATION

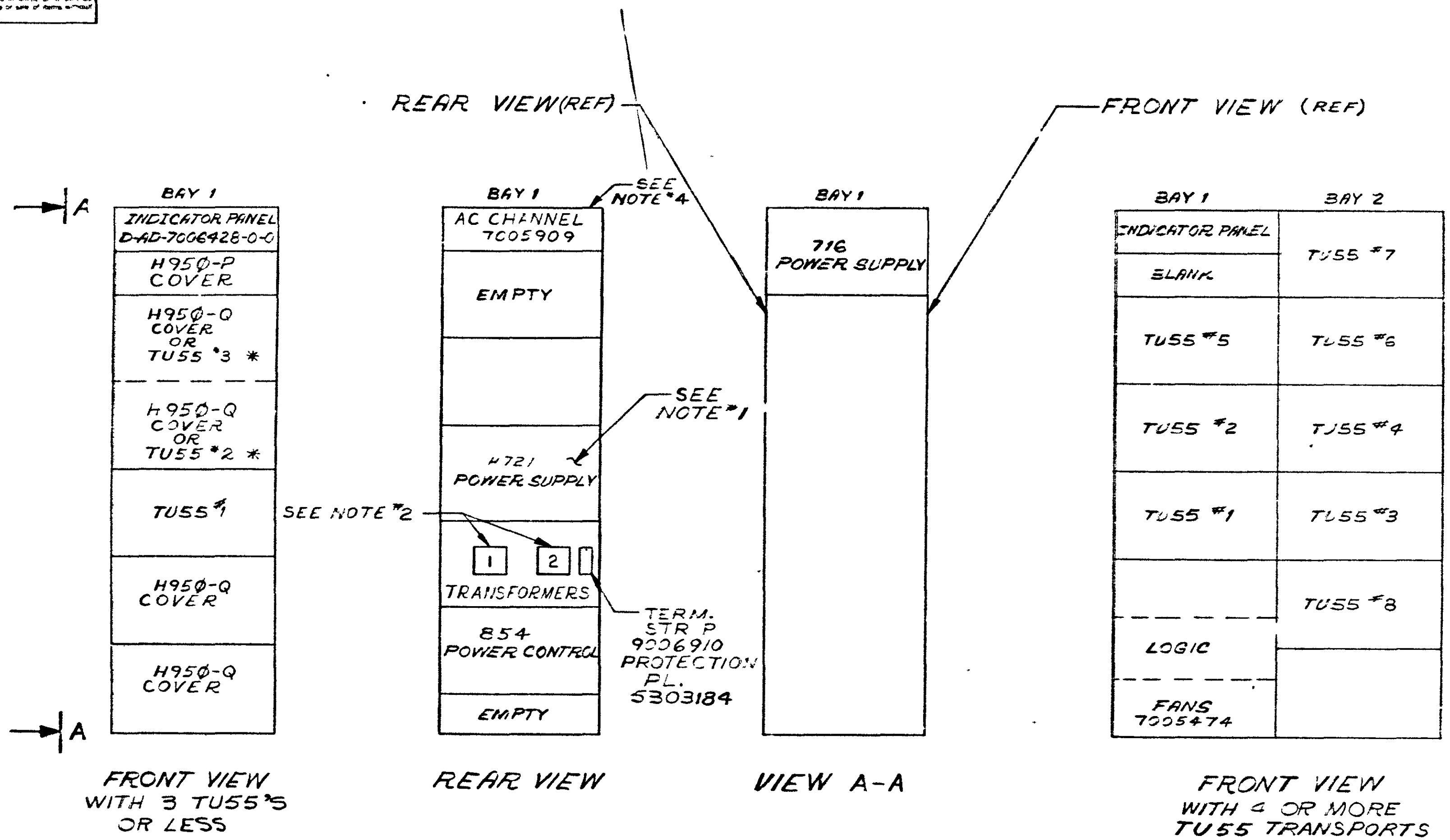
SIZE D CODE IC NUMBER TC08-0-20

SCALE
SHEET 1 OF

REVISIONS: REV A, CHANGE NO TC08-00015

DEC FORM NO

D IC TC08-0-20



NOTES:

1. H72[illegible] TRANSPORTS [illegible]
2. TRANSFORMER #2 AND JONES STRIP USED ONLY IN 50 HZ CABINET. TRANSFORMER #2 USED ONLY WHEN THERE ARE MORE THAN TWO (2) TU55'S.
3. FOR UP TO THREE (3) TU55'S USE BAY 1. FOR FOUR (4) OR MORE TRANSPORTS USE BAYS 1 & 2.
   * INSTALL COVERS WHEN TU55 #2 OR TU55 #3 NOT INSTALLED.
4. AC CHANNEL MOUNTED ON CABINET CHANNEL AND NOT ON REAR DOOR.

REV	CHANGE NO	CHK	
A	TC08-00014	NARHI	
B	TC08-00017	NARHI	2-19-71
C	TC08-00019	NARHI	5-21-71

FIRST USED ON OPTION/MODEL: TC08

DO NOT SCALE DRAWING. UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES: DECIMALS ± .005, FRACTIONS ± 1/64, ANGLES ± 0°30'. FINAL SURFACE QUALITY. REMOVE BURRS AND BREAK SHARP CORNERS.

MATERIAL: —

FINISH: —

NEXT HIGHER ASSY: D-UA-TC08-Z-[illegible]

digital EQUIPMENT CORPORATION

TITLE: TC08 SYSTEM CABINET LAYOUT

SIZE: D | CODE: A | NUMBER: TC08-0-21 | REV: C

D-AH-TC08-0-21

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 10/2/70

TITLE TCØ8 Acceptance Procedure

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

ENG	APPD	SIZE	CODE	NUMBER	REV
Larry Narhi		A	52	TCØ8-0-2	

DEC FORM NO DRA 107

TITLE TCØ8 Acceptance Procedure

Purpose: To define the procedure to accept a TCØ8, DECtape controller for shipment.

Test Hardware:

1) A PDP-8 family computer
2) One or more TU55 or TU56 tape transports
3) TCØ8 indicator panel
4) 716 indicator supply
5) 783 or equivalent supply
6) A TCØ8 or TCØ8-F depending on the computer output bus polarity

Test Software:

1) TCØ1 Basic Exerciser
2) TCØ1 Random Exerciser

Procedure:

1) Make sure all ECO's have been installed
2) Perform QC inspection
3) Make the Basic Exerciser run on each transport
4) Run the Random Exerciser for a minimum of one hour for each drive that is to be shipped with the system. No errors are acceptable.
5) Run DECtape formatter program on each drive.
6) If the system has extra memory, run the DECtape Extended Memory Exerciser for 1/2 hour per drive transport.
7) If the system has any other Data Break devices, run the DMØ1 Exerciser for a minimum of 1/2 hour.
8) Any standard DECtape system software may be run in acceptance at the operators discretion.

