pdp11

digital

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DIP SHIT

FP11-B floating-point processor engineering drawings

digital equipment corporation · maynard. massachusetts

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

DRAWING DIRECTORY

CUSTOMER PRINT SET INDEX

THIS IS PRINT SET

SEQUENCE		SEQUENCE
DRAWING DIRECTORY	B-DD-FP11-0 (SHEET ONE ONLY)	
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FP11 FLOWS 5(LOAD CLASS)	D-FD-FP11-B-06	
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FP11 FLOWS 9(EXECUTE ADD,SUB,OR CMP)	D-FD-FP11-B-10	
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FP11 FLOWS 12(NORMALIZE & ROUND)	D-FD-FP11-B-13	
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FRACTION DATA PATH HIGH ORDER(FRH)	E-CS-M8114-0-1	
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FP ROM & ROM CONTROL (FRM)	E-CS-M8112-0-1	
FP EXPONENT DATA PATH (FXP)	E-CS-M8113-0-1	
ACCESSORY LIST	A-AL-FP11-B-16	

UNIT VARIATIONS

VARIATION	TITLE	PRINT SET TYPE: FP11-1
FP11-B	FLOATING POINT PROCESSOR	

REVISIONS	DATE	CHG. NO.	REV
	7-72	FP11-1	A

USED ON OPTION/MODEL: 11/45

DRN. R. COOK	DATE 2/24/72	TITLE: FLOATING POINT PROCESSOR
CHK'D. R. COOK	DATE 4/19/72	
PROJ ENG L B Hughes	DATE 4/28/72	
PROD. D. Hirsh	DATE 5/1/72	SIZE B · CODE DD · NUMBER FP11-0 · REV A
FIELD SERV. Art Zinn	DATE 5/1/72	
SHEET 1 OF 3		DIST

DRB 106

DEC 16-(325)-1062-1-N871

EALU
FALU

ALUC <10:16>
0 ~A
1 ~(A∨B)
2 A MINUS B
3 Ø
4 ~(A∧B)
5 ~B
6 A MINUS B MINUS 1
7 A⊕~B
10 A PLUS B PLUS 1
11 A PLUS B
12 B
13 A∧B
14 1
15 A MINUS 1
16 A∨B
17 A

CNST <57:53>
Ø 200
1 TO 1Ø 1 TO 1Ø
11 1ØØØØ
12 TO 14 12 TO 14
15 1ØØØØ4
16&17 16&17
2Ø 22Ø
21 TO 31 21 TO 31
32 7Ø
33 71
34 TO 35 34 TO 35
36 74
37 75

RDFN CNSTFØ
Ø TRAP & WAIT FOR ACKN
1 NOP
CNSTF1
Ø WAIT FOR ATTN
1 NOP
CNSTF2
Ø NOT USED
1 NOP
CNSTF3
Ø DATI
1 NOP
CNSTF4
Ø TRAP IF -Ø
1 NOP

FCC <44:43>
Ø LD FN,FZ CLR FV,FC
1 LD FN,FZ,FV,CLR FC
2 LD FN,FZ,CLR FV,SET FC
3 NOP

SYNC <52>
Ø ENABLE FP SYNC
1 NOP

ADDR INCR <43>
Ø ADD 2 TO ADDRESS
1 ADD Ø TO ADDRESS

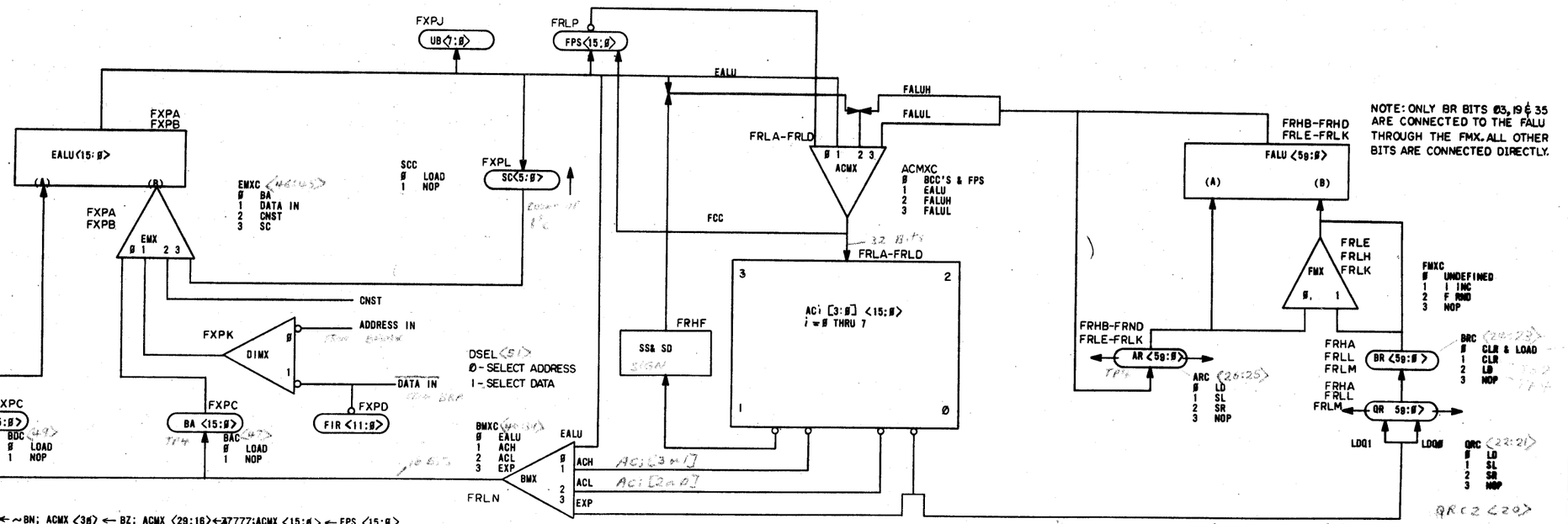
DISBLØ <62>
Ø CLR INITF & ABORTF
1 NOP

DISBL1 <63>
Ø CLR FP REQ
1 NOP

CONTROL SEL <61:59>
Ø LD FPS
1 LD UB
2 REG WRITE
3 DISABLE SYNC
4 DISABLE SC - HIGHT.
5 FIR CLK
6 NOT USED
7 NOP

CSB <53:51>
Ø FRAC-MUL
1 FRAC-DIV
2 RS-AR-SC
3 LS-AR-NORM
4 RS-QR-SC-(Ø IN)
5 LS-QR-SC
6 RS-QR-SC (1 IN)
7 NOP

CALL SP FUNCTS
WILL STOP THE CLOCK
SC-STEP COUNTER
CSB Ø,1,2,4,5,6
CLOCK WITH STOP UNTIL
SC=Ø THEN START



NOTE: ONLY BR BITS Ø3, 19 & 35 ARE CONNECTED TO THE FALU THROUGH THE FMX. ALL OTHER BITS ARE CONNECTED DIRECTLY.

DATA PATH DEFINITIONS

ACMX←FPS:= ACMX <31> ←~BN; ACMX <3Ø> ← BZ; ACMX <29:16>←17777;ACMX <15:Ø> ← FPS <15:Ø>
ACMX←EALU:= ACMX <31:16>←EALU <15:Ø> ;ACMX <15:Ø> EALU <15: Ø>
ACMX←FALUH:= ACMX <31:> ←~SD;ACMX <3Ø:23>←EALU <7:Ø> ACMX<22: Ø>← FALU<57: 35>
ACMX←FALUL:= ACMX <31:Ø> ←FALU<34: 3>
BMX←EALU:= BMX <15:Ø>←EALU <15:Ø>
BMX←ACH:= BMX <15:Ø>← ACi [3] <15:Ø> OR ACi [1] <15:Ø>
BMX←ACL:= BMX <15:Ø>← ACi [2] <15:Ø> OR ACi [Ø]:<15:Ø>
BMX←EXP:= BMX <15:Ø>←Ø; BMX <7:Ø> ACi [3:2] <3Ø:23>

ACH = SCROUT<31:16>
ACL = SCROUT<15:Ø>

EMX←BA:= EMX <15: Ø>← BA <15:Ø>
EMX←DATA IN:=EMX <15:Ø> ←DIMX <15:Ø>
EMX←CNST:= EMX <15:Ø> ← CNST <15:Ø>
EMX← SC:: = EMX <15:6> ← Ø; EMX <5:Ø> ←SC <5:Ø>

FMX←BR:= FMX <2>←BR <35> ;FMX <1> ← BR <19> ;FMX<Ø> ←BR <3>
FMX←F+RND:= FMX <2>← AR <34> IF~FD ELSE FMX<2> ← BR <35> ; FMX <1> ← BR <19> ;FMX <Ø>← AR <2> IF FD ELSE FMX <Ø> ←BR <3>
FMX←I+INC:= FMX <2>← ~IL; FMX <1> ←IL;FMX <Ø> ← BR <3>

LDQ1:= QR <5Ø> ←Ø; QR <58> ←1 IF ACi [3:2] <3Ø:23>≠Ø ELSE QR<58>←Ø;QR<57:35> ← ACi [3:2] <22:Ø>
LDQØ:= QR<34:3>← ACi [1:Ø] <31:Ø> ; QR<2:Ø>← Ø

SIGNC
Ø SD ← SS IF SUB ELSE SD← SS
1 SD ← SS∨SD
2 SS←1
3 NOP

ACF <34:32>
Ø ACS
1 ACSy1
2 ACD
3 ACDy1
4 AC6
5 AC7
6 NOT USED
7 NOT USED

ACC <37:36>
Ø [3:2]
1 [3]
2 [2]
3 NOP
4 [1:Ø]
5 [1]
6 [Ø]
7 NOP

ACRE <33>
Ø WRITE
1 READ

B cond codes are set every t.m. BC & BA is clocked

BZ = BMX <15:Ø> = Ø
BN = BMX <15> = 1
BBIZ = BMX <15:Ø8> = Ø

NOTE: SEE Page 4-13 FOR Read Notes

FICC is not USED

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN. akhut	DATE 10-24	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHK'D	DATE 3/1/73	
ENG. CBAngle	DATE 3-16-73	TITLE
PROJ. ENG. CB Hughes	DATE 3/16-73	FP DATA PATHS
PROD. A. Bush	DATE 3-15-73	
NEXT HIGHER ASSY.		
B-DD-11/45-Ø		SIZE D, CODE FD, NUMBER FP11-B-Ø, REV.
SCALE		
SHEET OF		DIST.

REVISIONS | CHANGE NO | CHK
SRUNING 40.522 15840
DEC FORM NO DRD 102-B
NUMBER FD FP11-B-Ø
SIZE CODE D
REV

READY

RDY.00 (3)
WRITE FPS IN SCRATCH
S1 REQ←0
ACMX←~FPS
S4 AC7[0]←ACMX
(6)

RDY.10 (6)
LOAD FPS IN BD
SCR·OUT←AC7[0]
BMX←ACL
t4 BD←BMX
(72)

RDY.20 (72)
WAIT FOR NEXT FP INS. LD FIR AND INS. ADRS
DIMX←DATA ADDRESS
EMX←DIMX
ALU'S←B
ACMX←EALU
WAIT FOR FP ATTN
t3 FIR←DATA IN
t3 SS+SD←0
REQ←1
(76)

RDY.30 (76)
LD INS ADRS
DIMX←DATA ADDRESS
EMX←DIMX
ALU'S←B
ACMX←EALU
S4 AC7[3]←ACMX
S3 ENABLE FP SYNC
IF~CONV·SP
(210) 5F0

μTRAP

INIT, 1145 ABORT
TRP.00 (0)
TRAP CAUSED BY INIT OR INTR CLR (1145)
S2 CLR ABORT FLOPS
(7)J
READY 1

μBRK PNT TRAP
TRP.10 (9)
TRAP CAUSED BY μBREAK LOGIC. LD FEC
S1 REQ←0
EMX←CNST.16
ALU'S←~B
ACMX←EALU
S4 AC7[2]←ACMX
(292)

TRP.20 (292)
LD INS ADRS IN BA
SEND FP EXEC TRAP
WAIT FOR FP ACKN
S4 SCR·OUT←AC7[1]
BMX←ACH
t4 BA←BMX
(32)

TRP.30 (32)
WRITE FEA INTO SCRATCH
EMX←BA
ALU'S←~B
ACMX←EALU
t4 AC7[3]←ACMX
(7)·J
READY 1

2Ø ABORT
TRP.40 (10)
ABORT CAUSE BY 1120 INTERFACE. LD FEC IN TEMP
S2 CLR ABORT FLOPS
ALU'S←1
ACMX←EALU
S4 AC7[0]←ACMX
(275)

FINT

TRP.60 (275)
LD TEMP FEC + INS ADRS IN BR + INTERRUPT CPU
S1 REQ←0
SEND FP EXEC TRAP
WAIT FOR FP ACKN
SCR·OUT←AC7[1:0]
t3 QR←LDQ0
t4 BR←QR
S4 FER←1
(2)

TRP.70 (2)
WRITE FEC+FEA INTO SCRATCH
ALU'S←~B
ACMX←FALUL
S4 AC7C3:2]←ACMX
(7)·J
READY 1

-Ø TRAP
TRP.50 (20)
MINUS ZERO DETECTED LD FEC IN TEMP
S1 REQ←0
EMX←CNST.19
ALU'S←~B
ACMX←EALU
S4 AC7[0]←ACMX
(276)

READY 1

ABORT → μTRAP 1

ILL·OP. CODE
RDY.90 (219)
ILLEGAL INSTRUCTION. WAIT FOR COMPLETION OF ADRS CALCULATION
ALU'S←0
BMX←EALU
WAIT FOR FP ATTN
S3 ENABLE FP SYNC
(272)
ABORT → μTRAP 1

RDY.50 (272)
LOAD FEC IN TEMP LOCATION
S1 FP REQ←0
EMX←CNST.2
ALU'S←~B
ACMX←EALU
S4 ACT[03]←ACMX
(275)
FINT 1

NO·MEM·CL
RDY.60 (239)
NO MEMORY CLASS. LD CONTENTS OF GENERAL REG
EMX←DATA IN
ALU'S←B
BMX←EALU
WAIT FOR FP ATTN
t1 BD←BMX
S3 ENABLE FP SYNC
(90) 0F0
ABORT → μTRAP 1
NO MEM 2

LOAD·CL
RDY.70 (259)
LOAD CLASS INS
EMX←DATA IN
ALU'S←B
BMX←EALU
WAIT FOR FP ATTN
S3 ENABLE FP SYNC
(290) 0F0
ABORT → μTRAP 1
LOAD 4

STORE·CL
XCT·STR
RDY.80 (279)
STORE CLASS INS.
EMX←DATA IN
ALU'S←B
BMX←EALU
WAIT FOR FP ATTN
(190) 0F0
ABORT → μTRAP 1
STORE 6

CONV·SP
RDY.90 (270)
GO AND CONV. BEFORE STORE. GET HIGH ORDER FROM AC
SCR·OUT←ACDC3:27
t4 SDE←SCR OUT<31>
BMX←EXP
t4 BA←BMX
t4 BD←BMX
t3 QR←0
t3 QRE←LDQ1
t4 BRE←QR
(292) 0F0
ABORT → μTRAP 1

STCFD → STCFY 13
STCFI → STCIJ 14
STEXP → STEXP 13

S3 ENABLE FP SYNC
FP SYNC IS GATED IN S2 OF NEXT STATE

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN. W. Grant DATE 10-11-71
CHK'D. [illegible] DATE 3/9/72
ENG. R. Douglas DATE 3-10-72
PROJ. ENG. R. Mussey DATE 3-10-72
PROD. A. Smith DATE 3-15-72
NEXT HIGHER ASSY. B-DD-11/45-0
SCALE —
SHEET OF

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: FP11 FLOWS 1 (READY STATE & UTRAPS)

SIZE D | CODE FD | NUMBER FP11-B-02 | REV.
DIST.