Supporting Software:

1) All DECtape MAINDECS
2) Complete set of DECtape system software including Library system tapes.
3) TCØ8 Print set of the latest revision.

SIZE	CODE	NUMBER	REV
A	52	TCØ8-0-2	

DEC FORM NO DRA 109E

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION DATE 10/1/70

TITLE TC08 Engineering S cification

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

Table of Contents

ENG	APPD	SIZE	CODE	NUMBER	REV
L. Narhi		A		TC08-0-0	

DEC FORM NO. DRA 107

ENGINEERING SPECIFICATION CONTINUATION SHEET

TITLE TC08 Specification

1.1 General Description

The DECtape system is a computer peripheral which stores digital data on 3/4 inch magnetic tape in a three track parallel/serial format, with which the data can be accessed in blocks which are read or written in both directions.

1.1.1 A Computer Peripheral

DECtape is a peripheral for the "8" family of Computers. Each DECtape system consists of a controller and from one to eight tape drives. The controller connects to the computer's I/O bus and communicates to the processor for control and status information; and directly to memory for data information. Each drive connects to the controller through a parallel bus through which both control and data information pass.

There are two controller models and two models of tape drives. Table 1-1 lists these models, and the computer systems on which they are used. Note that the TC08 and TC08-N are functionally identical. Any significant differences will be indicated in the text.

Table 1-1 DECtape Model Numbers

Controller Model	Tape Drive Model	Computer System
TC08	TU55, TU56	PDP8/L, PDP-8/E
TC08-N	TU55, TU56	PDP8/1, PDP-8

SIZE	CODE	NUMBER	REV
A		TC08-0-0	

DEC FORM NO 16-1022 DRA 108

ENGINEERING SPECIFICATION CONTINUATION SHEET

TITLE TC08 Specification

SIZE	CODE	NUMBER	REV
A		TC08-0-0	

DEC FORM NO 16-1022 DRA 108

ENGINEERING SPECIFICATION CONTINUATION SHEET

TITLE TC08 Specification

1.1.2 Stores Digital Data on 3/4 Inch Magnetic Tape

Each transport contains motors, tape heads, and the logic necessary for selection, motion control and data transfer. Each drive can handle 260 foot reels of 3/4 inch 1 mil magnetic tape. Bits are recorded at a density of 350 ± 35 bits per track inch. The tape moves at a speed of 93 ± 12 inches per second, and can store up to 190,000 12-bit words. The TU55 has one drive, and the TU56 has two drives.

1.1.3 Stores Data In A Three Track Serial/Parallel Format

The data in the DECtape system is stored in a parallel format, in that each 12-bit data word is divided into 4 3-bit bytes, and stored in parallel across three data tracks. The system stores the complete 12-bit word serially along the tape in four of these bytes.

1.1.4 Data Can Be Accessed In Blocks

DECtape stores it's data words in blocks or groups. Each block can be randomly accessed in that it is identified by a block number or address, and the controller under the direction of the computer can select at random any block to write or read a group of words.

SIZE	CODE	NUMBER	REV
A		TC08-0-0	

DEC FORM NO 16-1022 DRA 108

The length, or number of words in each block is pre-determined when the tape itself is formatted. Formatting involves writing a timing track and a mark track on two (non-data) tracks of the tape, and numbering the data blocks. During formatting, the programmer can select the length of the blocks. Once set, the length cannot be changed without destroying data on the tape.

1.1.5 Data Can Be Accessed In Both Directions

Each block can be identified by the computer no matter which way the tape is moving. Further, data can be read or written in either direction. This feature allows the programmer relatively fast search time since the tape does not have to be re-wound before a block can be searched out, and the programmer can begin to write no matter which end of the block appears first. It is important, however, that the programmer read and write the same data in the same direction, or else be prepared to unscramble it in the computer.

1.2 Operational Description of DECtape

Information flow within the DECtape system is determined by the recording format on the tape surface, and the internal architecture of the controller.

The two tracks next to the timing tracks are called mark tracks. These record the instructions which tell the TC08 controller where the tape is and what type of data is stored in the associated information tracks. The information or data tracks are placed in the middle of the tape, where the effect of skew is at a minimum. As are the timing and mark tracks, the data tracks are paired up.

The high reliability of the recording/reading system is because of the way in which the 10 tracks are divided into five pairs of counterparts. That is, corresponding heads for each track are wired in series, and record and write the same information. During reading, the analog sum of the two heads is used to detect the correct value of the bit. Therefore, a bit cannot be misread until the noise on the tape is sufficient to change the polarity of the sum of the signals being read. During writing, corresponding heads record the same information.

In summary, the five pairs of tracks consist of - the timing tracks used to strobe the other tracks, the mark tracks which store instructions, and three data tracks. An 12 bit PDP-8 word, then, used 4 lines of 3 data bits each.

1.2.1 The Tape Surface Recording Format

Two important DECtape features - individually addressable blocks and bidirectional reading and writing, are the result of the tape surface format. This stores not only data, but also instructions telling DECtape what to do with the data.

1.2.1.1 DECtape Heads and Tape Tracks

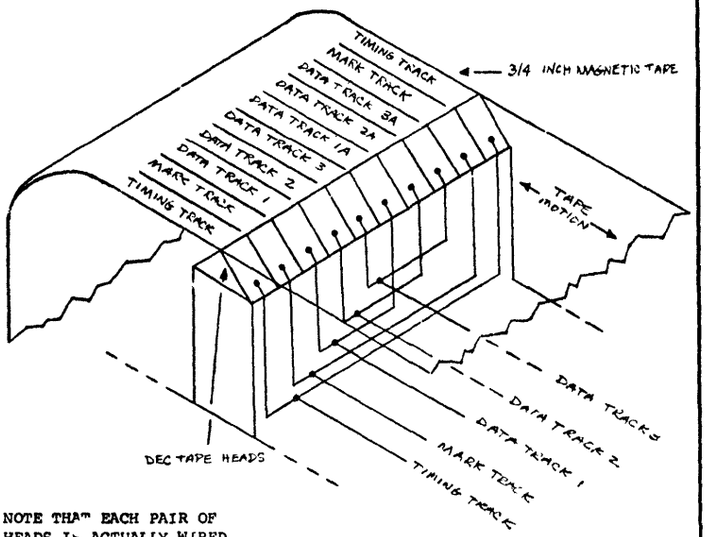
Both the data and the instructions are stored in, or read from, the magnetic tape through read/write heads which magnetize the tape in one of two directions to represent a "0" or a "1", and read the same information back. There are ten read/write heads distributed along the width of the tape, each head covering a narrow path called a tape track or channel. Figure 1-1 shows a tape stretched over the ten heads to indicate how the width is divided into ten tracks.