REVISIONS | REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

NO. MEM

LDUB
NOM.ØØ (66)
LD DATA INTO μBREAK REG
S1 REQ←Ø
ALU'S←A
t4 UB←EALU
(7) J
READY 1

LDFAMØ
NOM.Ø2 (42)
READ MOST SIGN. HALF OF SOURCE AC
S1 REQ←Ø
SCR OUT←ACS[3:2]
BMX←EXP
t2 BA←BMX
t3 QR←LDQ1
t4 SS←SCR OUT<31>
BR←QR
(5)

NOM.Ø4 (5)
READ LEAST SIGN. HALF OF SOURCE AC + MOVE SS TO SD
SCR OUT←ACS[1:Ø]
t3 QR←LDQØ
t4 BR←QR
SD←SS
(21)

LDX.1

NOM.Ø6 (21)
WRITE INTO MOST SIGN HALF OF DEST. AC
ALU'S←~B
FMX←BR
ACMX←FALUH
EMX←BA
S4 ACS[3:2]←SCR IN
t4 SET FCC(Ø)
(12) 9F1.J

STR.BR1

FD(Ø)
FD(1)

NOM.Ø8 (12)
WRITE INTO LEAST SIGN. HALF OF DEST. AC
ALU'S←~B
FMX←BR
ACMX←FALUL
S4 ACS[1:Ø]←SCR IN
(7) J
READY 1

STR.BR2

STFAMØ
NOM.1Ø (39)
READ MOST SIGN. HALF OF SOURCE AC
S1 REQ←Ø
SCR OUT←ACDI[3:2]
BMX←EXP
t2 BA←BMX
t3 QR←LDQ1
t4 SD←SCR OUT<31>
BR←QR
FD(Ø) (29) 9F1
FD(1)

NOM.12 (29)
READ LEAST SIGN. HALF OF SOURCE AC
SCR OUT←ACDI[1:Ø]
t3 QR←LDQØ
t4 BR←QR
(25)

NOM.14 (25)
WRITE INTO MOST SIGN. HALF OF DEST. AC
ALU'S←~B
FMX←BR
ACMX←FALUH
EMX←BA
S4 ACS[3:2]←SCR IN
(16) 9F1.J
FD(Ø)
FD(1)

NOM.16 (16)
WRITE INTO LEAST SIGN. HALF OF DEST. AC
ALU'S←~B
FMX←BR
ACMX←FALUL
S4 ACS[1:Ø]←ACMX
(7) J
READY 1

CLR.AC

CLRFAMØ
NOM.18 (41)
WRITE Ø IN MOST SIGN. HALF OF AC
S1 REQ←Ø
ALU'S←1
ACMX←EALU
S4 ACS[3:2]←ACMX
t4 SET FCC(Ø)
(22) 9F1.J
FD(Ø)
READY 1
FD(1)

NOM.2Ø (22)
WRITE Ø IN LEAST SIGN HALF OF AC
ALU'S←1
ACMX←EALU
S4 ACS[1:Ø]←SCR IN
(7) J
READY 1

LDSC
NOM.22 (45)
LD 1'S COMP. OF DATA INTO SC
S1 REQ←Ø
ALU'S←~A
S4 SC←EALU EIF FMM BLOCK SC LOADS
(7) J
READY 1

(NEGF∨ABSF∨TSTF)AMØ
NOM.29 (43)
LD UPPER QUARTER OF AC IN BD
S1 REQ←Ø
SCR OUT←ACS[3]
BMX←ACH
t4 BD←BMX
(73)

NOM.26 (73)
LD EXP IN BA TO TEST FOR ZERO
SCR OUT←ACS[3]
BMX←EXP
t4 BA←BMX
(11) IFØ

TSTF
NOM.28 (31)
SET FCC'S
ALU'S←~A
ACMX←EALU
t4 SET FCC(Ø)
(7) J
READY 1

NEGF
NOM.3Ø (71)
COMPLIMENT SIGN
EMX←CNST1ØØØØØ
ALU'S←A PLUS B
BMX←EALU
t4 BD←BMX
(9Ø) 6F1

ABSF
NOM.32 (51)
CLEAR SIGN
EMX←CNST1ØØØØØ
ALU'S←A∧~B
BMX←EALU
t4 BD←BMX
(9Ø) 6F1

~BZ
NOM.34 (98)
WRITE INTO UPPER QUARTER OF AC
ALU'S←~A
ACMX←EALU
S4 ACSC3]←ACMX
t4 SET FCC(Ø)
(7) J
READY 1

BZ
CLR.AC 2

LDFPSAMØ
NOM.36 (67)
LD DATA INTO FPS
S1 REQ←Ø
EALU←A
t4 FPS←EALU
(7) J
READY 1

NO MEM 2
3

REVISIONS

REV	CHANGE NO	CHK

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL /

FINISH

DRN. A. Kibort	DATE 10-12-71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D	DATE 3/14/72	
ENG. A.B. Hughes	DATE 3-16-72	
PROJ. ENG. A.B. Hughes	DATE 3-16-72	
PROD. L. Church	DATE 3-15-72	

NEXT HIGHER ASSY. B-DD-11/45-Ø

SCALE

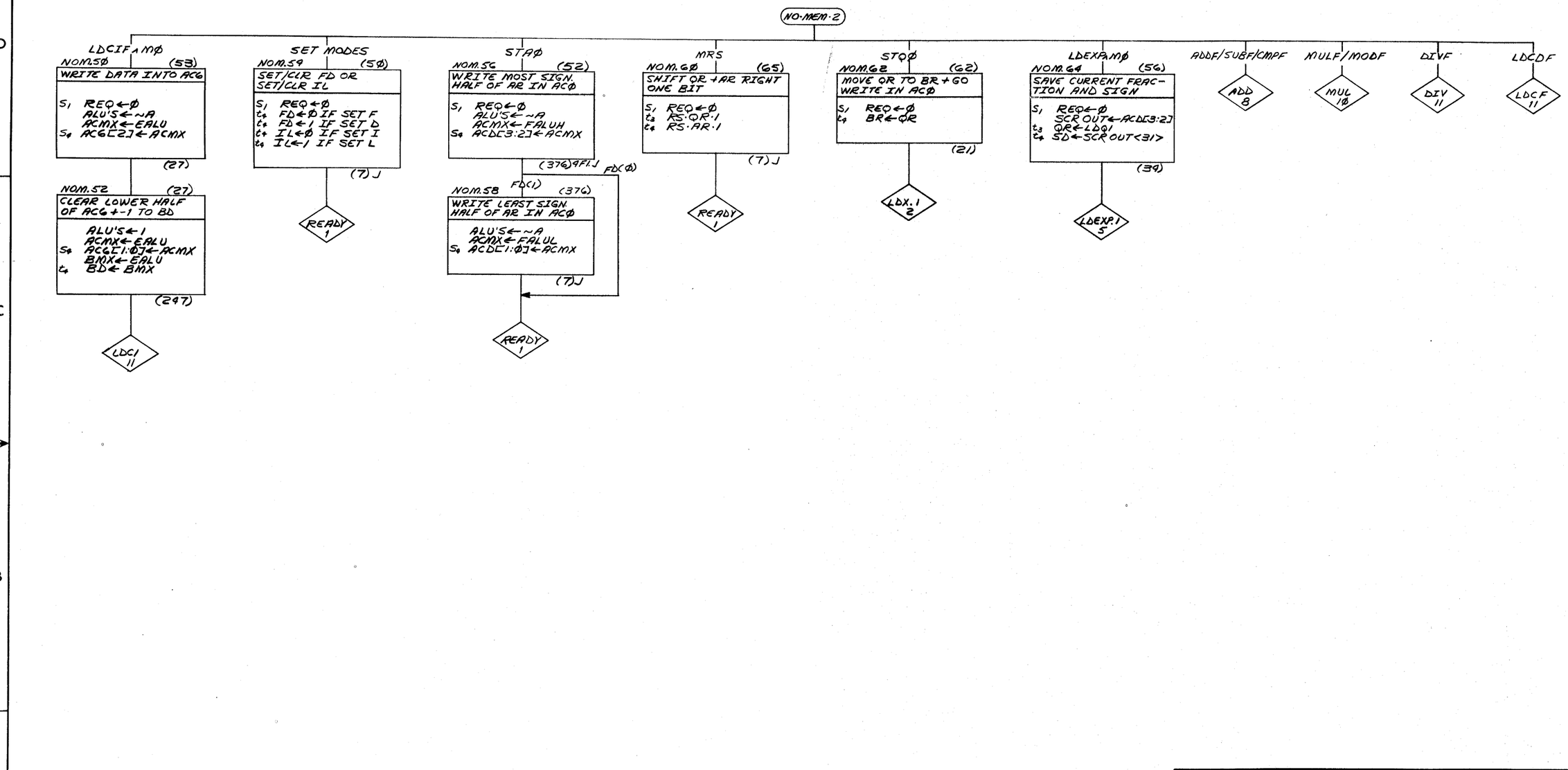
SHEET OF

TITLE
FP11 FLOWS 2
(NO MEM CLASS)

SIZE	CODE	NUMBER	REV.
D	FD	FP11-B-Ø3	

DIST.

DEC FORM NO DRD 102-B



2 316

FIRST USED ON OPTION/MODEL: 11/45	QTY.	DESCRIPTION	PART NO.	ITEM NO.	
		PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES: DECIMALS .XXX = .005, .XX = .02, .X = .1; ANGLES ±0° 30'. REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓	DRN. [illegible]	DATE 10/13/71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS		
	CHK'D [illegible]	DATE 5/14/72			
	ENG. [illegible]	DATE 8-18-72	TITLE: FP11 FLOWS 3 (NO MEM CLASS)		
	PROJ. ENG. [illegible]	DATE 7-12-72			
	PROD. [illegible]	DATE 3-15-72			
MATERIAL: —	NEXT HIGHER ASSY. B-DD-11/45-Ø		SIZE D	CODE FD	NUMBER FP11-B-Ø4 REV.
FINISH: —	SCALE —				
	SHEET OF		DIST.		

REVISIONS: REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

SIZE D CODE FD NUMBER FP11-B-Ø4 REV.

LOAD

LDACG

LD.ØØ (29Ø) — LD 1ST WORD OF SRC IN AC6
INC ADDRESS
FPCI ← DATI
EMX ← DATA IN
ALU'S ← ~B
ACMX ← EALU
WAIT FOR FP ATTN
S4 ACGC3 ← ACMX
ENABLE -Ø INTERRUPT
S3 ENABLE FP SYNC
(122) 3F1

IMMEDIATE → LDACG.1

~IMMEDIATE

LD.Ø2 (122) — LD 2ND WORD OF SRC IN AC6
INC ADDRESS
FPCI ← DATI
EMX ← DATA IN
ALU'S ← ~B
ACMX ← EALU
WAIT FOR FP ATTN
S4 ACGC2 ← ACMX
S3 ENABLE FP SYNC
(232) 9F1

-Ø → µTRAP 1

FD(Ø) → LDRG.2

FD(1)

LD.Ø9 (232) — LD 3RD WORD OF SRC IN AC6
INC ADDRESS
FPCI ← DATI
EMX ← DATA IN
ALU'S ← ~B
ACMX ← EALU
WAIT FOR FP ATTN
S4 ACGC1 ← ACMX
S3 ENABLE FP SYNC
(3Ø)

LD.Ø6 (3Ø) — LD 4TH WORD OF SRC IN AC6 AND GO DO OPERATION
FPCI ← DATI
EMX ← DATA IN
ALU'S ← ~B
ACMX ← EALU
WAIT FOR FP ATTN
S4 ACGC0 ← ACMX
S3 ENABLE FP SYNC
(6Ø) 1FØ

ADDF/SUBF/CMPF → ADD 8
MULF/MODF → MUL 1Ø
DIV → DIV 11
LDCDF → LDCF 11

LD.Ø8 (123) — CLR 3RD QUARTER OF AC6
S, REQ ← Ø
ALU'S ← ~1
ACMX ← EALU
S4 ACGC2 ← ACMX
(233)

-Ø → µTRAP 1

LD.1Ø (233) — CLR LEAST SIGN. HALF OF AC6 AND GO DO OPERATION
S, REQ ← Ø
ALU'S ← 1
ACMX ← EALU
S4 ACGC1:ØJ ← ACMX
(6Ø) 1FØ

ADDF/SUBF/CMPF → ADD 8
MULF/MODF → MUL 1Ø
DIV → DIV 11
LDCDF → LDCF 11

LDFA ~MØ

LD.12 (29) — LD 1ST WORD OF SRC IN AC6
INC ADDRESS
FPCI ← DATI
EMX ← DATA IN
ALU'S ← ~B
ACMX ← EALU
WAIT FOR FP ATTN
S4 ACGC3 ← ACMX
t4 SET FCC'S
ENBL -Ø INTERRUPT
S3 ENABLE FP SYNC
(2Ø2) 3F1

IMMEDIATE → LDFA.1

~IMMEDIATE

LD.13 (2Ø2) — LD 2ND WORD OF SRC IN AC6
INC ADDRESS
FPCI ← DATI
EMX ← DATA IN
ALU'S ← ~B
ACMX ← EALU
WAIT FOR FP ATTN
S4 ACGC2 ← ACMX
S3 ENABLE FP SYNC
(23C) 4F1

µTRAP 1 → -Ø

FD(Ø) → LDRG.2

FD(1)

LD.14 (236) — LD 3RD WORD OF SRC IN AC6
INC ADDRESS
FPCI DATI
EMX ← DATA IN
ALU'S ← ~B
ACMX ← EALU
WAIT FOR FP ATTN
S4 ACGC1 ← ACMX
S3 ENABLE FP SYNC
(19)

LD.16 (19) — LD 4TH WORD OF SRC IN AC6
FPCI ← DATI
EMX ← DATA IN
EALU ← ~B
ACMX ← EALU
WAIT FOR FP ATTN
S4 ACGC0 ← ACMX
S3 ENABLE FP SYNC
(237)

IMMEDIATE → LDFA.2

LD.18 (2Ø3) — CLR 2ND WORD OF AC6
S, REQ ← Ø
ALU'S ← 1
ACMX ← EALU
S4 ACGC2 ← ACMX
(126)

-Ø → µTRAP 1

LD.2Ø (126) — CLR LEAST SIGN. HALF OF AC6
ALU'S ← 1
ACMX ← EALU
S4 ACGC1:Ø ← ACMX
(237)

LD.22 (237) — READ MOST SIGN HALF OF AC5(ACG) AND GO TO LDFA.MØ
S, REQ ← Ø
SCROUT ← AC5[3:2]
BMX ← EXP
t4 BA ← BMX
t3 QR ← LDQ1
t4 SS ← SCROUT<31>
t4 BR ← QR
(5)

LDX.1 2

LDCDFA ~MØ

LD.29 (299) — LD 1ST WORD OF SRC IN AC6
INC ADDRESS
FPCI ← DATI
EMX ← DATA IN
ALU'S ← ~B
ACMX ← EALU
WAIT FOR FP ATTN
S4 ACGC3 ← ACMX
ENABLE -Ø INTERRUPT
S3 ENABLE FP SYNC
t4 SET FCC(Ø)
(2Ø6) 3F1

IMMEDIATE → LDCDF.1

~IMMEDIATE

LD.26 (2Ø6) — LD 2ND WORD OF SRC IN AC6
INC ADDRESS
FPCI ← DATI
EMX ← DATA IN
ALU'S ← ~B
ACMX ← EALU
WAIT FOR FP ATTN
S4 ACGC2 ← ACMX
S3 ENABLE FP SYNC
(212) 9F1

-Ø → µTRAP 1

FD(Ø)

LD.28 (213) — LD 3RD WORD OF SRC IN AC6
INC ADDRESS
FPCI ← DATI
EMX ← DATA IN
ALU'S ← ~B
ACMX ← EALU
WAIT FOR FP ATTN
S4 ACGC1 ← ACMX
S3 ENABLE FP SYNC
(79)

LDCF 11

FD(1) → LDCF.A 11

IMMEDIATE → LDCDF.2

LD.3Ø (2Ø7) — CLR 3RD WORD OF AC6
S, REQ ← Ø
ALU'S ← 1
ACMX ← EALU
S4 ACGC2 ← ACMX
(233)

-Ø → µTRAP 1

LDAC6.2 9

LDCIFA ~MØ

LD.32 (25Ø) — LD 1ST WORD OF INTEGER SRC IN AC6
INC ADDRESS
FPCI ← DATI
EMX ← DATA IN
ALU'S ← ~B
ACMX ← EALU
WAIT FOR FP ATTN
S4 ACGC2 ← ACMX
(276) 3F1

IMMEDIATE → LDCIF.1

~IMMEDIATE

LD.34 (276) — CLR LEAST SIGN. HALF OF AC6 + SET BD TO 1'S + GO CONVERT
FPCI ← DATI
ALU'S ← 1
ACMX ← EALU
S4 ACGC1:ØJ ← ACMX
S3 ENABLE FP SYNC
BMX ← EALU
t4 BD ← BMX
(295) 3F2
IL(Ø) → LDCI 11

IL(1)

LD.36 (245) — LD 2ND WORD OF INTEGER SCR IN ACC + GO CONVERT
FPCI ← DATI
EMX ← DATA IN
ALU'S ← ~B
ACMX ← EALU
WAIT FOR FP ATTN
S4 ACGC1 ← ACMX
S3 ENABLE FP SYNC
(297)

LDCI 11

IMMEDIATE → LDCIF.2

LD.38 (277) — CLR LEAST SIGN. HALF OF ACG3 SET BD TO 1'S + GO CONVERT
ALU'S ← 1
ACMX ← EALU
S4 ACGC1:ØJ ← ACMX
S3 ENABLE FP SYNC
BMX ← EALU
t4 BD ← BMX
(297)

LDCI 11

Parts list

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN.	DATE	10-19-71
CHK'D	DATE	5/14/72
ENG.	DATE	3-10-72
PROJ. ENG.	DATE	3-10-72
PROD.	DATE	3-15-72

NEXT HIGHER ASSY. B-DD-11/45-Ø
SCALE
SHEET OF

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: FP11 FLOWS 4 (LOAD CLASS)

SIZE	CODE	NUMBER	REV.
D	FD	FP11-B-Ø5	

DIST.

REVISIONS | REV | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

LOAD·2

LDFPS$_A$~MØ

LD.50 (257)
LD SRC IN FPS + GO TO READY
FPCI ← DATI
WAIT FOR FP ATTN
S_3 ENABLE FP SYNC
EMX ← DIMX
EALU ← B
t_4 FPS ← EALU
(7) J
READY 1

CFCC

LD.52 (269)
INST DONE. GO TO READY
S_1 REQ ← Ø
(7) J
READY 1

(NEGF$_V$, ABSF$_V$, TSTF)$_A$~MØ

LD.54 (243)
LD 1ST WORD OF DST IN AC6
FPCI ← DATI
EMX ← DIMX
ALU'S ← ~B
ACMX ← EALU
WAIT FOR FP ATTN
S_4 AC6[3] ← ACMX
ENBL ~Ø INTERRUPT
t_4 SET FCC (Ø)
(26)

LD.56 (26)
LD 1ST WORD IN BD
SCR·OUT ← AC6[3]
BMX ← ACH
t_4 BD ← BMX
(75) -Ø UTRAP 1

LD.58 (75)
LD EXP. IN BA TO TEST FOR ZERO
SCR OUT ← AC6[3]
BMX ← EXP
t_4 BA ← BMX
(111) IFØ

LD EXP$_A$~MØ

LD.68 (255)
SAVE OLD SIGN + FRACTION + LD EXP IN BD
FPCI ← DATI
EMX ← DIMX
ALU ← B
BMX ← EALU
SCR OUT ← AC0[3:2]
WAIT FOR FP ATTN
t_4 SI ← SCR OUT<3:1>
t_4 BD ← BMX
t_3 LDQ ← SCR OUT
S_3 ENABLE FP SYNC
(39)

LDEXP.1

LD.70 (39)
ADD BIAS TO EXP
S_1 REQ ← Ø
EMX ← CNST.200
ALU'S ← A PLUS B
BMX ← EALU
t_4 BA ← BMX
t_3 BR ← QR
(35)

LD.72 (35)
STORE RESULT
EMX ← BA
ALU'S ← ~B
ACMX ← FALUH
AC0[3:2] ← ACMX
S_4
t_4 SET FCC(1)
(226) CF1

TSTF

LD.60 (131)
SET FCC'S
ALU'S ← ~A
ACMX ← EALU
t_4 SET FCC(Ø)
S_3 ENABLE FP SYNC
(7) J
READY 1

NEGF

LD.62 (171)
COMPLIMENT SIGN
EMX ← CNST.1ØØØØØ
ALU'S ← A PLUS B
BMX ← EALU
t_4 BD ← BMX
S_3 ENABLE FP SYNC
(190) GF1

ABSF

LD.64 (151)
CLR SIGN
EMX ← CNST.1ØØØØØ
ALU'S ← R_0 ~B
BMX ← EALU
t_4 BD ← BMX
S_3 ENABLE FP SYNC
(190) GF1

~BZ

LD.66 (190)
STORE RESULT IF NOT ZERO
FPCI ← DATO
ALU'S ← ~A
ACMX ← EALU
WAIT FOR FP ATTN
t_4 SET FCC(Ø)
S_3 ENABLE FP SYNC
(7) J
READY 1

BZ
CLR·MEM 6

-BZ

LD.78 (226)
GO CHECK FOR EXCEPTION
NOP
(110) 2F3 J

BZ

LD.76 (227)
EXP EQ ZERO. GO TREAT AS UNDERFLOW
ALU'S ← 1
ACMX ← EALU
t_4 SET FCC(Ø)
(110)
U FLOW 12

BN_A~BBIZ
μ. FLOW 12

~BN_A~BBIZ
Q. FLOW 12

~BN_ABBIZ
READY 1

BN_ABBIZ
CAN NOT OCCUR

REVISIONS	REV	CHK
CHANGE NO.		

DEC FORM NO
DRD 102-B

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES	DRN. Q Kilcourt	DATE 10-15-71
DECIMALS .XXX = .005 .XX = .02 .X = .1 / ANGLES ±0° 30'	CHK'D	DATE 3/14/72
	ENG. A B Hughes	DATE 3-16-72
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓	PROJ. ENG. A B Hughes	DATE 3-16-72
	PROD. M. Almeida	DATE 3-15-72

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: FP11 FLOWS 5 (LOAD CLASS)

MATERIAL	NEXT HIGHER ASSY.	SIZE	CODE	NUMBER	REV.
	B-DD-11/45-Ø	D	FD	FP11-B-Ø6	
FINISH	SCALE	SHEET	OF	DIST.	

STORE

CLRF$_A$~MØ

CLR.MEM

STR.ØØ (191)
CLR BD
ALU'S←Ø
BMX←EALU
t$_4$ BD←BMX
S$_3$ ENABLE FP SYNC
(21Ø)

STRØ2 (21Ø)
CLR 1ST WORD
INC ADDRESS
ALU'S←~A
ACMX←EALU
FDCI←DATO
WAIT FOR FP ATTN
SET FCC (Ø)
t$_4$
S$_3$ ENABLE FP SYNC
(156) 3F1.J
IMMEDIATE
READY 1

~IMMEDIATE

STR.Ø4 (156)
CLR 2ND WORD
INC ADDRESS
FPCI←DATO
WAIT FOR FP ATTN
S$_3$ ENABLE FP SYNC
(172) 9F1.J
FD(Ø)
READY 1

FD(1)

STRØ6 (172)
CLR 3RD WORD
INC ADDRESS
FPCI←DATO
WAIT FOR FP ATTN
S$_3$ ENABLE FP SYNC
(132)

STRØ8 (132)
STORE BD IN 4TH WORD
FPCI←DATO
WAIT FOR FP ATTN
S$_3$ ENABLE FP SYNC
(7) J
READY

STORE.1

STF$_A$~MØ

STR.1Ø (192)
LD 1ST WORD IN BD + TELL CPU TO STR
SCR OUT←ACD[3]
BMX←ACH
t$_4$ BD←BMX
S$_3$ ENABLE FP SYNC
(17Ø)

STR.12 (17Ø)
STR 1ST WORD + LD 2ND WORD IN BD
INC ADDRESS
FPCI←DATO
SCR OUT←ACD[2]
BMX←ACL
WAIT FOR FP ATTN
t$_4$ BD←BMX
S$_3$ ENABLE FP SYNC
(356) 3F1.J
IMMEDIATE
READY 1

~IMMEDIATE

STR.14 (356)
STR 2ND WORD + LD 3RD WORD IN BD
INC ADDRESS
FPCI←DATO
SCR OUT←ACD[1]
BMX←ACH
WAIT FOR FP ATTN
t$_4$ BD←BMX
S$_3$ ENABLE FP SYNC
(176) 9F1.J
FD(Ø)
READY

FD(1)

STR.16 (176)
STR 3RD WORD + LD 4TH WORD IN BD
INC ADDRESS
FPCI←DATO
SCR OUT←ACD[ØJ
BMX←ACL
WAIT FOR FP ATTN
t$_4$ BD←BMX
S$_3$ ENABLE FP SYNC
(132)

STCFD$_A$~MØ

STR.18 (196)
LD 1ST WORD IN BD
SCR OUT←ACG[3]
BMX←ACH
t$_4$ BD←BMX
S$_3$ ENABLE FP SYNC
(353)

STR.2Ø (353)
STR 1ST WORD + LD 2ND WORD IN BD
INC ADDRESS
FPCI←DATO
SCR OUT←ACG[2]
BMX←ACL
WAIT FOR FP ATTN
t$_4$ BD←BMX
S$_3$ ENABLE FP SYNC
(3Ø6) 3F1.J

~IMMEDIATE

STR.22 (3Ø6)
STR 2ND WORD + LD 3RD WORD IN BD
INC ADDRESS
FPCI←DATO
SCR OUT←ACG[1]
BMX←ACH
WAIT FOR FP ATTN
t$_4$ BD←BMX
S$_3$ ENABLE FP SYNC
(199) 9F1
FD(1)
STCF.1
6
FD(Ø)

STR.24 (195)
STR 3RD WORD + LD 4TH WORD IN BD
INC ADDRESS
FPCI←DATO
SCR OUT←ACG[ØJ
BMX←ACL
WAIT FOR FP ATTN
t$_4$ BD←BMX
S$_3$ ENABLE FP SYNC
(265)

STR.26 (265)
STR 4TH WORD; +GO TEST FOR OVERFLOW
FPCI←DATO
WAIT FOR FP ATTN
(199)
STCF.1
6

IMMEDIATE

STR.28 (3Ø7)
FEC IN TEMP + CHECK FOR OVERFLOW
S$_1$ REQ←Ø
EMX←CNST.1Ø
ALU'S←~B
ACMX←EALU
S$_4$ AC7[ØJ←ACMX
(275) 5F2.J
FV$_A$ FIV
FINT 1
~(FV$_A$ FIV)
READY 1

STF'PS

STR.3Ø (155)
LD FPS IN BD
SCR OUT←AC7[ØJ
BMX←ACL
t$_4$ BD←BMX
S$_3$ ENABLE FP SYNC
(132) 5FI

~MØ
STORE.1
6

STEXP

STR.32 (159)
LD CONVERTED EXP IN BD
SCR OUT←ACG[2]
BMX←ACL
t$_4$ BD←BMX
S$_3$ ENABLE FP SYNC
(132) 5FI

MØ

STR.34 (133)
TELL CPU TO STORE IN GEN. REG.
ENABLE FP REG WR
WAIT FOR FP ATTN
S$_3$ ENABLE FP SYNC
(7) J
READY 1

STST

STR.36 (16Ø)
LD FEC IN BD
SCR OUT←AC7[2]
BMX←ACL
BD←BMX
t$_4$
S$_3$ ENABLE FP SYNC
(1Ø9) 5FI

~MØ

STR.38 (1Ø4)
STR FEC + LD FEA IN BD
INC ADDRESS
FPCI←DATO
SCR OUT←AC7[3J
BMX←ACH
WAIT FOR FP ATTN
t$_4$ BD←BMX
S$_3$ ENABLE FP SYNC
(132) 3F1.J

IMMEDIATE
READY 1

~IMMEDIATE
STORE.1
6

MØ

STR.9Ø (1Ø5)
STR FEC IN GEN. REG + GO TO READY
ENABLE FP REG WR
WAIT FOR FP ATTN
S$_3$ ENABLE FP SYNC
(7) J
READY

STCFD$_A$MØ

STCF.1

STR.92 (199)
FEC IN TEMP + CHECK FOR OVERFLOW
EMX←CONST.1Ø
ALU'S←~B
ACMX←EALU
S$_4$ AC7[ØJ←ACMX
S$_3$ ENABLE FP SYNC
(275) 5F2.J
FV$_A$ FIV
FINT 1
~(FV$_A$ FIV)
READY 1

STORE.2
7

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN.		DATE 10-18-71
CHK'D		DATE 3/14/72
ENG.		DATE 8-10-72
PROJ. ENG.		DATE 8-10-72
PROD.		DATE 8-15-72

NEXT HIGHER ASSY. B-DD-11/45-Ø
SCALE
SHEET OF

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

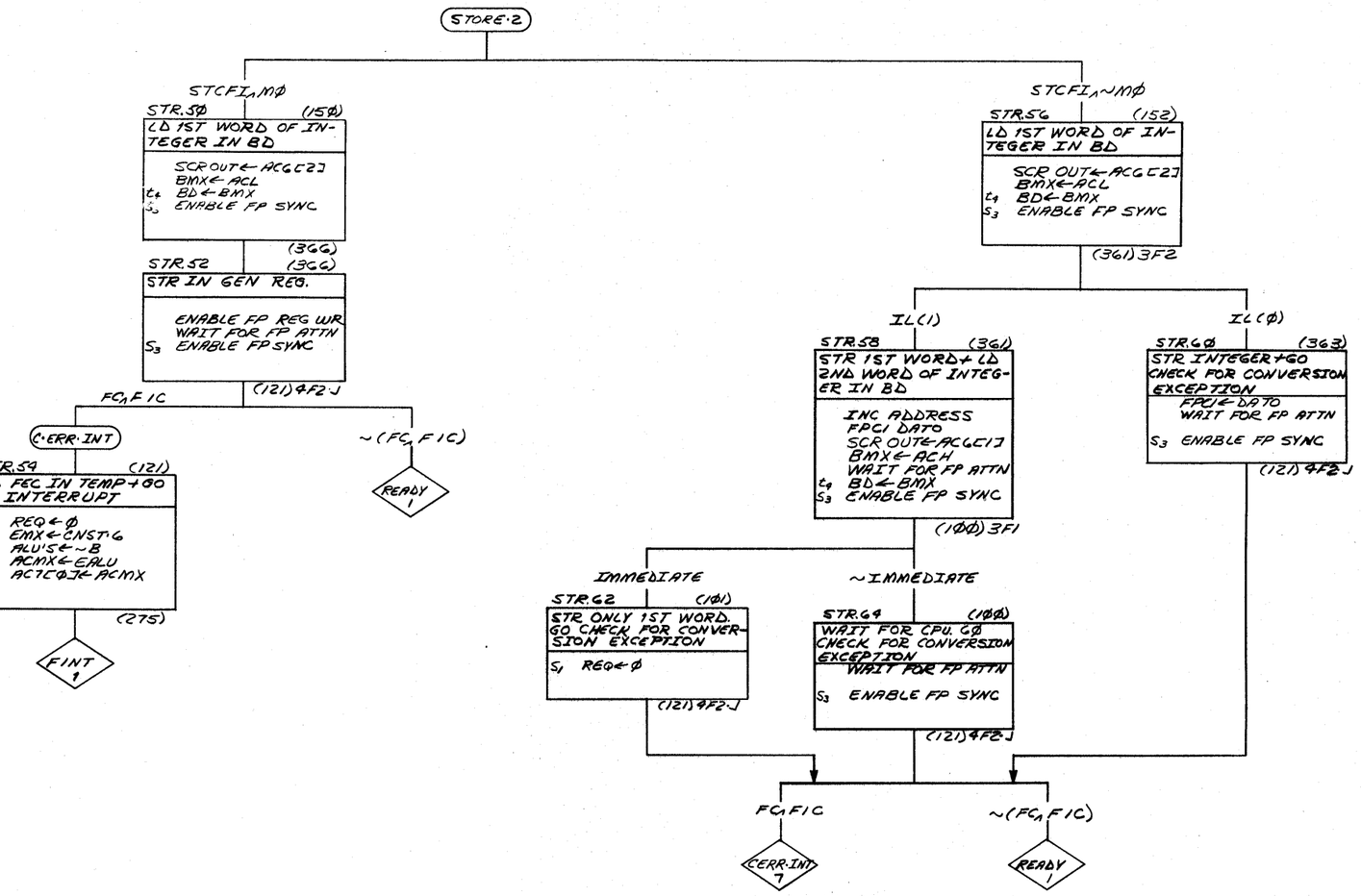
TITLE
FP11 FLOWS 6
(STORE CLASS)

SIZE	CODE	NUMBER	REV.
D	FD	FP11-B-Ø7	

DIST.

REVISIONS | REV. | CHANGE NO. | CHK

DEC FORM NO D2D 102-B



REVISIONS	REV	CHANGE NO.	CHK

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

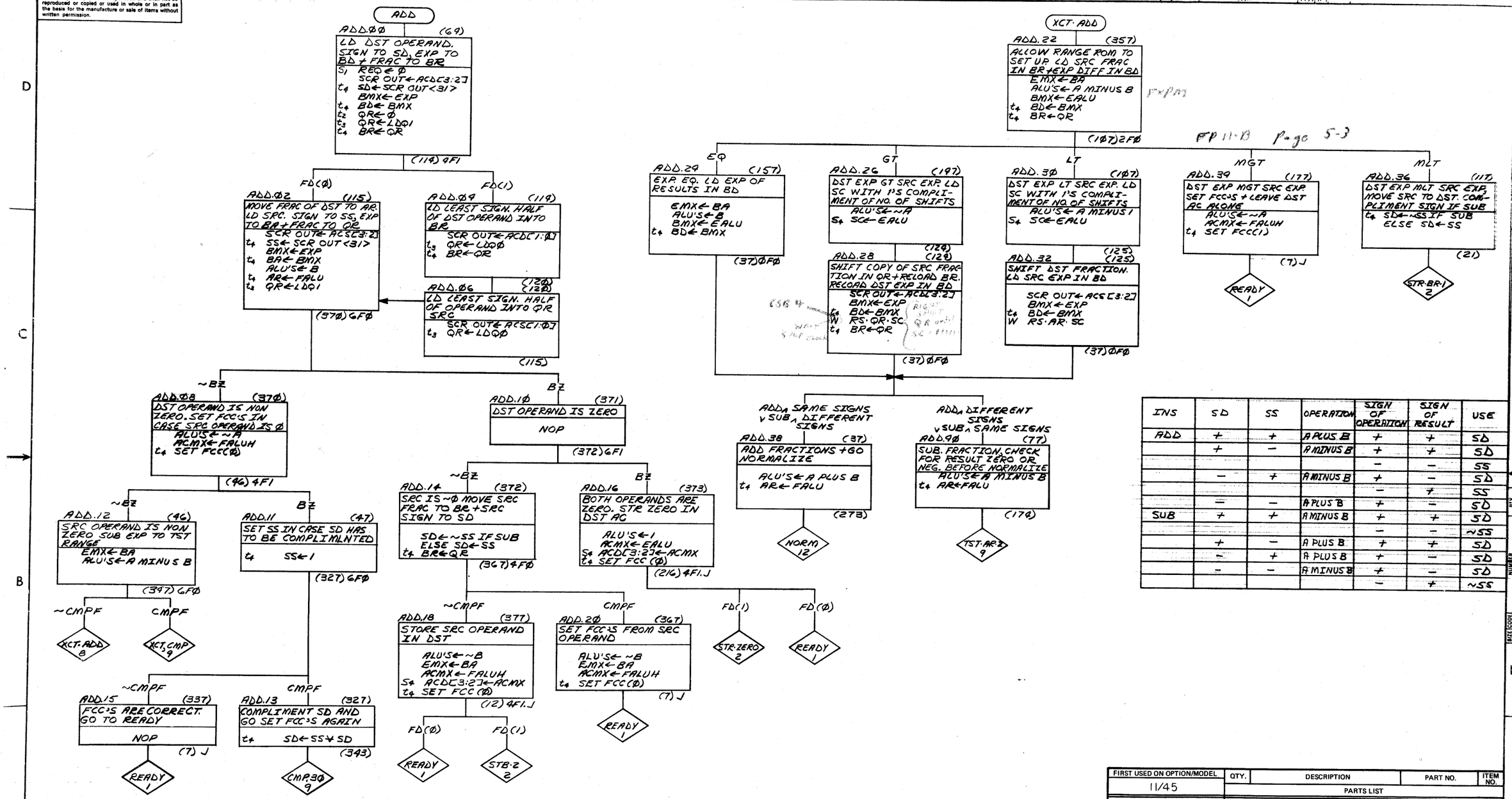
MATERIAL —

FINISH —

DRN. A.Kalant	DATE 1/4/72	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D.	DATE 3/14/72	
ENG. A.B.Hughes	DATE 3-16-72	TITLE FP11 FLOWS 7 (STORE CLASS)
PROJ. ENG. A.B.Hughes	DATE 3-16-72	
PROD.	DATE 3-15-72	
NEXT HIGHER ASSY. B-DD-11/45-Ø		SIZE D CODE FD NUMBER FP11-B-Ø8 REV.
SCALE —		
SHEET OF		DIST.

DEC FORM NO DRD 102-B

SIZE D CODE FD NUMBER FP11-B-Ø8 REV.