The ten tracks and heads are divided functionally into five pairs. The two outside tracks are called timing tracks. On these tracks signals are pre-recorded at a fixed frequency, and used to strobe information into or from the other tracks. The tape controller synchronizes on these pulses.

1.2.1.2 Tape Recording Format

A reel of tape must be pre-formatted before it can be used on the DECtape system. This involves logically dividing the 260 foot length into three zones - two end zones and a recording zone. The end zones are about 11 feet long and are used to wind tape around the heads and ito the take-up reel. They never contain any data. The recording zone contains the data.

The recording zone is divided into blocks. Each block will store a specific number od data words and several control words, including its own address or block number. The number of words such a data block will store is determined when the tape is formatted. Normally, one reel is formatted with 1474 blocks, each with 129 12-bit words. However, the total length of the tape is equivalent to 884,736 lines which can be divided into any number of blocks up to 4,096. Complete instructions on how to format a tape are available in the DECtape Formatter. (The number of blocks is limited by this formatter).



NOTE THAT EACH PAIR OF HEADS IS ACTUALLY WIRED IN SERIES, AND TWO WIRES ARE RUN TO A DIFFERENTIAL AMPLIFIER, FOR SIMPLICITY A SINGLE WIRE FOR EACH PAIR IS SHOWN HERE.

Figure 1-1 DECtape Heads and Tape Tracks

Each data block on the tape has the following characteristics: (fig. 1-2)

1. It is numbered and its number is contained in the data tracks of the block number area at either end of the block. This is to say that the computer can identify a block from its number by approaching the block from either direction. The block can then be read or written into, in either direction.

2. A longitudinal parity checksum is automatically calculated by the controller and deposited into the parity check area of the block. There is a parity check at either end of the block so that the checksum can then be deposited no matter in which direction data has been read or written. When the data is read back, this checksum is recalculated and compared with the original. Any discrepancy is reported to the computer.

3. Spaces are established to delineate blocks, and within each block, between the block number and the data area, so as to give the computer time to react to the number (i.e. set up the data parameters). The controller

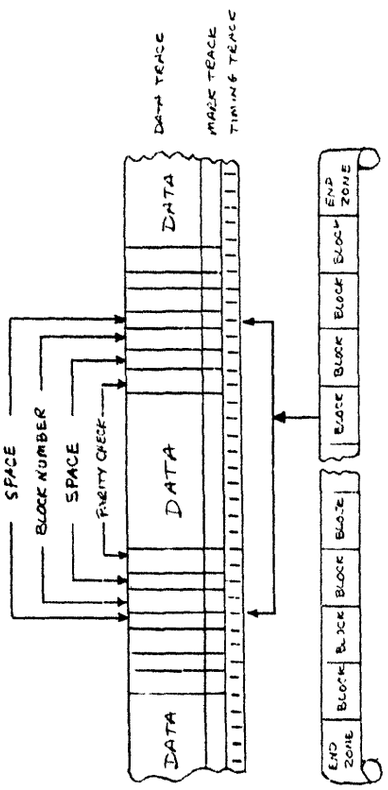


Figure 1-2 DECtape Recording Format
Showing The Three Zones and a Data Block
Expanded to Illustrate Data and Control Areas

identifies the different areas of a block, as well as the different zones on the tape, from special codes pre-recorded on the mark track. These codes are not seen by the computer, and are of no interest to the programmer except for the function that they perform. A more detailed breakdown of the mark track is given in Chapter 2.

1.2.2 The DECtape Architecture

The organization of the hardware in the controller is studied in three parts - the control, the data transfer section, and the formatter. These are shown in figures 1-3, 1-4, and 1-5.

1.2.2.1 The Control Section

The control section is that logic which comes under the supervision of the program through IOT instructions. (Table 1-2 describes the IOT instructions) It consists of 7 registers and their associated logic. (Table 1-3 summarizes the decoding for each register.) Descriptions of the registers are as follows.

1. The Unit Select Register. A 3-bit register which feeds a binary to octal decoder, which in turn drives eight select lines to the control cable. Each transport can be dialed into a

particular selection address by means of a switch on the front of the transport. If the number decoded from the Unit Select Register corresponds to the number selected on the switch then that transport will accept motion commands from the controller. If more than one transport is on the same number, then an error flag is posted as soon as an attempt is made to initiate operation.

2. The Motion Register. A 2-bit double buffered register that commands the selected transport to stop, go and move forward or go and move in reverse. Note that each transport remembers its motion, and if it is subsequently unselected without being stopped, it will continue until it is re-selected and stopped, or until it runs out of tape.

3. The Mode Register. This selects either continuous or normal mode for each operation of the function register. The difference in response for each function to the two modes is explained in Table 1-4.

4. The Function Register. This is 3-bits long, and is decoded by a binary to octal converter to select one of a possible seven functions. An explanation of these functions is given in Table 1-4.

All of these bits 0 to 9 can be read back into the computer under the instruction Read Status A. (DTRA).

The error flags can also be read into the accumulator into AC bits which correspond to the bits shown in Figure 1-3. Further, the DECtape flag is read into accumulator bit 11. Bits 0-6 and bit 11 are known collectively as Status B. The IOT instruction which reads them is called DTRB.

In Summary, the Status A registers are set under IOT command. They determine the operation to be performed, the transport which is to perform that operation, the direction of motion, and the mode. Any errors are communicated to the computer through the interrupt logic. If an operation is successful, then that too is communicated back to the computer, which then takes further action. The actual information transfers are taken care of through the multi cycle data break facility under the direction of the data transfer logic.

5. Enable the Interrupt. A 1-bit register which, when set, allows the controller to use its PI interrupt system. When reset, it disconnects DECtape from the interrupt lines. In the disconnect state none of the error conditions or DECtape flag can cause an interrupt. In no other way, however, is status B affected.

6. The ERROR Flags are flip flops which continually examine possible error conditions during the operation of the transport. Each condition is explained in Table 1-5.

7. The DECtape flag is also a single flip flop which sets, either when an operation has been successfully completed, or when it has been aborted as the result of an error.

The unit Select, Motion, Mode, Function and Enable registers are all set from the accumulator by the XOR status A IOT. The bits of Figure 1-5 indicate the accumulator bit which sets each flip flop. The two bits not shown, bit 10 and 11, clear the error flags and the DECtape flag respectively, if they are set to a zero in the AC during an XOR instruction. The complete word from 1 to 11 is known as Status A.