FP11-B Page 5-3

INS	SD	SS	OPERATION	SIGN OF OPERATION	SIGN OF RESULT	USE
ADD	+	+	A PLUS B	+	+	SD
	+	−	A MINUS B	+	+	SD
				−	−	SS
	−	+	A MINUS B	+	−	SD
				−	+	SS
	−	−	A PLUS B	+	−	SD
SUB	+	+	A MINUS B	+	+	SD
				−	−	~SS
	+	−	A PLUS B	+	+	SD
	−	+	A PLUS B	+	−	SD
	−	−	A MINUS B	+	−	SD
				−	+	~SS

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN.	DATE	10/21/71
CHK'D	DATE	3/14/72
ENG.	DATE	3-14-72
PROJ. ENG.	DATE	3-10-72
PROD.	DATE	3-15-72

NEXT HIGHER ASSY. B-DD-11/45-Ø
SCALE —
SHEET OF

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

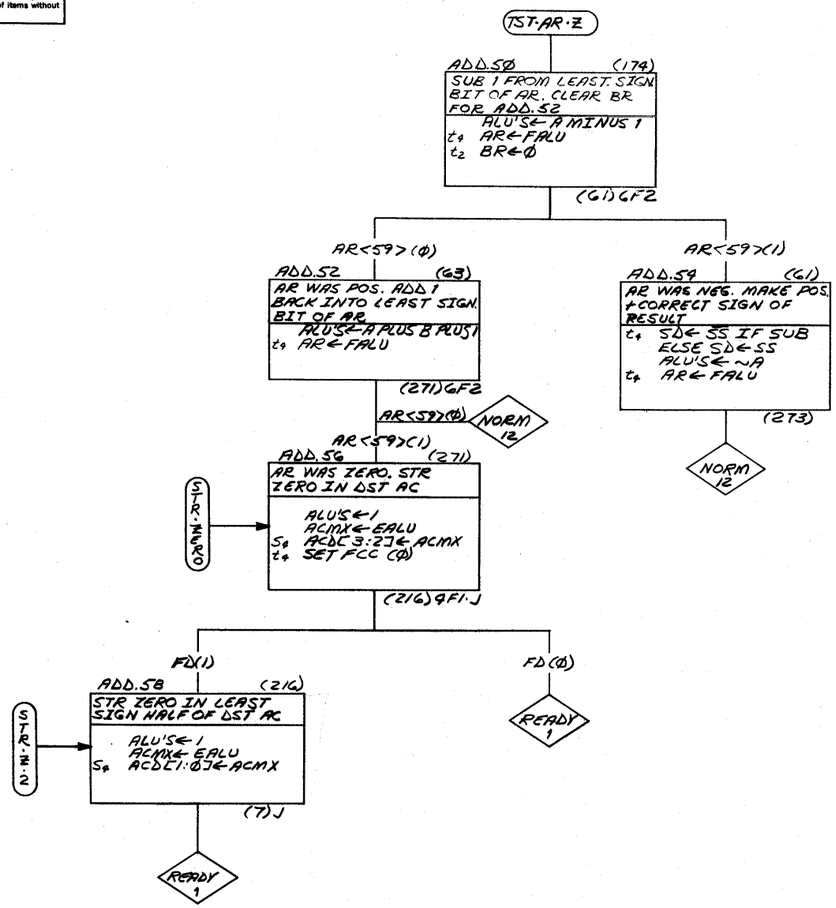
TITLE: FP11 FLOWS 8 (EXECUTE ADD, SUB, OR CMP)

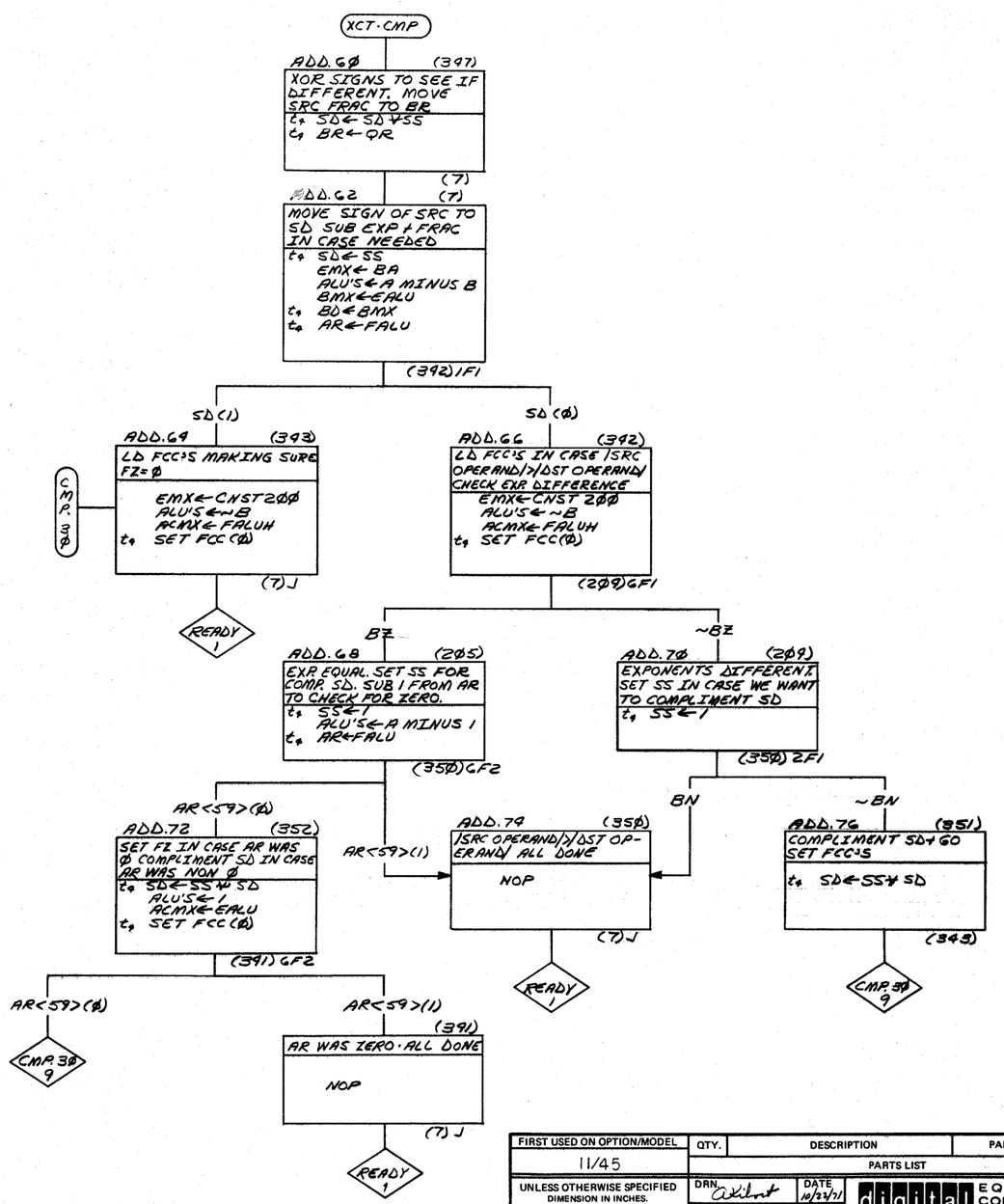
SIZE	CODE	NUMBER	REV.
D	FD	FP11-B-Ø9	

DIST.

REVISIONS | REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B





REVISIONS	CHANGE NO.	REV.
		CHK

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS SPECIFIED DIMENSION IN INCHES. TOLERANCES	DRN. Wilmot	DATE 10/23/71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'	CHK'D. [illegible]	DATE 3/14/72	TITLE: FP11 FLOWS 9 (EXECUTE ADD SUB OR CMP)
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓	ENG. T.D.Hughes	DATE 3-15-72	
	PROJ. ENG. T.D.Hughes	DATE 3-15-72	
	PROD. J. Smith	DATE 3-15-72	
MATERIAL —	NEXT HIGHER ASSY. B-DD-11/45-Ø		SIZE D CODE FD NUMBER FP11-B-10 REV.
FINISH —	SCALE —		
	SHEET OF		DIST.

DEC FORM NO DRD 102-B

MUL

MUL.ØØ (6Ø)
LD DST SIGN TO SD EXP TO BD→FRAC TO BR. LD STEP CTR FOR 24 BIT MUL
S1 REQ←Ø
EMX←CNST·31
ALU'S←~B
S↓ SC←EALU
SCR OUT←ACD[3:2]
t↓ SD←SCR OUT<31>
BMX←EXP
t↓ BD←BMX
t↓ QR←Ø
t3 QR←LDQ1
t↓ BR←QR
(22Ø)9F1

FD(Ø) MUL.Ø2 (221)
LD SRC OPERAND, SIGN IN SS EXP IN BA+FRAC IN QR, CLEAR AR
SCR OUT←ACSC[3:2]
t↓ SS←SCR OUT<31>
BMX←EXP
t↓ BA←BMX
t3 QR←LDQ1
ALU'S←Ø
t↓ AR←FALU
(224)6F1

FD(1) MUL.Ø4 (223)
LD LEAST SIGN HALF OF DST OPERAND IN BR. LD STEP COUNTER FOR 5'6 BIT MUL
EMX←CNST 11
EALU←~B
S↓ SC←EALU
SCR OUT←ACD[1:Ø]
t3 QR←LDQØ
t↓ BR←QR
(221)

BZ MUL.Ø6 (225)
DST OPERAND IS ZERO
NOP
MODF (23)6FØ

~BZ MUL.Ø8 (229)
DST OPERAND~Ø LD LEAST SIGN HALF OF SRC OPERAND IN QR+ADD EXPONENTS
EMX←BA
ALU'S←A PLUS B
BMX←EALU
t↓ BD←BMX
SCR OUT←ACSC[1:Ø]
t3 QR←LDQØ
(23Ø)6F1

~MODF MUL.12 (33)
STR ZERO IN DST
ALU'S←1
ACMX←EALU
S↓ ACD[3:2]←ACMX
t↓ SET FCC(Ø)
(216)4F1,J

STR·Z·I
MUL.1Ø (23)
STR ZERO IN DST, NOTE THAT AR IS ZERO
ALU'S←1
ACMX←EALU
S↓ ACDv1C[3:2]←ACMX
(3Ø9)4F1
FD(Ø) S·Z·F·1 1Ø
FD(1) S·Z·F·2 1Ø

FD(1) STR·ZERO
FD(Ø) READY 1

BZ MUL.14 (231)
SRC OPERAND IS ZERO
NOP
(23)6FØ
~MODF
MODF
STR·Z·I 1Ø

~BZ MUL.16 (23Ø)
CALL HARDWARE MUL. ROUTINE
W FRAC MUL
(362)

MUL.18 (362)
CALCULATE SIGN OF RESULT+REMOVE EXTRA 2ØØ FROM EXP OF RESULT
t↓ SD←SS+SD
EMX←CNST 2ØØ
ALU'S←A MINUS B
BMX←EALU
t↓ BD←BMX
(1Ø2)6FØ

AR<58>(Ø)∧~MODF MUL.2Ø (112)
ANSWER NOT NORMALIZED. SHFT LEFT 1 + UPDATE EXP
ALU'S←A MINUS 1
BMX←EALU
t↓ BD←BMX
t↓ LS·AR·1
t2 BR←Ø
(262)4FØ

AR<58>(1)∧~MODF MUL.22 (116)
ANSWER IS NORMALIZED GO TRUNCATE ν ROUND
t2 BR←Ø
(262)4FØ

AR<58>(Ø)∧MODF MUL.24 (1Ø2)
ANSWER NOT NORMALIZED SHFT LEFT+REMOVE BIAS FROM EXP
EMX←CNST·2ØØ
ALU'S←AMINUS B MINUS 1
BMX←EALU
t↓ BD←BMX
t↓ LS·AR·1
(36Ø)
STR·I·F 1Ø

AR<58>(1)∧MODF MUL.26 (1Ø4)
ANSWER NORMALIZED. REMOVE BIAS FROM EXP
EMX←CNST 2ØØ
ALU'S←A MINUS B
BMX←EALU
t↓ BD←BMX
(36Ø)
STR·I·F 1Ø

FT(Ø)∧FD(Ø) NORM.GØ 12
FT(Ø)∧FD(1) NORM.7Ø 12
FT(1)∧FD(Ø) NORM.BØ 12
FT(1)∧FD(1) NORM.9Ø 12

STR·I·F
MOD.ØØ (36Ø)
LOOK AT RANGE OF UNBIASED EXP
ALU'S←A
(127)
MOD.Ø2 (121)
ALLOW RANGE ROM TO SETTLE
ALU'S←A
(1Ø3)2FØ

MLT MOD.Ø4 (113)
INTEGER PART IS ZERO
ALU'S←1
ACMX←EALU
S↓ ACDv1C[3:2]←ACMX
(26Ø)9F1

LT MOD.Ø6 (1Ø3)
INTEGER PART IS ZERO
ALU'S←1
ACMX←EALU
S↓ ACDv1C[3:2]←ACMX
(26Ø)9F1

EQ MOD.Ø8 (153)
INTEGER PART IS ZERO
ALU'S←1
ACMX←EALU
S↓ ACDv1C[3:2]←ACMX
(26Ø)9F1

GT MOD.19 (193)
LD STEP COUNTER WITH POSITION OF BINARY PNT.
ALU'S←~A
S↓ SC←EALU
t2 QR←Ø
(211)

MGT MOD.29 (173)
FRACTIONAL PART IS ZERO ADD BIAS BACK INTO EXP
EMX←CNST 2ØØ
ALU'S←A PLUS B
BMX←EALU
t↓ BD←BMX
(3Ø2)

FD(1) MOD.1Ø (26Ø)
STR ZERO IN LEAST SIGN. HALF OF DST,1
EALU←1
ACMX←EALU
S↓ ACDv1C[1:Ø]←ACMX
(261)

FD(Ø) MOD.12 (261)
ADD BIAS BACK INTO EXPONENT
EMX←CNST 2ØØ
ALU'S←A PLUS B
BMX←EALU
t↓ BD←BMX
t2 BR←Ø
(262)9FØ

MOD.16 (211)
ADD BIAS BACK INTO EXP+FORM MASK IN QR.
BR←QR
EMX←CNST 2ØØ
ALU'S←A PLUS B
BMX←EALU
t↓ BA←BMX
t↓ BD←BMX
W RSQR·SC(1IN)
(175)

MOD.26 (3Ø2)
STR MOST SIGN. HALF OF INTEGER
ALU'S←~A
ACMX←FALUH
S↓ ACDv1C[3:2]←ACMX
(3ØØ)9F1

MOD.13 (175)
AND OFF INTEGER PART + STR
ALU'S←~(A∧B)
EMX←BA
ACMX←FALUH
S↓ ACDv1C[3:2]←ACMX
(3Ø9)9F1

MOD.28 FD(1) (3ØØ)
STR LEAST SIGN. HALF OF INTEGER
ALU'S←~A
ACMX←FALUL
S↓ ACDv1C[1:Ø]←ACMX
(3Ø3)

MOD. 3Ø (3Ø3)
STR ZERO IN LEAST SIGN HALF OF FRAC.
ALU'S←1
ACMX←EALU
S↓ ACDC1:Ø]←ACMX
(3Ø1)

FD(Ø) MOD.32 (3Ø1)
STR ZERO IN MOST SIGN HALF OF FRAC
ALU'S←~1
ACMX←EALU
S↓ ACDC3:2]←ACMX
t↓ SET FCC(Ø)
(136)
NORM13Ø 12

FD(Ø) S·Z·F·1

FD(1) MOD.2Ø (3Ø9)
STR LEAST SIGN HALF OF INTEGER PART
ALU'S←~(A∧B)
ACMX←FALUL
S↓ ACDv1C[1:Ø]←ACMX
(3Ø5)
S·N·F·2

MOD.22 (3Ø5)
AND OFF FRACTIONAL PART+GO NORMALIZE
FALU←A∧~B
t↓ AR←FALU
(179)
TST·AR·2 9

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

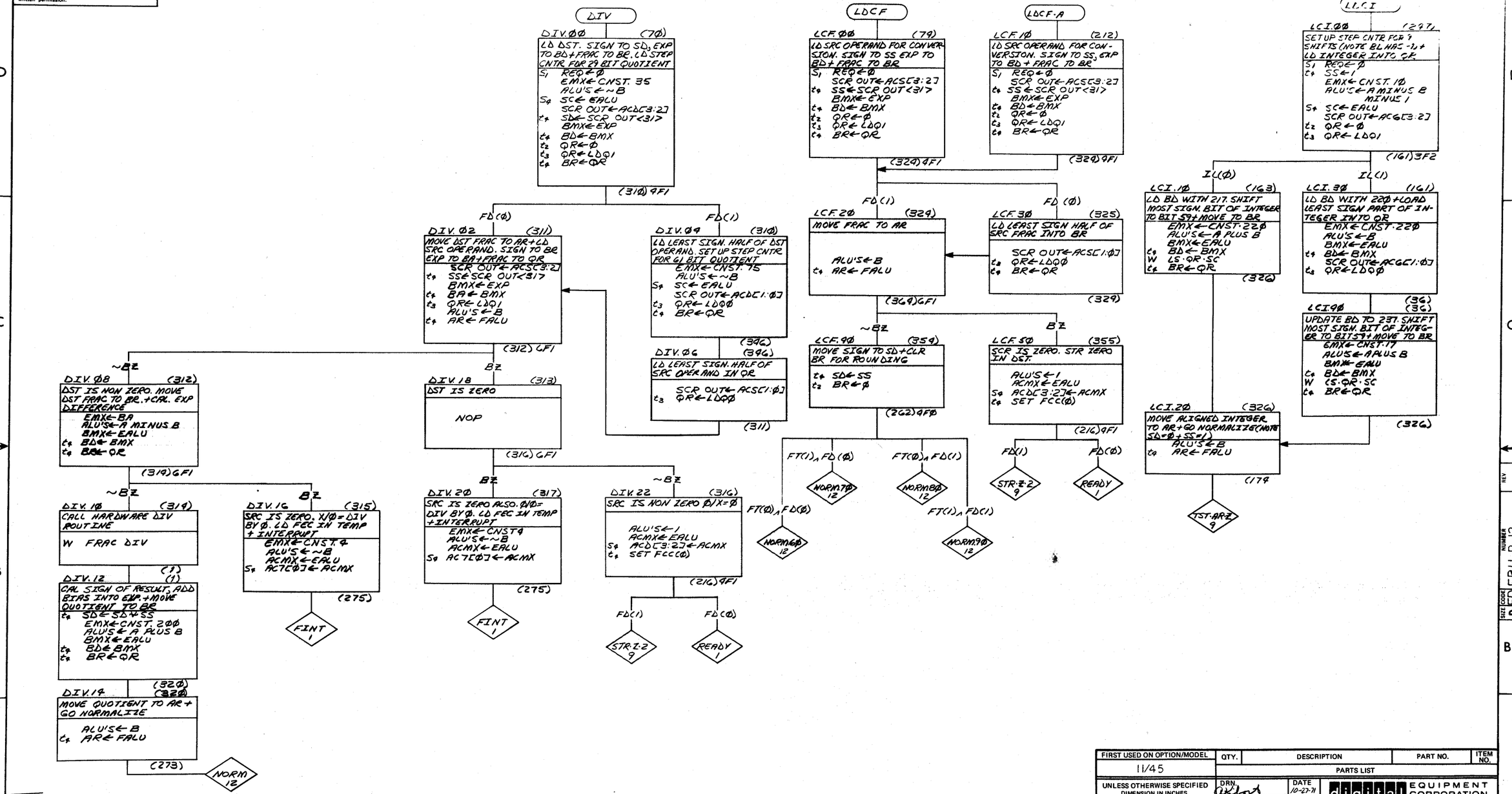
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL
FINISH

DRN. Q2 Libert	DATE 10/26/71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. Robert Wilson	DATE 3/19/72	
ENG. R B Hughes	DATE 3-9-72	TITLE: FP11 FLOWS 1Ø (EXECUTE MUL OR MOD)
PROJ. ENG. R B Hughes FS	DATE 3-9-72	
PROD. C. H. Welch	DATE 3-15-72	
NEXT HIGHER ASSY. B-DD-11/45-Ø		SIZE D · CODE FD · NUMBER FP11-B-11 · REV.
SCALE		
SHEET OF		DIST.