Table 1 - 2

Mnemonic	Octal Code	Description
DTCA	6762	Clear status register A. The DECtape control and error flags are undisturbed (D.F and EF).
DTRA	6761	Read status register A. The content of status register A is ORed into the accumulator.
DTXA	6764	XOR status register A. The exclusive OR of the content of bits 0 through 9 of the accumulator and status A is loaded into status register A, and bits 10 and 11 of the accumulator are sampled to control clearing of the error and DECtape flags, respectively. The WC overflow flag is cleared.
DTLA	6766	Load status register A. Combines action of DTCA and DTXA to load AC0-9 into status register A. Bits 10 and 11 control clearing of error and DECtape flags, respectively.
DTLB	6774	The 3 memory field bits are loaded from AC bits 6-8. The AC is cleared and the error flags are left undisturbed.
DTRB	6772	Read Status B. The AC is cleared and the content of status B is ORed into the accumulator.
DTDF	6771	Skip on DECtape flag. The state of the DEC tape flag (DTF) is sampled. If it is set to a 1, the content of the PC is incremented by one to skip the next sequential instruction.

TABLE 1-3 Status A-bit Assignments

Register	AC Bit	Register Bit	Octal Code	Decoding
Unit Select (USR)	0-2	0-2		Unit
			000	0 or 8
			001	1
			010	2
			011	3
			100	4
			101	5
			110	6
			111	7
Motion (MR)	3	Ø	0 =	Forward (FWD)
			1 =	Reverse (REV)
	4	1	0 =	Stop motion (STOP)
			1 =	Start motion (GO)
Mode	5	Ø	0 =	Normal Mode (NM)
			1 =	Continous mode (CM)
Function (FR)	6,7,8	0,1,2		Operation
			000	Move
			001	Search
			010	Read Data
			011	Read all
			100	Write data
			101	Write all
			110	Write timing
			111	Unused (causes select error)
Enable the Interrupt (ENI)	9	Ø	1 =	Enable DECtape control flag (DTCF) to the program interrupt.
Error flag (EF)	10		0 =	Clear all error flags
			1 =	Error flags undisturbed
DECtape flag (DTF)	11		0 =	Clear DECtape flag
			1 =	DECtape flag undisturbed

Table 1 - 4

FUNCTION	OPERATION
SEARCH (Continued)	This search operation is most efficient when both modes are used in the following way: 1. The current block number is detected in normal mode. 2. The difference between it and the desired block number is computer, and the direction corrected, if necessary. 3. If the direction is reversed, read the current block again and compute the new difference, otherwise go to 4. 4. The two's complement of the difference is loaded into the word count register. 5. The function is changed to continuous mode. 6. On the next interrupt, the transport is over the desired block. The block number is in the address specified by the current address register.
READ DATA	READ DATA is used to transfer blocks of data into core memory. The standard block length is 129 12-bit words. For this and all following functions, the CA location initially must be set to (the transfer memory location - 1) Because the CA location is incremented just before each word transfer. the WC location is also incremented prior to each word transfer, so must be set to the 2s complement of the number of words to be

Table 1 - 4 The DECtape Functions

FUNCTION	OPERATION
MOVE	The move function is used to re-wind tape. Code 000 of bits 6, 7, and 8 initiates tape motion in the selected direction, provided GO is also on. The makr track is read, but only the end of tape instruction is decoded. End of tape posts an error flag and causes an interrupt to the computer. If the tape control is unselected but not stopped, it continues to run; however, the end of tape is not detected. The state of mode is irrelevant.
SEARCH	The search function is used to search for blocks. When a block number is detected by the mark track, the three-cycle data break control transfers the number into the address specified by the current address register. The current address register is not incremented so that successive block numbers always go to the same address. The word count register is incremented, however, as each block number is passed. If the mode is set to normal, the DECtape flag is set each time a block number is detected. This causes an interrupt and the program can identify the block number. In continuous mode, no interrupt occurs until the word count register overflows.

Table 1-4

FUNCTION	OPERATION
READ DATA (continued	transferred prior to the transfer. Data may be transferred in forward or reverse. Any number of words equal to or less than a block may be transferred in NM. The DTF is raised and an interrupt occurs at the end of each block. The DTF must be cleared before the beginning of the next block (i.e. 17 msec.) to avoid an erroneous timing error. When partial blocks are transferred data transmission will end with WC overflow (i.e. the word which causes the WC overflow is the last one transferred.) However, the remainder of the block is read and parity checked before the DTI and interrupt occur. Tape motion continues until the GO bit is reset to 0 by the program. If the GO bit is not reset to a 0 or a new function specified before the end of the next block, a timing error will occur. READ DATA in NM is intended primarily for single, 129-word block transfers. If any other number of words is to be transferred, it is advantageous to use CM. However, if the programmer chooses to use NM for any other number of words, the program must check for WC overflow at each interrupt because there is no other way to determine when to stop the tape or change to another function.

Table 1 - 4

FUNCTION	OPERATION
READ DATA (continued)	When the WC overflow occurs, it is essential that the function be changed or the GO bit set to 0. Otherwise transfer begins again (the IOT to clear the DTF implicitly specifies the same function again) at the next block (or next word for the ALL functions)since WC=00008 is valid. Any number of words may be transferred in CM. However, the DTF and an interrupt occur only once after a WC overflow and an end of block. The comments concerning tape continuation apply in CM as well as NM.
READ ALL	The READ ALL function allows information to be read from unusually formatted tape; essentially reading all data tracks recorded on DECtape regardless of the mark track value. During the READ ALL function the DECtape control does not distinguish between different marks recorded on the mark track - except to check for mark track errors (MKTK). In normal mode (NM) the DTF is raised and causes an interrupt at the end of each 12-bit word transfer. Data transfer stops after WC overflow, but tape motion continues until to GO bit is set to 0 or a new function is specified (in both NM and CM). If the DTF is not cleared after each word transfer, a timing error occurs at the end of the next word (i.e. 33 microseconds later).

Table 1 - 4

FUNCTION	OPERATION
WRITE DATA (continued)	In continuous mode, the DTF is set at the end of the block in which WC overflow occurred. Therefore, if no new function is specified, the tape continues to move but the writers are disabled, and an error will occur.
WRITE ALL	All the details of the READ ALL function description apply. The WRITE ALL function is used to write an unusual format (such as block numbers on DECtape after timing and mark tracks have been recorded). The word which causes WC to overflow is the last one written in NM or CM. The tape continues to move but the writers are disabled. NOTE: Change of function must be delayed for 90 microseconds to insure recording of last word. Alternative method: Set WC to one greater than desired number of word transfers and change function within 40 microseconds after WC overflow. NOTE: The WC is in location 7750 The CA is in location 7751

Table 1-4

Function	Operation
READ ALL (Continued)	For continuous mode, the DTF is raised and causes an interrupt at WC overflow only. If this interrupt is ignored no more data transfers occur but tape motion continues to EOT.
WRITE DATA	The write enable switch on the TU55 or TU56 must be in write enable position for all WRITE functions. All the details of the READ DATA function description apply with the following exceptions. In normal mode, the DTF is set to a 1 at the end of each block. If WC overflow did not occur in the block just ended and a new function is specified, the next block will be processed provided the DTF has been cleared. If WC overflow did occur in the block just ended and no new function is specified, the tape continues to move but the writers are disabled, and an error will occur. The remainder of the block is written with zeroes. In both CM and NM when partial blocks are written, data transfer from core to DECtape stops at WC overflow. All zeroes are written in the remaining data words of the block and the parity check character is computed over the entire block and recorded.