REVISIONS: REV. | CHANGE NO | CHK

SIZE D · CODE FD · NUMBER FP11-B-11 · REV.

DEC FORM NO DRD 102-B

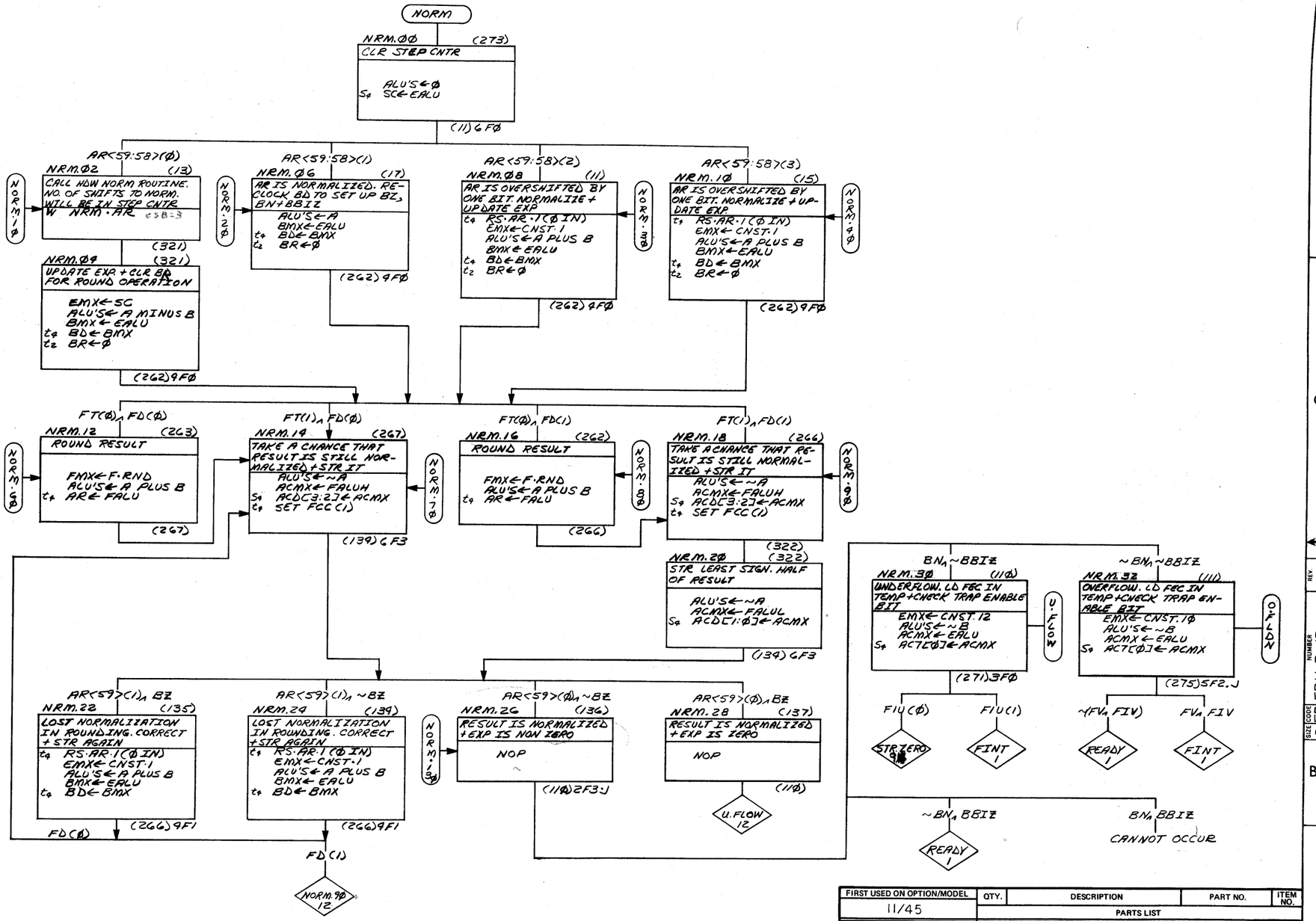


FIRST USED ON OPTION/MODEL: 11/45	QTY.	DESCRIPTION: PARTS LIST	PART NO. / ITEM NO.
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES: DECIMALS .XXX = .005, .XX = .02, .X = .1; ANGLES ±0° 30'. REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓	DRN. [illegible] DATE 10-27-71	CHK'D. [illegible] DATE 3/19/72	ENG. K.B.Hughes DATE 3-16-72
PROJ. ENG. K.B.Hughes DATE 3-16-72	PROD. T. Smith DATE 3-15-72	MATERIAL —	FINISH —
NEXT HIGHER ASSY. B-DD-11/45-Ø	SCALE —	SHEET OF	
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	TITLE: FP11 FLOWS 11 (EXECUTE DIV, LDCF OR LDCI)	SIZE D CODE FD NUMBER FP11-B-12 REV.	DIST.

REVISIONS: REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

SIZE CODE D FD NUMBER FP11-B-12 REV



B cond color on Block

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

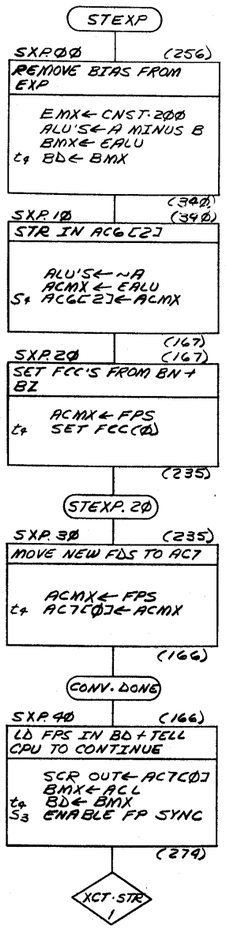
FINISH

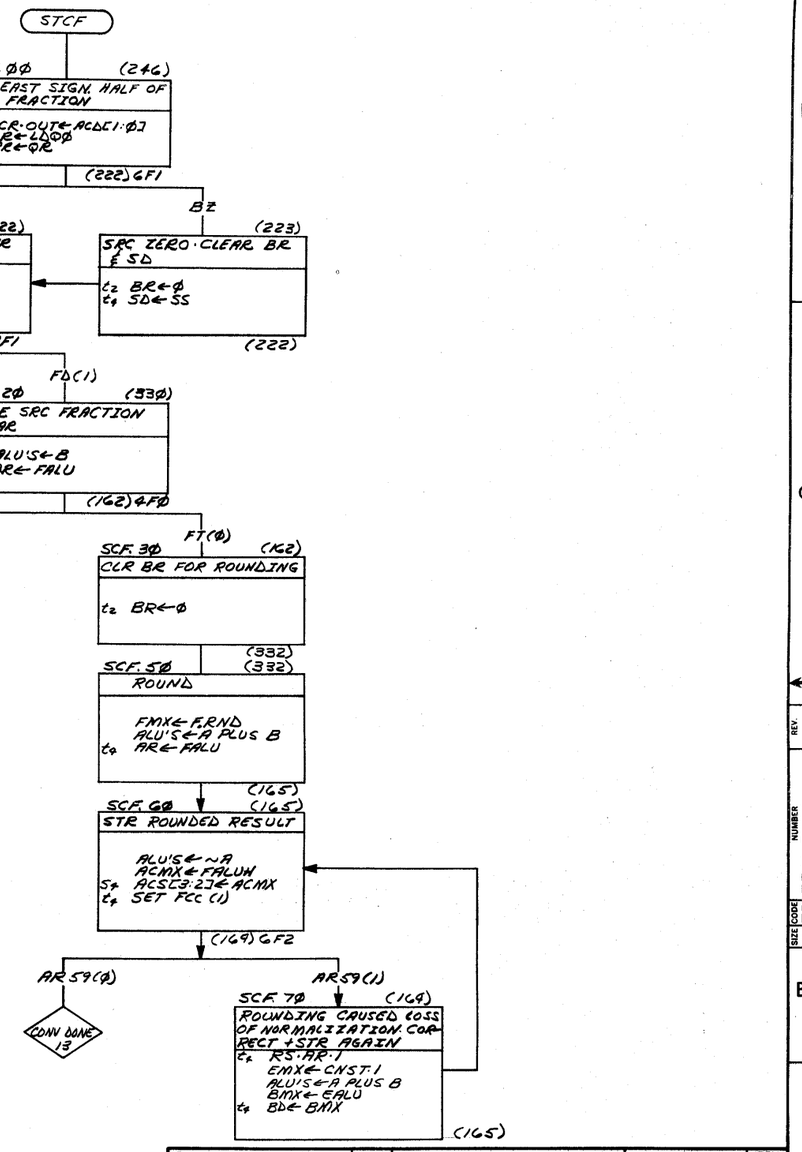
DRN. Eckhart	DATE 1/28/71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. Hodgson	DATE 3/9/72	
ENG. W B Hughes	DATE 3-10-72	TITLE FP11 FLOWS 12 (NORMALIZE & ROUND)
PROJ. ENG. W B Hughes	DATE 3-10-72	
PROD. A. Church	DATE 3-15-72	
NEXT HIGHER ASSY. B-DD-11/45-Ø		SIZE D CODE FD NUMBER FP11-B-13 REV.
SCALE		DIST.
SHEET OF		

REVISIONS | REV. | CHANGE NO | CHK

DEC FORM NO DRD 102-B

SIZE CODE D FD NUMBER FP11-B-13 REV.





FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN. A Klint	DATE 10-25-71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
ENG. P Donahue	DATE 3/4/72	
ENG. T Dillingham	DATE 8-10-72	TITLE: FP11 FLOWS 13 (EXECUTE STEXP & STCF)
PROJ. ENG. A Kenyon	DATE 2-22-72	
PROD. A Hatch	DATE 3-6-72	
NEXT HIGHER ASSY. B-DD-11/45-Ø		SIZE D · CODE FD · NUMBER FP11-B-14 · REV.
SCALE —		
SHEET OF		DIST.

REVISIONS	CHANGE NO.	REV.
		CHK

DEC FORM NO IJRD 102-B

SIZE D · CODE FD · NUMBER FP11-B-14 · REV.

STCI

SCI.00 (252)
USE EXP-201 TO SET BCC'S
EMX←CNST·200
ALU'S←A MINUS B MINUS 1
BMX←EALU
t_4 BA←BMX
(251)3F2

IL(1)

SCI.03 (251)
SUB 21 FROM EXP
EMX←CNST·21
ALU'S←A MINUS B
BMX←EALU
t_4 BD←BMX
(379)2F1

IL(0)

SCI.09 (253)
SUB 1 FROM EXP
ALU'S←A MINUS 1
BMX←EALU
t_4 BD←BMX
(379)2F1

BN

SCI.06 (374)
EXP≤200·STR ZERO
ALU'S←1
ACMX←EALU
S_8 ACGC3:2]←ACMX
t_4 SET FCC(0)
(333)

SCI.08 (338)
STR ZERO IN LEAST SIGN HALF
ALU'S←1
ACMX←EALU
S_4 ACGC1:0]←ACMX
(235)

STEXP.20 /3

~BN

SCI.10 (375)
EXP>200·SET BCC'S ON EXP-221 OR EXP-241
EMX←CNST.220
ALU'S←A MINUS B
BMX←EALU
t_4 BD←BMX
(364)4F1

FD(0)

SCI.12 (365)
MOVE FRAC TO AC
ALU'S←B
t_4 AR←FALU
(54)2F1

FD(1)

SCI.11 (364)
LD LEAST SIGN. HALF OF SRC FRAC. IN BR
SCR·OUT←ACDC1:0]
t_3 QR←LDQR
t_4 BR←QR
(365)

BN

SCI.19 (59)
EXP<220 OR 240. LD STEP CNTR TO ALIGN BINARY PNT BETWEEN BIT 34 & 35
EMX←CNST·7
ALU'S←A MINUS B MINUS 1
S_8 SC←EALU
(395)

SCI.16 (395)
CALL HARDWARE ROUTINE TO SHIFT AR RIGHT
W RS·AR·SC(0 IN)
(339)1F1

SD(1)

STRI·NEG /4

SD(0)

~BN

SCI.18 (339)
STR ALIGNED RESULT + CHECK TO MAKE SURE INTEGER IS POSITIVE
ALU'S←~A
ACMX←FALUH
S_4 ACGC3:2]←ACMX
(55)1F2

AR<50>(0)

SCI.20 (57)
INTEGER IS POSITIVE. STORE LEAST SIGN. HALF
ALU'S←~A
ACMX←FALUL
S_4 ACGC1:0]←ACMX
(130)

STCI.CØ /4

AR<50>(1)

SCI.22 (55)
CONVERSION ERROR. CLR RESULT + SET FC
ALU'S←1
ACMX←EALU
S_1 ACGC3:2]←ACMX
t_4 SET FCC(2)
(333)

STCI·ØØ

STCI·NEG

SCI.29 (335)
LD 1'S COMP OF INTEGER IN AR + CLR BR FOR INCREMENTING
ALU'S←~A
t_4 AR←FALU
t_2 BR←0
(336)
(336)

SCI.26 (336)
ADD 1 TO GET 2'S COMPLEMENT
FMX←I·INC
ALU←A PLUS B
t_4 AR←FALU
(323)
(323)

SCI.28 (323)
STR RESULT + CHECK TO SEE IF INTEGER IS NEGATIVE
ALU'S←~A
ACMX←FALUH
S_4 ACGC3:2]←ACMX
(215)1F2

AR<50>(0)

SCI.30 (217)
SIGN IS WRONG, CLR RESULT + SET FC TO INDICATE CONVERSION ERROR
ALU'S←1
ACMX←EALU
S_4 ACGC3:2]←ACMX
t_4 SET FCC(2)
(333)

STCI 50 /4

AR<50>(1)

SCI.32 (215)
INTEGER IS NEGATIVE. STR LEAST SIGN PART
ALU'S←~A
ACMX←FALUL
S_4 ACGC1:0]←ACMX
(130)
(130)

SCI.39 (130)
SET FCC'S. LD SIGN. OF SRC IN FN + 0 IN FI, FV + FC
EMX←CNST·200
ALU'S←~B
ACMX←FALUH
t_4 SET FCC(0)
(235)

STCI·CØ

STEXP.20 /3

FIRST USED ON OPTION/MODEL: 11/45	QTY.	DESCRIPTION	PART NO. / ITEM NO.
		PARTS LIST	

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

DRN. Wilmot DATE 1/24/74
CHKD. [illegible] DATE 3/4/72
ENG. R.B. Hughes DATE 3-16-72
PROJ. ENG. R.B. Hughes DATE 3-10-72
PROD. O. Hauch DATE 3-15-72

NEXT HIGHER ASSY. B-DD-11/45-Ø
SCALE —
SHEET OF

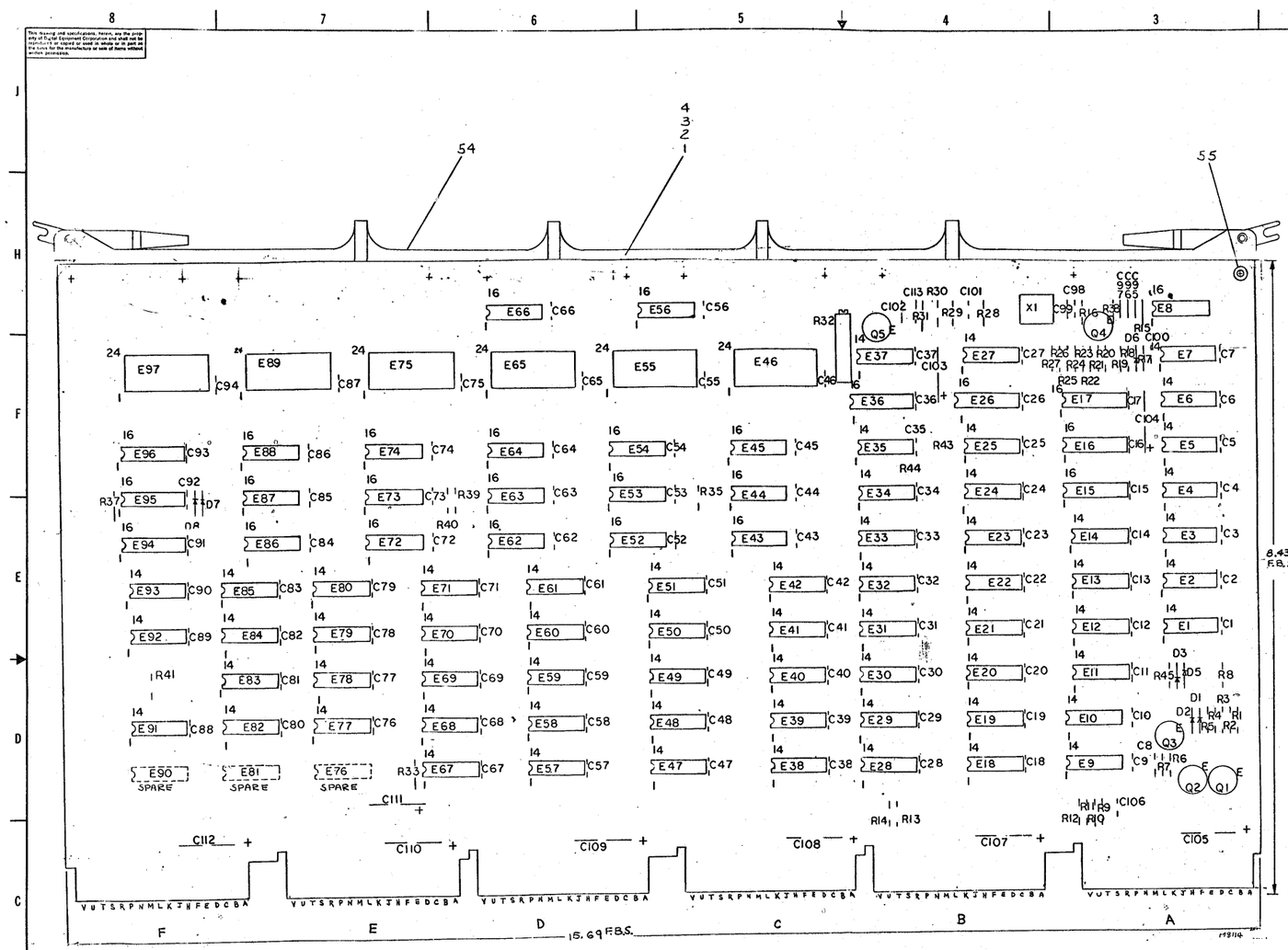
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: FP11 FLOWS 14 (EXECUTE STCI)

SIZE D | CODE FD | NUMBER FP11-B-15 | REV.
DIST.