Table 1-5 The Error Flags

FLAG	
ERROR FLAG	Five types of errors can be detected in the use of DECtape: Timing Error Parity Error Select Error End of Tape Mark Track Error For all errors the EF is raised, a bit is set in the status register and an interrupt occurs (if the enable-to-interrupt bit has been set). The DTSF instruction skips on the inclusive OR of those error bits; hence, each status bit must be checked to determine the kind of error. For all but the parity error, the selected transport is stopped and the EF is raised at the time of the error detection. No DTF occurs. For a parity error, the GO bit remains 1 (i.e., motion continues) and the EF is raised simultaneously with the DTF in NM. Only 1 interrupt occurs; hence the program must check the EF. A parity error in CM raises the EF at the end of the block in which the parity occurs causing an interrupt (if enabled). If no program action is taken, e.g. stop transport or reverse and re-read, data transfer continues and the DTF is raised and causes an interrupt at WC overflow and end of final block read.

Table 1 - 5

FLAG	
MARK TRACK ERROR BIT 1	A mark track error occurs if the DECtape control fails to recognize a legitimate mark on the mark track. The error may occur in all but the move or write timing and mark track functions. In both CM, and NM, the EF is raised, the tape transport stops and an interrupt occurs.
END OF TAPE ERROR BIT 2	An EOT error occurs when the DECtape enters either end zone with the GO bit = 1 and the forward/reverse direction bit set to continue in the same direction. In NM and CM data transfer stops at the last legitimate block, the EF is raised, the tape transport stops and an error interrupt occurs.
SELECT ERROR BIT 3	Select Error * - A select error will result under any of the following conditions: 1. Selection of none or more than 1 transport. 2. Attempt to write on DECtape transport with WRITE ENABLE/WRITE LOCK switch in the WRITE LOCK position. 3. Attempt to select unit for any function with DECtape transport REMOTE/OFF/LOCAL switch in the OFF or LOCAL (off-line) position. 4. Attempt to write timing and mark tracks with the DECtape control switch in any position other than write timing and mark

1.2.2.2 The Data Transfer Section

The data transfer section (Figure 1-4) handles the flow of information between the multi cycle data channel of the computer, and the magnetic read/write heads. There are two types of information - data, and instructions from the tape which tell the controller what to do with the data. The instructions are recorded on the mark track, which feeds the window register and subsequently the data control logic. This combination looks at the mark track codes and from them determines whether the tape heads are over end zones or recording zones; and if over recording zones, where in any particular block. Meanwhile, data from the three data heads, and timing pulses from the timing track heads are feeding the data buffer and the data control logic respectively. The timing pulses are used to strobe the mark track and data track information at the proper time. Data comes into the controller in bytes of three, therefore the data buffer is basically two 6-bit shift registers.

As the data is shifted in, the longitudinal parity buffer calculates the parity of each track. When a complete block has been read, this buffer should be all ones if no error has been detected. If it is not all ones, then a parity error flag

Table 1-5

FLAG	
SELECT ERROR (continued)	track. 5. Attempt to perform any function other than write timing and mark tracks with the DECtape control switch in the write timing and mark track position. 6. Attempt to execute unused function (Octal code 7). *No-tape or tape-run-off-reel conditions are not detectable.
PARITY ERROR	Parity Error - A parity error occurs only during the READ DATA function for a hardware computed parity check character (PCC) failure.
TIMING ERROR	Timing Error - A timing error (program malfunction) is a data miss or program failure to clear the DTF status bit. A timing error occurs also if the program switches to READ or WRITE DATA function while the DECtape is currently passing over a data area on tape.

is raised.

During a Read operation the data buffer accumulates a complete 12-bit word, and transfers it to the DECtape buffer for temporary storage. The Data Channel flag is then raised and a multi cycle data channel break initiated. During the break, this word is transferred out of the DECtape buffer into the location specified by the current address register at location 7750. The would count at location 7751 is incremented. The computer is allowed a maximum of 33 us. to complete this operation.

If the computer has not responded in time, an error flag is raised to show the timing error.

Alternately, if a write operation is required, the TC08 requests a multi cycle data channel break. The computer transfers the word to be written into the DECtape buffer, which is then transferred into the Data Buffer at the right time. From the data buffer it is shifted out and written onto the tape. Meanwhile, the TC08 requests another word from the computer as soon as the DECtape buffer is emptied into the Data Buffer, and the TC08 is ready to write the next piece of data.

At the end of a transfer, the word count overflows, and the DECtape flag is raised. Then a P1 to location Ø is initiated, as explained in Table 1-4.

1.2.2.3 The Formatter Section

Before a reel of DECtape can be used in a system, it must first be formatted. This involves writing the proper mark track codes, numbering the data blocks, and writing in the timing track. A program called the DECtape Formatter is available for doing this. The program specifies the Write Timing and Mark Track function and transfers the correct mark track code through the data channel into the DECtape buffer, as shown in figure 1-5. Only bits 0, 3, 6 and 9 are used. The controller switch must be on WRTM. These bits are loaded into the proper shift register of the Data Buffer, which then shifts them into the mark track write head and so to the tape. In normal mode the DECtape flag is raised after each word is transferred to the mark track. In continuous mode, the DECtape flag is raised when the Word Count overflows. Meanwhile, the timing track writer is recording clock pulses on the timing track.