REVISIONS | REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B



NOTES:

1. UNLESS OTHERWISE NOTED RESISTANCE IS IN Ω AND CAPACITANCE IS IN PICOFARADS. CAPS. WITHOUT VALUE NOTED ARE .01 MFD.

AA2, AV1, CA2, CV1, BA2, BV1, DA2, DV1, EA2, EV1, FA2, FV1 — +5V — 6.8 μF — .01 μF — C1 THRU C94, C102, C106

AC2, AN2, AH1, AT1, BC2, BN2, BH1, BT1, CC2, CN2, CH1, CT1, DC2, DN2, DH1, DT1, EC2, EN2, EH1, ET1, FC2, FN2, FH1, FT1 — GND — C103, C104, C105, C107, C108, C109, C110, C111, C112

IC TYPE	GND	+5V
DEC 74181	12	24
DEC 74175	8	16
DEC 74194	8	16
DEC 74S182	8	16
DEC 74S112	8	16

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

IC PIN LOCATIONS

AWG	FROM PT	TO PT

JUMPER LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1	E10	IC DEC74S74-45	1910950	59
1	C113	CAPACITOR 18PF 100V 5%	1002608	58
1	C101	CAPACITOR 47PF 100V 5%	1000011	57
1	X1	CRYSTAL 18mhz	1509880-6	56
12		EYELET	9006732	55
1		HANDLE MODULE	E-PS-1210711-2	54
1	Q1	TRANSISTOR DEC 4258	1505321	53
4	Q2,Q3,Q4,Q5	TRANSISTOR DEC 3009B	1503100	52
1	E24	IC DEC 74S65	1910543	51
6	E46, E55, E65, E75, E89, E97	IC DEC 74181	1909982	50
6	E44, E53, E63, E73, E87, E95	IC DEC 74175	1910651	49
12	E43, E45, E52, E54, E62, E64, E72, E74, E86, E88, E94, E96	IC DEC 74194	1910623	48
1	E84	IC DEC 74H74	1909647	47
1	#77	IC DEC 74H50	1909060	46
3	E61, E80, E85	IC DEC 74H40	1905586	45
2	E5, E82	IC DEC 74H11	1909267	44
3	E27, E79, E91	IC DEC 74H10	1909057	43
1	E78	IC DEC 74H04	1909931	42
2	E71, E92	IC DEC 74H00	1909056	41
2	E56, E66	IC DEC 74182-1	1910551	40
8	E7, E18, E19, E20, E37, E42, E47, E93	IC DEC 74S140	1910546	39
5	E15, E16, E17, E26, E36	IC DEC 74S112	1910545	38
8	E25, E28, E33, E39, E41, E48, E49, E91	IC DEC 74S74	1910544	37
3	E4, E32, E38	IC DEC 74S64	1910542	36
2	E40, E45	IC DEC 74S20	1910539	35
6	E1, E11, E22, E30, E35, E49	IC DEC 74S11	1910537	34
6	E12, E29, E34, E51, E57, E60	IC DEC 74S10	1910536	33
1	E13	IC DEC 74S05	1910535	32
9	E3, E14, E21, E31, E50, E58, E59, E67, E83	IC DEC 74S00	1910532	31
2	E23, E70	IC DEC 74S04	1910534	30
1	E6	IC DEC 7404	1996686	29
1	E2	IC DEC 7400	1955575	28
1	E8	TRANSFORMER, PULSE	1609651	27
4	R33, R35, R37, R41	RESISTOR 100Ω, ¼W, 5%	1300229	26
1	R32	RESISTOR, VARIABLE, 5K, 3/4W	1309143-09	25
4	R1 THRU R4	RESISTOR 1.2K, ¼W, 5%	1301320	24
5	R8 THRU R12	RESISTOR 1K, ¼W, 5%	1300365	23
7	R13, R20, R22, R24, R26, R39, R44	RESISTOR 680Ω, ¼W, 5%	1301424	22
1	R16	RESISTOR 10K, ¼W, 10%	1300481	21
1	R19	RESISTOR 3.3K, ¼W, 5%	1300439	20
2	R5, R38	RESISTOR 82Ω, ¼W, 10%	1300224	19
10	R14, R21, R23, R25, R27, R29, R30, R31, R40, R43	RESISTOR 330Ω, ¼W, 5%	1300295	18
1	R15,	RESISTOR 220Ω, ¼W, 5%	1300271	17
3	R17, R18, R45	RESISTOR 470Ω, ¼W, 5%	1300316	16
2	R6, R7	RESISTOR 22Ω, ¼W, 5%	1301969	15
1	R28	RESISTOR 10Ω, ¼W, 5%	1301317	14
5	D1, D2, D3, D5, D6	DIODE D662	1101013	13
2	D7, D8	DIODE FD 777	1103041	12
1	C98	CAPACITOR 33PF, 100V, 5%	1000009	11
1	C96	CAPACITOR 68PF, 100V, 5%	1000014	10
1	C99	CAPACITOR 10PF, 100V, 5%	1000006	9
9	C103, C109, C105, C107, C108, C109, C110, C111, C112	CAPACITOR 6.8μF, 35V, 20%	1000067	8
96	C1 THRU C94, C102, C106	CAPACITOR .01μF, 100V, 20% DISC	1001610	7
1	C97	CAPACITOR 100PF, 100V, 5% DISC	1000016	6
2	C95, C100,	CAPACITOR .047μF 16V, +80-20% DISC	1009678	5
1		ETCHED CIRCUIT BOARD	5009863	4
REF		MODULE ECO HISTORY	B-MH-M8114-0-6	3
REF		ASSY/DRILLING HOLE LAYOUT	E-AH-M8114-0-5	2
REF		X-Y COORDINATE HOLE LOCATION	K-CO-M8114-0-4	1

PARTS LIST

ITEM	REVISIONS	DATE	APPROVED
A	ECO M8114-0-1	3-27-72	L. HUGHES
B	ECO M8114-0-2	4-10-72	L. HUGHES
C	ECO M8114-0-3	5-2-72	L. HUGHES

SEMICONDUCTOR CONVERSION CHART			
DEC 4258	N.A.		
DEC 3009 B	2N3646		
FD 777	SAME		
D662	1N645		
DEC NO.	EIA NO.	DEC NO.	EIA NO.

PCH BOARD REV C

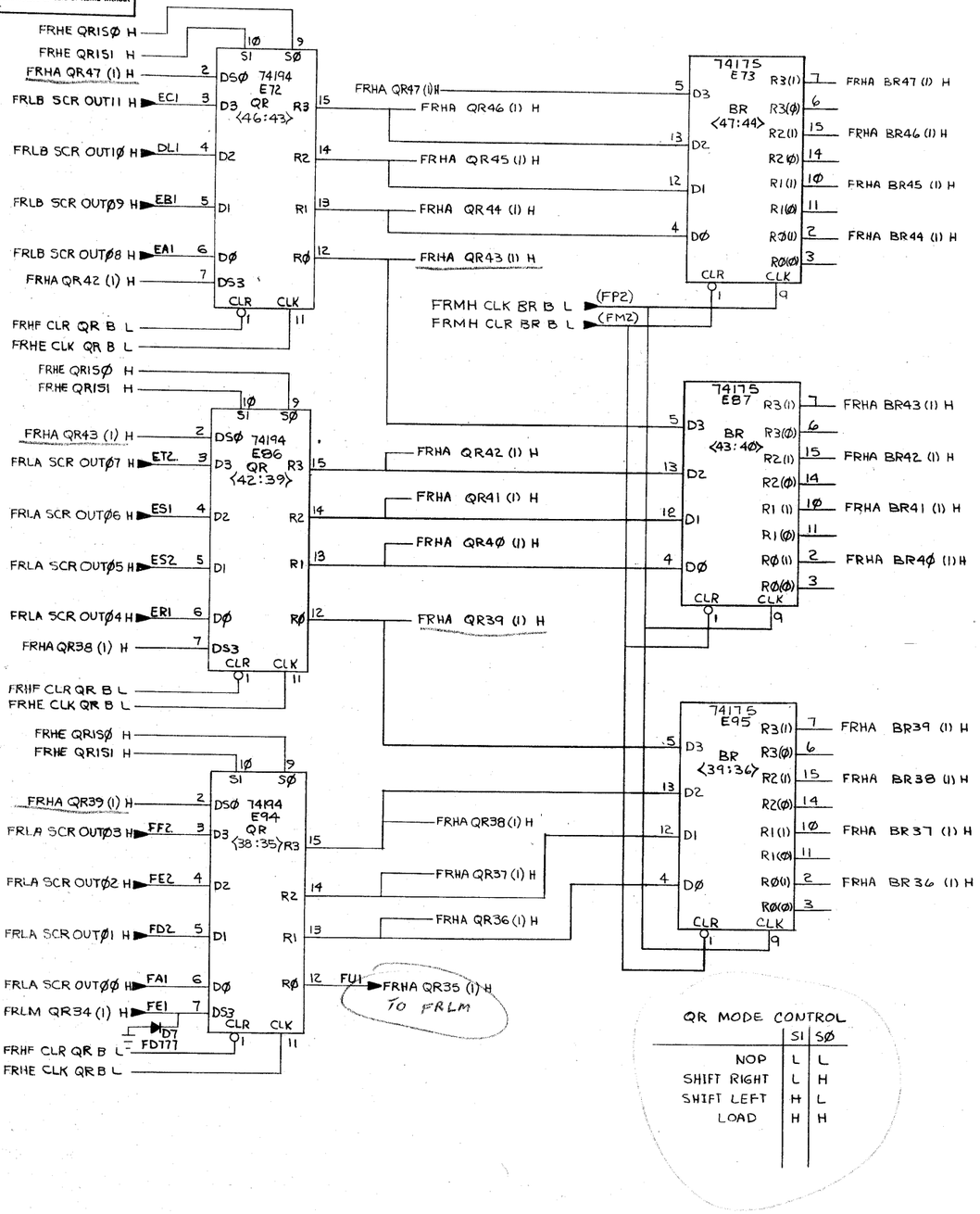
DRN. — DATE —
CHK'D. — DATE —
ENG. — DATE —
PROJ. ENG. — DATE —
PROJ. LDR. L. HUGHES DATE 5/1/72
NEXT HIGHER ASSY B-DD-11/45-0
SCALE 2/1 SHEET 1 OF 9

DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

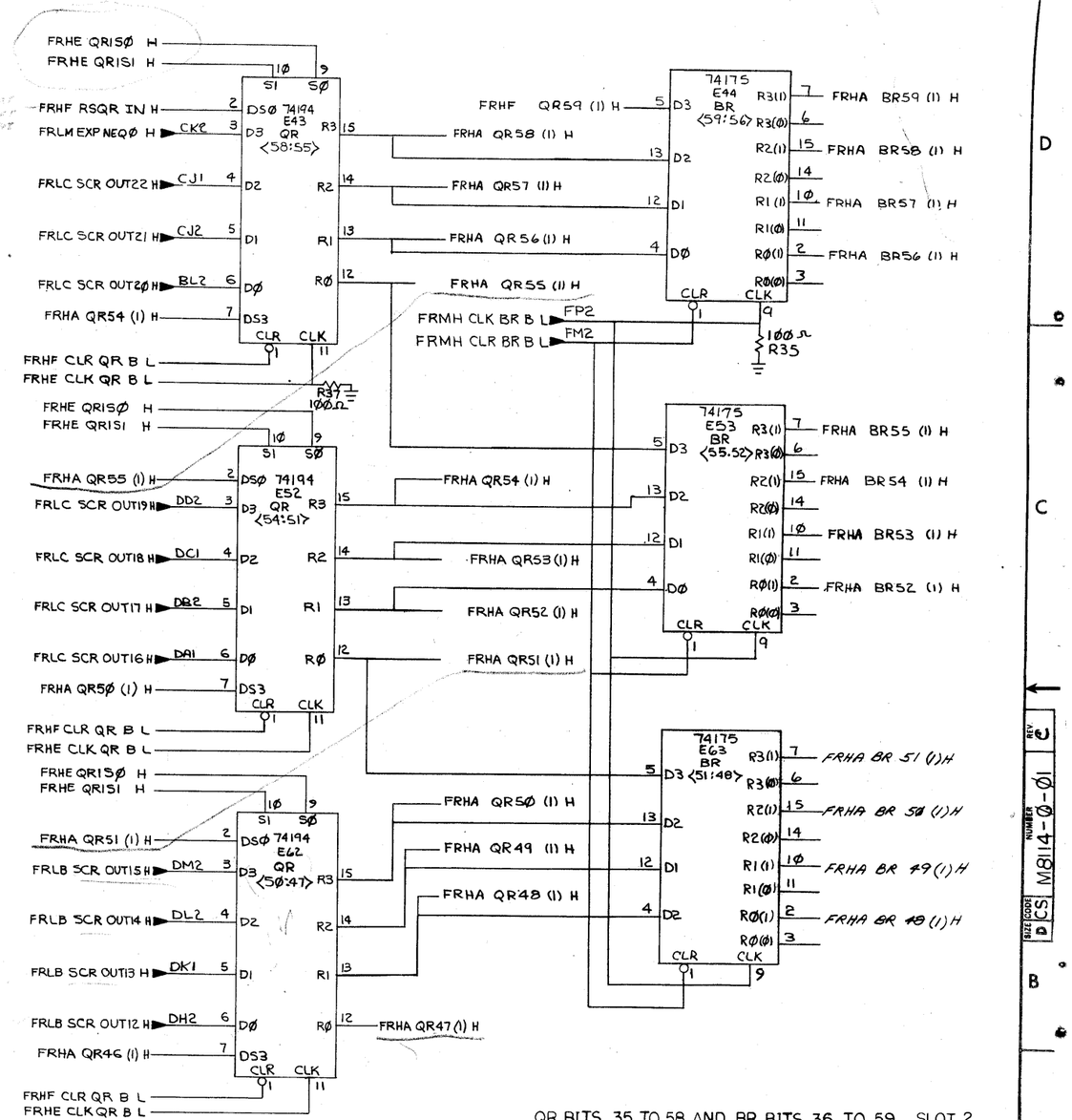
TITLE FRACTION DATA PATH HIGH ORDER

SIZE CODE E — NUMBER M8114-0-1 — REV. C — DIST.

M8114-0-1



	SI	SØ
NOP	L	L
SHIFT RIGHT	L	H
SHIFT LEFT	H	L
LOAD	H	H



QR BITS 35 TO 58 AND BR BITS 36 TO 59 SLOT 2

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45	PARTS LIST			

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

DRN. S. Roberts	DATE 10/9/71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK. [illegible]	DATE 2/14/72	
ENG. [illegible]	DATE 2/16/72	
PROJ. ENG. [illegible]	DATE 2/16/72	
PROD. [illegible]	DATE 5/1/72	

TITLE: FRACTION DATA PATH HIGH ORDER (FRHA)

NEXT HIGHER ASSY. B-DD-11/45-Ø

SIZE	CODE	NUMBER	REV.
D	CS	M8114-Ø-Ø1	C

SCALE —
SHEET 2 OF 9
DIST.

REVISIONS	CHANGE NO	REV
CHK		

DEC FORM NO. DRD 102-B

FALU CONTROL

	S3	S2	S1	SØ	M	CIN
~A	L	L	L	L	H	X
~(A∨B)	L	L	L	H	H	X
A MINUS B	L	L	H	L	H	L
Ø	L	L	H	H	H	X
~(A∧B)	L	H	L	L	H	X
~B	L	H	L	H	H	X
A MINUS B MINUS 1	L	H	H	L	H	H
A∧~B	L	H	H	H	H	X
A PLUS B PLUS 1	H	L	L	L	L	L
A PLUS B	H	L	L	H	L	H
B	H	L	H	L	H	X
A∧B	H	L	H	H	H	X
1	H	H	L	L	H	H
A MINUS 1	H	H	L	H	H	X
A∨B	H	H	H	L	H	X
A	H	H	H	H	H	X

AR MODE CONTROL

	S1	SØ
NOP	L	L
SHIFT RIGHT	L'	H
SHIFT LEFT	H	L
LOAD	H	H

FRHB COUT Ø6 L

FRLK L2 COUT 11 L — CK1

FRLK GØ H — CL1

FRLK PØ H — CL2

74182 E66 — COUTX, GØ, PØ

FRHB COUT Ø7 L

74182 E66 — COUTY, G1, P1

FRHB COUT Ø8 L

74182 E66 — COUTZ, G2, P2

74181 E97 FALU <39:36>

FRHA BR39 (1) H — B3

FRHA BR38 (1) H — B2

FRHA BR37 (1) H — B1

FRHA BR36 (1) H — BØ

F3 — FN1 — FRHB FALU39 H

F2 — FP1 — FRHB FALU38 H

F1 — FR1 — FRHB FALU37 H

FØ — FS1 — FRHB FALU36 H

74181 E89 FALU <43:40>

FRHA BR43 (1) H — B3

FRHA BR42 (1) H — B2

FRHA BR41 (1) H — B1

FRHA BR4Ø (1) H — BØ

F3 — ED2 — FRHB FALU43 H

F2 — EK2 — FRHB FALU42 H

F1 — EJ1 — FRHB FALU41 H

FØ — EK1 — FRHB FALU4Ø H

FRHB COUT Ø6 L

FRHB COUT Ø7 L

FRMH ALUM H — BT2

FRMH ALUSØ H — BU2

FRMH ALUS1 H — BU1

FRMH ALUS2 H — BV2

FRMH ALUS3 H — CA1

FRHE ARS1 H

FRHE ARSØ H

FRHB AR4Ø(1) H

FRLK AR35 (1) H — FR2

FRHB +3V A H

FRHE CLK AR B L

74194 E96 — DSØ, D3, D2, D1, DØ, DS3, CLR, CLK, R3, R2, R1, RØ

FRHB AR39 (1) H

FRHC AR44 (1) H

FRHB AR38 (1) H

FRHB AR37 (1) H

FRHB AR39 (1) H

FS2 — FRHB AR36 (1) H

74194 E88 — DSØ, D3, D2, D1, DØ, DS3, CLR, CLK, R3, R2, R1, RØ

FRHB AR43 (1) H

FRHB AR42 (1) H

FRHB AR41 (1) H

FRHB AR4Ø (1) H

+5V

330 R40

680 R39

D8 DF777

AR & FALU BITS 36 TO 43 SLOT 2

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//—

FINISH —//—

DRN	S. Roberts	DATE 10/9/71
CHK'D		DATE 2/16/72
ENG		DATE 2/16/72
PROJ ENG		DATE 2/16/72
PROD		DATE 2/17/72

NEXT HIGHER ASSY. B-DD-11/45-Ø

SCALE —//—

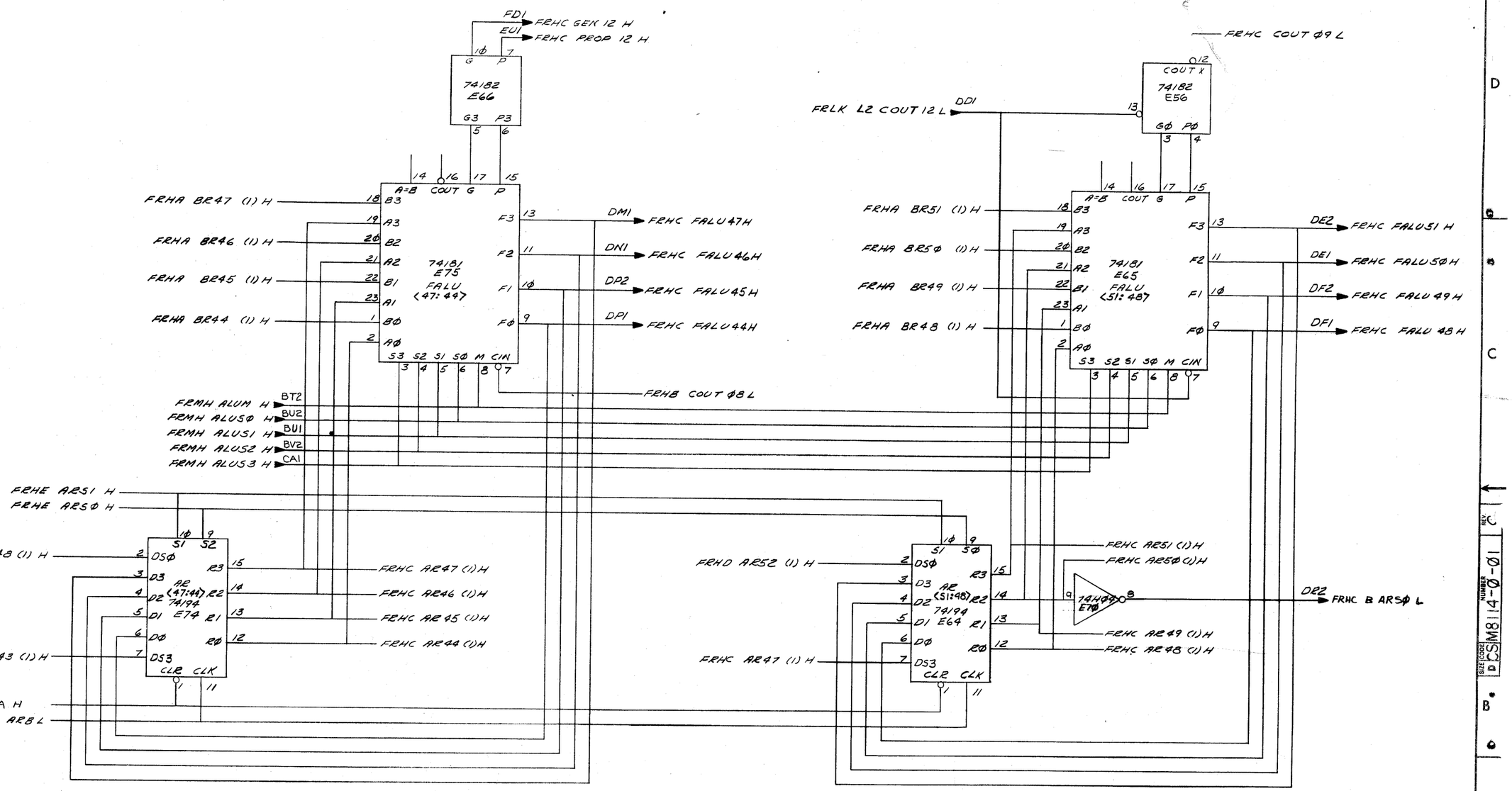
SHEET 3 OF 9

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: FRACTION DATA PATH HIGH ORDER (FRHB)

SIZE	CODE	NUMBER	REV.
D	CS	M8114-Ø-Ø1	C

DIST.



AR & FALU BITS 44 TO 51 SLOT 2

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

	NAME	DATE
DRN.	K. Dardo	10-11-71
CHK'D.	[illegible]	2/16/72
ENG.	W. Hughes	2/14/72
PROJ. ENG.	W. Hughes	2/16/72
PROD.	C. Lynch	2/17/72

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: FRACTION DATA PATH HIGH ORDER (FRHC)

NEXT HIGHER ASSY. B-DD-11/45-Ø

SCALE —

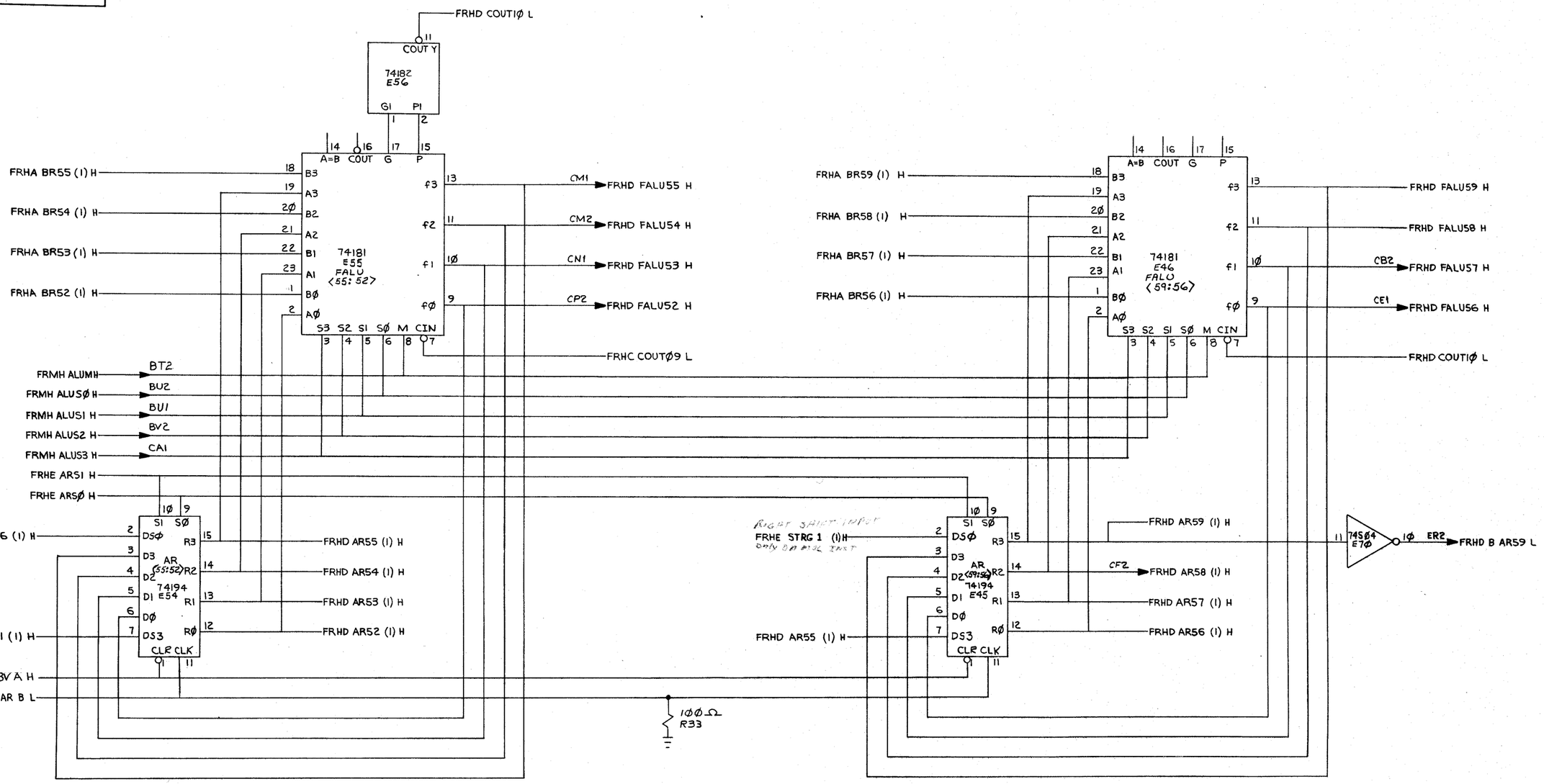
SHEET 4 OF 9

SIZE	CODE	NUMBER	REV.
D	CS	M8114-Ø-Ø1	C

DIST.

REVISIONS | REV | CHANGE NO | CHK

NUMBER D CS M8114-Ø-Ø1 REV C



AR & FALU BITS 52 TO 59 SLOT 2

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//—

FINISH —//—

		DATE
DRN.	S Roberts	10/15/71
CHK		DATE
ENG.	R Hughes	2/16/72
PROJ. ENG.	R Hughes	2/16/72
PROG.	A. Lynch	2/17/72

NEXT HIGHER ASSY. B-DD-11/45-Ø

SCALE —//—

SHEET 5 OF 9

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: FRACTION DATA PATH HIGH ORDER (FRHD)

SIZE	CODE	NUMBER	REV.
D	CS	M8114-Ø-ØI	C

DIST.

REVISIONS	REV	CHANGE NO.	CHK

DEC FORM NO DRD 102-B

MUL/DIV CONTROL LOGIC SLOT 2

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45	PARTS LIST			

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES.
TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

		DATE
DRN	K. Davis	10-8-71
CHK'D		2/16/72
ENG.	KB Hughes	2/16/72
PROJ. ENG.	KB Hughes	2/16/72
PROD.	A. Hirsch	2/17/72

NEXT HIGHER ASSY.
B-DD-11/45-Ø

SCALE —
SHEET 6 OF 9

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE
FRACTION DATA PATH HIGH ORDER
(FRHE)

SIZE	CODE	NUMBER	REV.
D	CS	M8114-Ø-Ø1	C

DIST.

DEC FORM NO
DRD 102-B

Page 5-16 for Divide

FRME CSB2 (Ø) H
FRME CSB1 (Ø) H
FRME CSBØ (1) H
FRHH TS2B H
74S2Ø E4B
CS1
CS2
DUI
CSR = 1

FRHF RR2 (Ø) H
FRHF RR1 (Ø) H
FRHF RRØ (Ø) H
74S1Ø E57
74S1Ø E58

FRHF RR2 (1) H
FRHF RR1 (1) H
FRHF RRØ (1) H
74S1Ø E57

FRME CSB2 (Ø) H
FRME CSBØ (1) H
FRHF +3V C H
74S11 E49
CS1
DUI

FRHD FALU 59 H
FRHE ARS1 H
FRHE ARSØ H
74S1Ø E6Ø
74S5Ø E59

FRHF RR1 (1) H
FRHF LO AR L
74S1Ø E6Ø
74S5Ø E59

FRHD FALU 58 H
FRHE ARS1 H
FRHE ARSØ H
74S1Ø E6B
74S5Ø E59

FRHF RRØ (1) H
FRHF LO AR L
74S1Ø E6B
74S5Ø E59

FRHD FALU 57 H
FRHE ARS1 H
FRHE ARSØ H
74S1Ø E6B
74S5Ø E58

FRHD AR 56 (1) H
FRHE CLK ARB L
74S5Ø E58
74S5Ø E58

FRHE ARS1 H
FRHE ARSØ H
74S5Ø E58

FRHF LD AR L

FRHF +3V B H
74S74 E2B
74S74 E6B
74S74 E6B

FRHF RR2 (1) H
FRHF RR2 (Ø) H
AR 59

FRHF RR1 (1) H
FRHF RR1 (Ø) H
AR 58

FRHF RRØ (1) H
FRHF RRØ (Ø) H
AR 57

FRHF +3V B H
FRHF +3V B H

FRHH +3V H H
FRHF QR59 DATA L

FRME CSBØ (1) H
FRHE ENAB QRSØ L
FRHF LOAD QR L
FRHA QR 58 (1) H
74S2Ø E4Ø
74S74 E41
FRHE CLK QR B L

FRHF QR 59 (1) H
FRHF QR 59 (Ø) H
FRHF CLR QR B L

FRHF QR59 (1) L
FRME CSB1 (1) H
FRME CSBØ (Ø) H
74S5Ø E21
BF2
CF1

FRHF RSQR IN H

FRHF LSQR IN H
FRHE MUL DIV H
FXPH FD (Ø) H
74S1Ø E37
CT2

FRHF MUL DIV LSQR31 L
TO FRUM

FRHE MUL DIV DISABLE L
FRHJ CLOCK D H
FRHE PQ(Ø) H
FRHH WAIT (1) H
FRHH SUB CALL H
CSB = Ø:6
74S11 E1
74S11 E1
B AJ1
FRHE CLK SCH
TO FXPL

FRLO SCR OUT 31 H
FRME SIGNC1 (1) H
FRME SIGNCØ (Ø) H
74H8Ø E92
74H8Ø E92
74H8Ø E92
74H8Ø E78
74H8Ø E92

FRME ACF2 (Ø) H
FRME ACF1 (Ø) H
FRHE LD QR 59 TO 35 H
74H11 E82

FRHH TS4B H
FRHJ CLOCK D H
74H1Ø E91
FRMJ READY CLR L
FFI
R41 100Ω

FRHE +3VA H
74H74 E84
FRHF SS (1) H
FRHF SS (Ø) H
SIGN

FRHF SS (Ø) H
FRHF SS (1) H
74S5Ø E77
74H8Ø E78
FRME SIGNC1 (Ø) H
FRME SIGNCØ (Ø) H
74H1Ø E79
FJ1

FXPE SUB H
EF2
74H8Ø E78
SCRATCHPAD

FRHF +3VB H
FRHF +3VB H

FRHF SD (Ø) H
FRHF SS (1) H
FRHF SS (Ø) H
FRHF SD (1) H
74S5Ø E77
EH2
FRHF SS XOR SD L
74H8Ø E78
MUL DIV
FRHF SS XOR SD H
74H1Ø E79
74H1Ø E79
CP1
FRLD SCR OUT 31 H
74H8Ø E83

FRHE +3VA H
74H74 E84
EM2
FRHF SD (1) H
SIGN
ERI
FRHF SD (Ø) H
FF1
FRMJ READY CLR L

FRME ACF2 (Ø) H
FRME ACF1 (Ø) H
FRHE LD QR 59 TO 35 H
ENI
74H11 E82
74H8Ø E78
FRME SIGNC1 (Ø) L
FKI
74H8Ø E83

FRHH TS4B H
FRHJ CLOCK D H
74H1Ø E91

FRHF LSQR IN H
FRHE MUL DIV H
FXPH FD (1) H
74S11 E11
B BP2
FRHF LSQRØØ IN H

FRME QRC2 (Ø) H
FRHH TS2B H
FRHE +3VA H
74S14Ø E93
FMI
FLI
FRHF CLR QR A L

FRME QRC2 (Ø) H
FRHH TS2B H
FRHE +3VA H
74S14Ø E93
(FMI)
FRHF CLR QR B L

FRHE MUL DIV H
FRHE RR2 (1) H
FRHE P2 (Ø) H
74S1Ø E29
74S1Ø E29
74S1Ø E29
FRHF LSQR IN H
TO QR LSØ
FRHF RR2 (Ø) H
FRHE P2 (1) H
FRHH +3VH H

FRME QRC1 (Ø) H
FRME QRCØ (Ø) H
74S5Ø E67
EPI
DSI
FRHF LOAD QR L
TO QR LSØ-Dummy

13 74S04 E70Ø 12 FRHF +3VB H

12 74S5Ø E67 13 11 FRHF +3VC H

DIV CONTROL LOGIC & SS & SD FLOPS SLOT2

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN. T. Jarvis DATE 10-18-71
CHK'D. [illegible] DATE 2/1/72
ENG. R.B. Hughes DATE 2/16/72
PROJ ENG. R.B. Hughes DATE 2/16/72
PROD. U. Unruh DATE 2/17/73

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: FRACTION DATA PATH HIGH ORDER (FRHF)

NEXT HIGHER ASSY. B-DD-11/45-Ø
SIZE D | CODE CS | NUMBER M8114-Ø-Ø1 | REV. C
SCALE —
SHEET 7 OF 9
DIST.