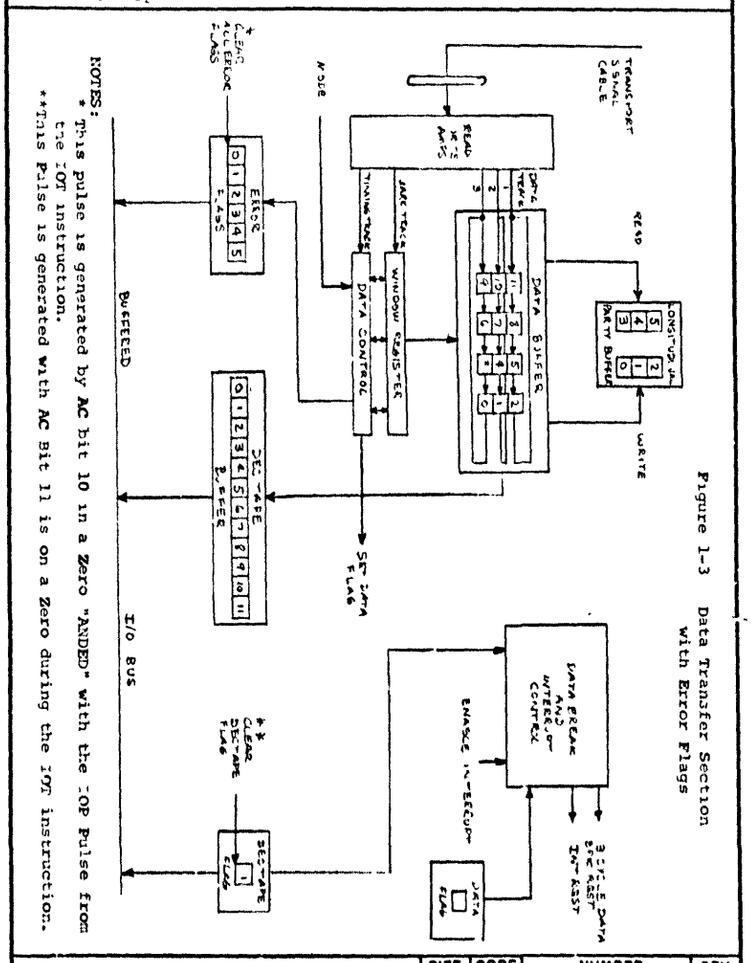


Figure 1-3 Data Transfer Section with Error Flags

The block numbers are written in WRITE ALL mode after the mark and timing tracks have been written.

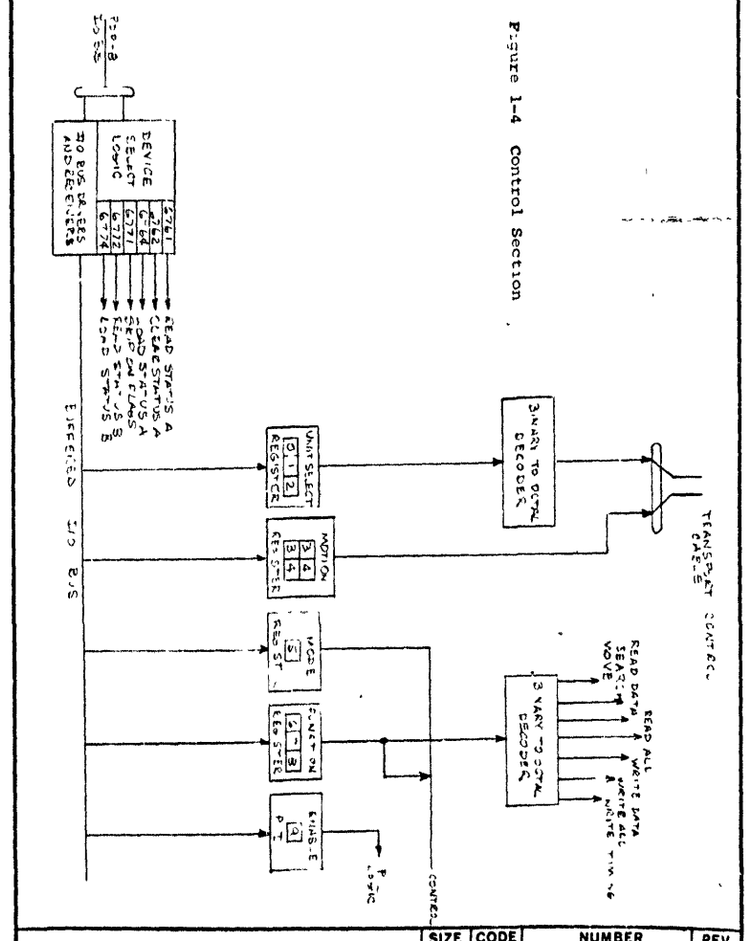


Figure 1-4 Control Section

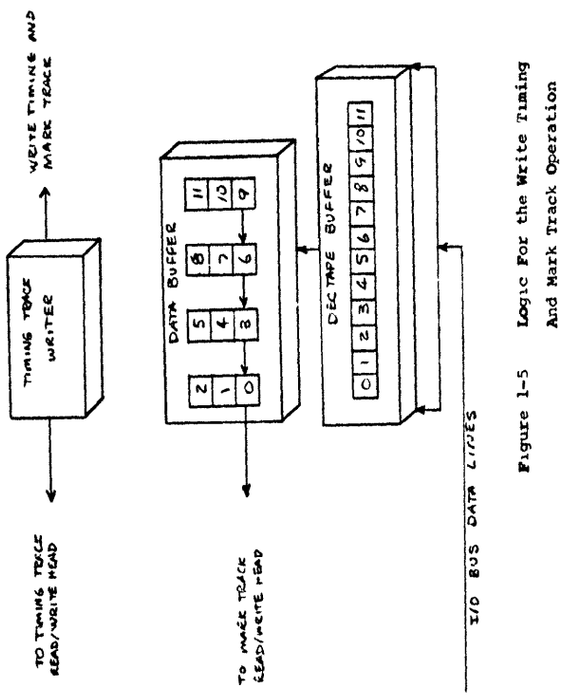


Figure 1-5 Logic For the Write Timing And Mark Track Operation

Table 1 - 6

INDICATOR NAME	INDICATOR FUNCTION
TIM	This flag indicates timing errors.
DTT	This lamp reflects the state of the DECtape flag. (ON indicates an operation completed).
DF	The Data Flag is set when the controller needs to transfer a data word through the thre -cycle break.
WC	The Word Count flag is zeroed whenever the word count register overflows.
U+M	This is the output of the up to speed delay. When the light is on it indicates that the tape is not yet up to speed.

1.3 TC08 Operator Controls and Indicators

The single switch, WRTM/NORMAL, and an array of lights are all with which the operator of the TC08 controller need concern himself. The operation of the transports is explained in their respective manuals. The TC08 switch (located on the left-hand side of the logic panel) puts the controller in write timing and mark track mode or else in normal, or every other mode, depending on the settings, SWTM or NORMAL respectively. Table 1 -6 summarizes the function of each indicator.

Table 1 - 6 The Indicator Panel

INDICATOR NAME	INDICATOR FUNCTION
USR	The Unit Select Register which specifies which transport is to be activated.
MR	The Motion Register specifies the three possible movements of the reel.
FR	This four-bit Function Register specifies one of several possible operations in either of two modes.
ENI	Enable the interrupt when on indicates that the controller can cause a program interrupt when an error flag or the DECtape flag is set.

Table 1 - 6

INDICATOR NAME	INDICATOR FUNCTION
EF	This flag is set if any one of the five following error flags come up. These conditions stop transport motion, except for the parity error of bit 4, and all cause a program interrupt if the facility is enabled.
MK	The output from the mark track instruction register is tested every time an instruction appears. If no instruction appears, this indicates that the mark track is not recorded properly and therefore an error has occurred. MK and therefore EF are set.
END	If the instruction register of the mark track decodes an end zone indicator, this flag and EF are set. A subsequent program interrupt stimulates the computer to determine the cause of the interrupt.
SE	This flag indicates select errors when control switch states and Status A function states are compared and found incongruous.
PAR	This error occurs if the longitudinal parity buffer shows an error at the end of a block during a read data function.

Table 1 - 6

INDICATOR NAME	INDICATOR FUNCTION
UTS	This Up-to-Speed flip-flop is set as soon as the tape transport reaches an acceptable speed.
W	This flag, when set, indicates that the writers are enabled.
WTM	This means the SWTM/NORMAL switch is in write timing and mark track mode (SWTM).
LPB	These six indicators reflect the state of the Longitudinal Parity Buffer.
STATE	These bits make up the state generator, a ring counter, which steps from an idle state through five other states and back to idle, as a block passes the tape heads.

Table 1 - 6

INDICATOR NAME	INDICATOR FUNCTION
MC	These three bits represent a three-bit switched tail counter composed of bits MC00, MC01, MC02.
C0, C1	These are the flip-flops which constitute the counters of the timing generator.
DTB	These lights reflect the statesof the 12-bit DECtape buffer.
WINDOW	The Window Register is a simple shift register which receives the instruction codes from the mark track and uses the codes to set the State Generator.

Table 1 - 6

INDICATOR NAME	INDICATOR FUNCTION
BM	Block Mark is the first bit to which the state generator moves. It is set when forward block makr is in the data buffer.
RC	The Reverse Checksum state occurs when the Reverse PCC Mark cell is encountered.
D	The Data State starts with the first block that contains data (The Reverse Final Mark) and finishes when the next-to-last data block (the Prefinal Mark) Passes the read heads.)
F	The Final State occurs during the last cell which contains data (the Final Mark.)
CK	The Checksum State occurs when the PCC Mark cell passes the heads. During this state, the checksum is deposited in the PCC Mark, if the TC08 is writing; it checks for a parity error, if the TC08 is in a read operation.
I	The idle state.

1.4 Programming Examples

The following is an example of programming the TC08. The program is written in PDP-8 Assembler languages.

Problem: Find a given block, number 5. The transport number is 3.

```
TAG          INSTRUCTION          REMARKS

SRCH,        Ø
             ION                  /Turn on PI
             CLA
             TAD   3614           /Status A code for search,etc
             DTCA                 /Clear Status A
             DTXA                 /Load Status A
             JMP I SRCH           /Return

Ø            ØØØØ

1,           JMP FLAG

FLAG         DTSK                 /Skip on flag
             JMP + 2
             JMS TAPE
             HLT                  /Error, DECtape flag was not
                                   set.  Another system flag
                                   caused the PI
TAPE,        CLA
             DTRB                 /Read Status B
             DCA TEMP             /Store it away
             AND  0001            /Mask for flag
             SZA                  /Flag is on
             HLT                  /No flag - something wrong
             CLA
             TAD TEMP             /Return Status B
             AND    1000          /Test for error flag
             SZA
             JMP ERROR            /Go to error subroutine
             JMP BLKNO            /Go to subroutine to get block
```

```
BLKNO,      CLA
            TAD I CA        /Get block number
            TAD  7773       /Test for block 5
            SNA
            JMS WRT         /This is block 5-start writin
            CLA             /Not block 5
            TAD  5          /Get a 5
            CIA             /Make 2's compliment of 5
            TAD I CA        /Add present block
            CIA             /2's compliment it
            DCA WC          /Put result in WC
            CLA
            TAD 0100        /Get next Status A
            DTXA            /X'OR into Status A, CM
            ION             /Turn PI
            JMP I SRCH      /Go back to main program
```


1.5 Equipment Description

1.5.1 Hardware

The TC08 Consists of two mounting panels of M series logic, an indicator panel, and associated power supplies and controls. The logic and indicator panel are mounted in the same cabinet as the power supplies, the power control and tape transports according to the configurations described in the PDP-8 Installation Manual.

1.5.2 Environmental Requirements

The DECtape system is designed to operate in a temperature range from 65 F (18 C) to 90 F (35 C) at a relative humidity of 10% to 55% with no condensation. The air should be free of dust and corrosive pollutants.

1.5.3 Power Requirements

Table 1-7 lists the primary power requirements for a DECtape system.

Table 1-7 DECtape Power Requirements

Configuration (no. of Transports) TU56	No. of Cabinets	AC Current (Amps)	Dissipation Heat BTU/HR (max)	Dissipation Power (KW)
1	1	4	1,516.6	446
2	1	7	2,706.6	796
3	1	10	3,896.6	1,146
4	2	13	5,086.6	1,496

1.6 Adjustment Procedures

1.6.1 Delays and Clock

1.6.1.1 The posts on the G888 reader writers should not be adjusted. They are pre-set in Module Production.

1.6.1.2 Set the XSTA Dy to 5 us. This delay will be triggered by the following program:

ADDRESS	INSTRUCTION	DESCRIPTION
0000	7604	Load AC from SR
0001	6766	Load Status A
0002	5000	Jump to Zero

The output of the delay is on pin D18T2. Adjust the bottom pot of the M302 in D16 so that the output signal has a positive duration of 5 microseconds.

1.6.1.3 The Status A register can also be tested with this program. By placing the data switches to A "1", the corresponding Status A bits will be set to A "1".

1.6.1.4 To check tape motion, set switches 0, 1, and 2 to select a transport and 3 and 4 to determine direction and motion.

1.6.2 Setting the Clock

1.6.2.1 The M401 clock will be enabled by the following procedure. Do not attempt to ground any signals with jumps; or modules may be destroyed. Toggle in the following program.

ADDRESS	INSTRUCTION	DESCRIPTION
0000	7604	Load AC from SR
0001	6762	Clear Status A
0002	6767	XOR Status A
0003	7200	Clear AC
0004	5002	Jump to 2

Remove the tape from the transport and place it on line write enable. Turn the switch WRTM/NORMAL to WRTM. Set the data switches 4, 5, 6 and 7 to a one (1); hit Load Address and start. A WRTM function will be executed on unit eight (8), and the clock will run.

The output of the clock is on pin D15D2. Adjust the pot on the M401 in D15 so that the pulse repretition rate at this pin is 8.33 microseconds.

1.6.3 The Unit or Motion Delay

1.6.3.1 Load the DECtape basic exerciser and run test zero (0) to make the tape rock.

1.6.3.2 The output of the U + M Dy is on pin D14K1. Adjust the top pot on the M307 in D14 so that a positive signal with a positive duration of 120 milliseconds appears on this pin.

1.6.4 The Rate Delay

1.6.4.1 The output of the SP Dy is on pin D14H2. Adjust the bottom pot on the M307 and D14 for a positive signal with a duration of 70 microseconds on this pin.

1.6.5 Cross Talk Delays

1.6.5.1 The output of TP0 XTLK Dy is at pin A14F2. Adjust the top pot of the M302 in slot A14 so that this pin gives a positive signal with a duration of 10 microseconds.

1.6.5.2 The TP1 XTLK Dy output is at pin A14T2. Adjust the bottom pot of the M302 in location A14 so that this pin gives a positive signal with a duration of 10 microseconds.

1.7 Summary of Statistics

The following tables summarize the errors, functions, flags and critical timing specifications of a DECtape system.

Table 1-8 Summary of Errors

FUNCTION	ERROR (IN NORMAL OR CONTINUOUS MODE)
Move	Select Error
	EOT*
Search	Select Error
	EOT*
	Timing Error
	MK TRK Error
Read Data	Select Error
	EOT*
	Timing Error
	Parity Error
	MK TRK Error
Read All	Select Error
	EOT*
	Timing Error
	MK TRK Error
Write Data	Select Error
	EOT*
	Timing Error
	MK TRK Error

*End of Tape

Table 1-9 Summary of Functions

FUNCTION	NORMAL MODE (NM)	CONTINUOUS MODE (CM)
0. Move	DTF: No Interrupt CA*: Ignored WC**: Ignored	Same as NM
1. Search	DTF: Interrupt at each block mark CA: No incremented WC: Incremented at each block mark	DTF: Interrupt at each block mark if WC has overflowed CA: Not incremented WA: Incremented at each block mark
2. Read Data	DTF: Interrupt at end of each block CA: Incremented at each word transfer WC: Incremented at each word transfer	DTF: Interrupt at end of block if WC has overflowed. CA: Incremented at each word transfer WC: Incremented at each word transfer.
3. Read All	DTF: Interrupt at each word transfer CA: Incremented at each word transfer	DTF: Interrupt at WC overflow CA: Incremented at each word transfer.

Table 1-8

FUNCTION	ERROR (IN NORMAL OR CONTINUOUS MODE)
Write All	Select Error
	EOT*
	Timing Error
	MK TRK Error
Write Timing & Mark Tracks	Select Error
	Timing Error

*End of tape

Table 1-9

FUNCTION	NORMAL MODE (NM)	CONTINUOUS MODE (CM)
	WC: Incremented at each word transfer	WC: Incremented at each word transfer
4. Write Data	Same as 2.	Same as Read Data
5. Write All	Same as 3.	Same as Read All
6. Write Timing & Mark Tracks	Same as 3.	Same as Read All
7. Unused***		

*Current Address (CA) is in location 7751
**Word Count (WC) is in location 7750
***If used by mistake, the control gives a Select Error (SE)

Table 1 - 10 Summary of Timing

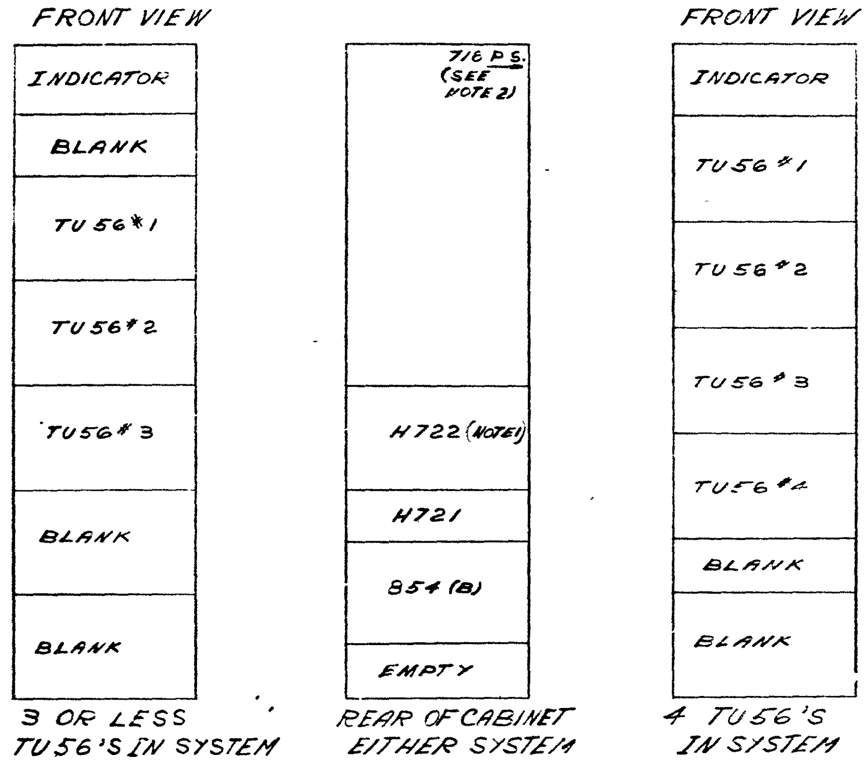
OPERATION	TIME
Time to answer data channel request	Up to 33 microseconds
Word Transfer Rate	1 12-bit word every 333 microseconds
Block Transfer Rate	1 129 Block every 25 milliseconds
Start Time	375 milliseconds (± 20%)
Stop Time	375 milliseconds (± 20%)
Turn Around Time	375 milliseconds (± 20%)
Search - Read Data Function change for present block	Up to 400 microseconds
Search - Write Data Function change for present block	Up to 400 micorseconds
Read - Search Function change for next block number	Up to 1000 microseconds
Write - Search Function change for next block number	Up to 1000 microseconds

Table 1-10

OPERATION	TIME
DTF to beginning of next data block	1.7 milliseconds
DTF Occurrence:	
Move: NM, CM	Never
Search: NM	
Read Data: NM	Every 54 milliseconds
Write Data: NM	
Search: CM	(WC) X53 milliseconds
Read Data: CM	(No. of blocks)
Write Data: CM	X53 milliseconds
Read All: NM	
Write All: NM	Every 33 microseconds
Write Timing & Mark Tracks: NM	
Read All: CM	
Write All: CM	(WC) 33 microseconds
Write Timing & Mark Tracks: CM	

NOTES:

1. H722 STEP DOWN TRANSFORMER USED ON 230 VAC SYSTEMS, ONLY.
2. 716 INDICATOR POWER SUPPLY MOUNTS ON LEFT SIDE, AS VIEWED FROM FRONT.



FIRST USED ON OPTION MODEL: TC28		
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN	DATE 9-1-71
DECIMALS .XXX ± .005, .XX ± .02, .X ± .1	ANGLES ±0° 30'	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓		
MATERIAL	NEXT HIGHER ASSY	
FINISH	SCALE	SHEET OF 1

digital EQUIPMENT CORPORATION

TITLE: DECTAPE CABINET LAYOUT (TU56)

SIZE D CODE A NUMBER TC28-0-24

REVISIONS: TC08 00019 ORIGINATED