REVISIONS: REV. | CHANGE NO | CHK

DEC FORM NO DRD 102-B

SIZE CODE CS M8114-Ø-Ø1 REV C

FRHH PAUSE (1) H
FRHH STATE2 (1) H
74S00 E14
74S04 E23
FRHH +3VE H
74S112 E26
RB 1K
AK1 → FRHH WAITS H
AD1 → FRHH WAIT (1) H
FRHJ CLOCK D H
FRHH START EN H
FRHH +3VD H

FRHH STATE2(1) L
FRHH +3VH H
74S140 E18
BK1 → FRHH TS2 A H
FRHH STATE2 (1) L
BJ2 → FRHH TS2 B H
FRHH STATE3 (1) L
74S140 E19
BJ1 → FRHH TS3 A H

FRHH STATE3 (1) L
FRHH +3VH H
74S140 E19
BK2 → FRHH TS3 B H
FRHH STATE4 (1) L
74S140 E20
BH2 → FRHH TS4 A H
FRHH STATE4 (1) L
74S140 E20
BM2 → FRHH TS4 B H

FRHH STATE3 (Ø) H
FRHH STATE4 (Ø) H
FRHH STATE1 (Ø) H
74S11 E11
FRHH START EN H
FRHH +3VF H
74S74-45 E10
RI2 1K
BC1 → FRHH T3S H
FRHH STATE3 (1) H
FRHH STATE3 (Ø) H
RII 1K
BB2 → FRHH T4S H
FRHH STATE4 (1) H
FRHH STATE4 (Ø) H
74S74 E9
RIØ 1K
AT2 → FRHH T1S H
FRHH STATE1 (1) H
FRHH STATE1 (Ø) H
R9 1K
AS2 → FRHH T2S H
FRHH STATE2 (1) H
FRHH STATE2 (Ø) H

FRHH PAUSE (Ø) H
FRHH M PAUSE (Ø) H
FRHH +3VF H
FRHJ CLOCK D H
74S10 E12
FRHH INIT L

74S11 E1
FRMF RDFN CNSTF (1) H → AUI
FRMF CNSTFØ (Ø) H → AEI
FRLP FID (Ø) H → ANI
74S10 E12
FRME CSB 2 (Ø) L → BLI
FRME CSB 1 (Ø) L → BF2
FRME CSB Ø (Ø) L → DUI
74S11 E22
FRHH SUB CALL L
FRMF RDFN CNSTF (1) H → AUI
FRMF CNSTF1 (Ø) H → API
74S00 E14
74S04 E23
FRHH FP ACKN WAIT H
74S10 E12
FRHH FP ATTN WAIT L
FRHH STATE1 (1) H
FRHJ CLOCK D H
74S00 E14
FRHH TPI H
74S74 E25
FRHH +3VE H
FRHH PAUSE (1) H
FRHH PAUSE (Ø) H
74S00 E14
AR1 → FRHH FP EXC TRAP L TO TMCA (CPU)

TMCB FP ACKN L BD2
74S04 E23
FRHH FP ACKN WAIT H
FRMJ ATTENTION (1) H BP1
74S65N E24
+5
R43 330
R49 680
FXPL SCZ (1) H CH2
FRHE MUL SUB (Ø) H
FRHF AR NORM (1) H CS1
FRME CSB 2 (Ø) H BF2
FRME CSB 1 (1) H DU1
FRME CSB Ø (1) H
FRHH SUB CALL H
FRHH SUB CALL L (F1CC)
CSB = 3 NORM

FRMJ ICLR (1) H AR2
FRMJ ZØ ABORT (1) H AS1
74S05 E13

FRHH +3VD H
FMAA S4 L BE2
74S112 E26
FRHH STATE4 (1) L
FRHH +3VE H
FRHJ ROM + UBS H
FRHH TPI H
74S74 E25
FRHH M PAUSE (Ø) H
FRHH M SWITCH CNTU (Ø) H
FRHH INIT L
74S11 E22

FRMJ INIT H AP2
74S04 E23
FRHH INIT L

74H10 E27
FRHH +3VD H
74S00 E3
FRHH +3VE H
74S00 E3
FRHH +3VF H
FRHH +3VH H
R14 330
R13 680
+5V

TIME STATE GENERATOR SLOT 2

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45	PARTS LIST			

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

DRN. Roberts DATE 10/18/71
CHK'D DATE 2/16/72
ENG. DATE 2/16/72
PROJ. ENG. DATE 2/16/72
PROD. DATE 2/17/72
NEXT HIGHER ASSY. B DD-11/45-Ø
SCALE
SHEET 8 OF 9

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE
FRACTION DATA PATH HIGH ORDER
(FRHH)

SIZE	CODE	NUMBER	REV.
D	CS	M8114-Ø-Ø1	C

DIST.

REVISIONS | REV. | CHANGE NO | CHK

DEC FORM NO 102-B

FRHH +3VE H

FMAA S3 L AM1

R20 680 +5V

R21 330

FRHJ XTAL H

74H11 E5

74S112 E15 XTAL ENA.

74S04 E6

R/C ENA.

74S112 E16

MS. ENA.

74S112 E17

SOURCE SYNCHRONIZER

FRHH +3VE H

FRHH +3VF H

XTAL SYNC.

FRHJ XTAL H

74S112 E15

FRHJ RC H

R/C SYNC.

74S112 E16

74S64 E4

C8 .01 MF

+5V

R45 470

Q3 30098

R5 82

R7 22

R6 22

Q2 30098

D5 D662

D3 D662

D2 D662

D1 D662

Q1 4258

R1 1.2K

R2 1.2K

R3 1.2K

R4 1.2K

-15V

AB2 FRHJ CLOCK A H

AC1 FRHJ CLOCK B H

AA1 FRHJ CLOCK C H

FRHJ CLOCK D H

AD2 FRHJ CLOCK A RTN L

AE2 FRHJ CLOCK B RTN L

AF2 FRHJ CLOCK C RTN L

NOTE:
TERMINATE CLOCK D WITH 120Ω 1/4 W 5% RESISTOR AT FARTHEST POINT FROM SOURCE.

74S112 E17

SINGLE TIME PULSE

AM2 FRHJ MSTEP CLK (Ø) H

R28 10

+5V

Q5 30098

R32 5K

C101 47 pF

45-300 nS

R29 330

R30 330

C102 .01 MF

C113 18PF

R31 330

74H10 E27

74S140 E37

74S140 E37

FRHJ RC H

R/C CLOCK (MAINTENANCE)

FMAA S2 L AL2

R24 680 +5V

R27 330

C103 6.8 MF

74Ø0 E2

74Ø0 E2

FMAA S1 L AK2

R22 680 +5V

R23 330

C104 6.8 MF

74Ø0 E2

FRHH +3VF H

74Ø0 E2

74H10 E27

FXPJ UMATCH H

74S00 E3

FRHJ ROM+UBS H

FMAA S4 (MAINT STEPPER) L BE2

R24 680 +5V

R25 330

+5V

R16 10K

R38 82

Q7 30098

C98 33PF

C97 100PF

C100 .047UF

C99 10 PF

X1 18 MHz CR

C96 68PF

C95 .047 UF

R15 220

E8

R17 470

R18 470Ω

R19 3.3K

D6 D662

74S140 E7

FRHJ XTAL H

CRYSTAL CLOCK

SLOT 1E

MAINT SWITCHES: REF. TO PAGE BOARD	
S4	SINGLE TIME STEPPER
S3	Ø = CRYSTAL TIMING SOURCE 1 = RC TIMING SOURCE
S2	S1 MODE CONTROL
Ø	Ø NORMAL OPERATION
Ø	1 UBR STOP
1	Ø SINGLE ROM CYCLE
1	1 SINGLE CLOCK (USE S4)

CLOCKS & CLOCK SYNCHRONIZER SLOT 2

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

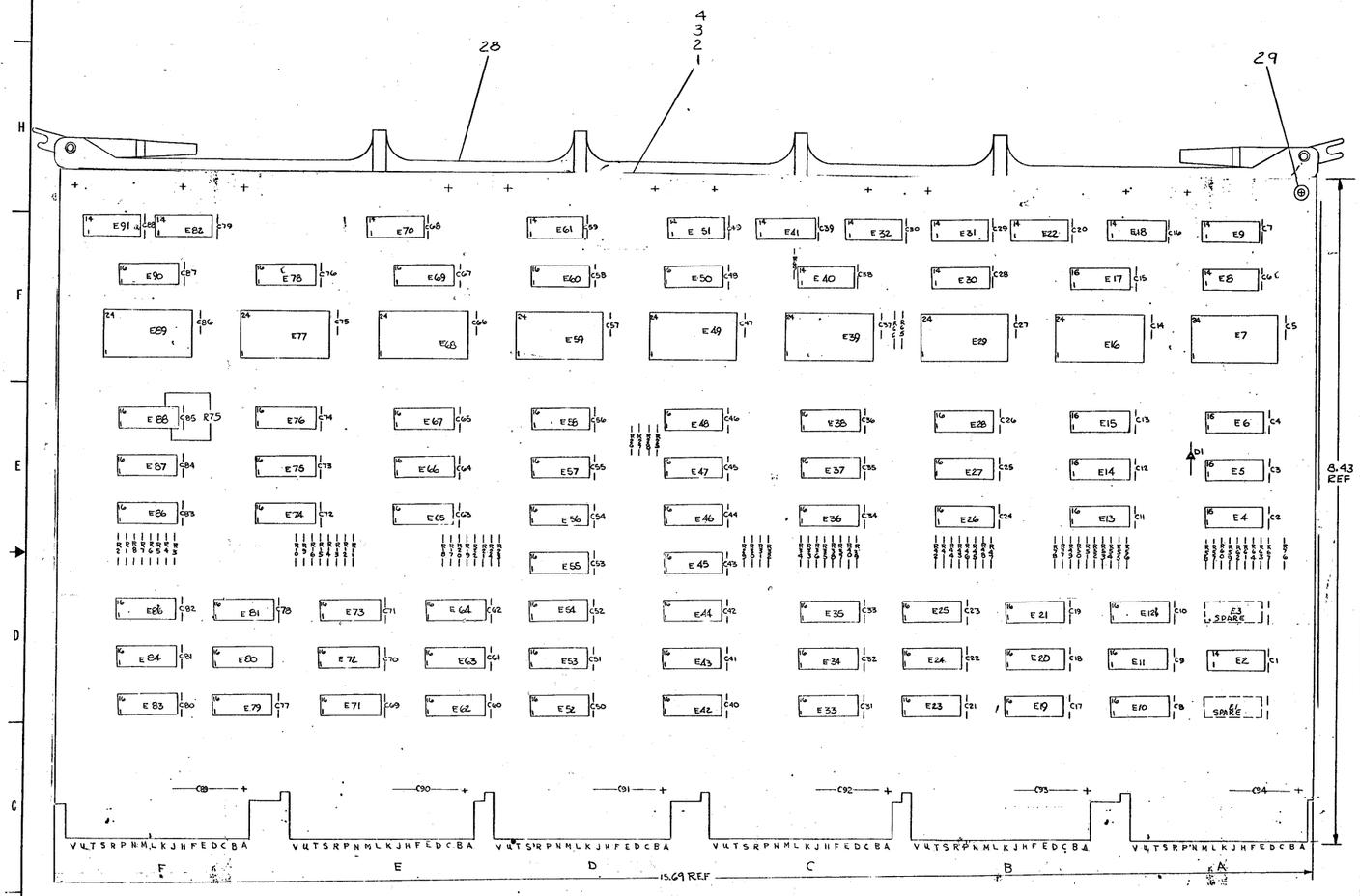
FINISH —

DRN. K. Bains	DATE 10-19-71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D	DATE 2/16/72	
ENG. R.B. Hughes	DATE 2/16/72	TITLE FRACTION DATA PATH HIGH ORDER (FRHJ)
PROJ. ENG. R.B. Hughes	DATE 2/16/72	
PROD. G. Hinch	DATE 2/17/72	
NEXT HIGHER ASSY. B-DD-11/45-Ø		SIZE D CODE CS NUMBER M8114-Ø-Ø1 REV. C
SCALE —		DIST.
SHEET 9 OF 9		

REVISIONS: REV | CHANGE NO | DATE

SIZE CODE D CS M8114-Ø-Ø1 REV C

NOTES:
1. UNLESS OTHERWISE NOTED RESISTANCE IS IN Ω AND CAPACITANCE IS IN PICOFARADS. CAPS. WITHOUT VALUE NOTED ARE .01 MFD.



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

AC2, AN2, AH1, AT1, BC2, BN2, BH1, BT1, CC2, CN2, CH1, CT1, DC2, DN2, DH1, DT1, EC2, EN2, EH1, ET1, FC2, FN2, FH1, FT1

+5V — + 6.8 µF (C89 THRU C94) + .01 µF (C1 THRU C88) — GND

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
		PARTS LIST		
12		EYELET	9006732	29
1		HANDLE, MODULE	E-PS-1210711-2	28
1	E18	IC DEC 74H11	1909267	27
2	E8, E30	IC DEC 74S05	1910535	26
1	E51	IC DEC 74H74	1909467	25
3	E32, E61, E22	IC DEC 74H00	1909056	24
2	E9, E41	IC DEC 74H10	1909057	23
2	E40, E70	IC DEC 74S04	1910534	22
2	E82, E91	IC DEC 74H50	1909060	21
1	E2	IC DEC 74H30	1909059	20
12	E14, E27, E37, E47, E57, E60, E66, E75, E78, E5, E87, E90	IC DEC 74175	1910651	19
3	E17, E50, E69	IC DEC 74182-1	1910551	16
9	E7, E16, E29, E39, E49, E59, E68, E77, E89	IC DEC 74181	1909982	17
18	E9, E6, E13, E15, E26, E28, E36, E38, E46, E48, E56, E58, E65, E67, E76, E76, E86, E88	IC DEC 74194	1910623	16
8	E12, E21, E25, E35, E43, E73, E81, E85	IC DEC 3101A	1910653	15
24	E10, E11, E19, E20, E23, E24, E33, E34, E42, E43, E44, E45, E52, E53, E54, E55, E62, E63, E71, E72, E79, E80, E83, E84	IC DEC 74153	1909937	14
1	E31	IC DEC 74H40	1905586	13
32	R2, R4, R6, R8, R10, R12, R14, R16, R18, R20, R22, R24, R26, R28, R29, R31, R33, R35, R37, R39, R42, R44, R46, R48, R50, R52, R54, R56, R58, R60, R62, R64	RESISTOR 1.2K, ¼W, 5%	1301320	12
32	R1, R3, R5, R7, R9, R11, R13, R15, R17, R19, R21, R23, R25, R27, R30, R32, R34, R36, R38, R40, R41, R43, R45, R47, R49, R51, R53, R55, R57, R59, R61, R63	RESISTOR 750Ω, ¼W, 5%	1301401	11
2	R65, R78	RESISTOR 330Ω, ¼W, 5%	1300295	10
2	R66, R77	RESISTOR 680Ω, ¼W, 5%	1301424	9
4	R67, R69, R76, R75	RESISTOR 100Ω, ¼W, 5%	1300229	8
1	D1	DIODE FD777	1103041	7
88	C1 THRU C88	CAPACITOR .01 µF, 100V, 20%	1001610	6
6	C89 THRU C94	CAPACITOR 6.8 µF, 35V, 20%	1000067	5
1		ETCHED CIRCUIT BOARD	5009861	4
REF		MODULE ECO HISTORY	3-MM-M8115-0-6	3
REF		ASSY/DRILLING HOLE LAYOUT	E-AH-M8115-0-5	2
REF		X-Y COORDINATE HOLE LOCATION	X-CO-M8115-0-4	1

ETCH BOARD REV B

IC TYPE	GND	+5V
DEC 74153	8	16
DEC 74175	8	16
DEC 74194	8	16
DEC 74181	12	24
DEC 74182-1	8	16

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

IC PIN LOCATIONS

ITEM NO.	AWG	FROM PT	TO PT

JUMPER LIST

REV	CHANGE NO	REVISIONS	CHK
C	M8115-00002	ADDED SPARE GATES	
B	M8115-00001	ORIGINATED	

DEC NO.	EIA NO.	DEC NO.	EIA NO.
FD777	SAME		

SEMICONDUCTOR CONVERSION CHART

		DATE
DRAWN	D. Jones	7/21/73
CHK'D		
ENG.		
PROJ. ENG.		
PROG.		

NEXT HIGHER ASSY: 3-DD-11/45-0

SCALE: 2/1 SHEET 1 OF 14

EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: FRACTION DATA PATH LOW ORDER

SIZE: E | CODE | NUMBER: CS/M8115-0-1 | REV: C

DEC FORM NO. DNE 104

ACRE
Rom BIT 3X

FRMH SCR WRITE Ø L FE2

FRME ACCØ (Ø) L FD2
Rom BIT 35

ACCUMULATOR MULTIPLEXER

74153 E83
ACMX <Ø3:Ø2>
FRLE FALUØ6 H
FRHB FALU38 H EU2
FXPA EALUØ3 H CE1
FRLP FN (Ø) H
FRLE FALUØ5 H
FRHB FALU 37 H FP1
FXPA EALUØ2 H BJ1
FRLP FZ (Ø) H
FRLA ACMXØ3 H
FRLA ACMXØ2 H

ACMX CONTROL

	SI	SØ
FPS	L	L
EALU	L	H
FALUH	H	L
FALUL	H	H

AC i <Ø3:ØØ>
31Ø1 E85
[Ø,2]
W CS D3 D2 D1 DØ M3 M2 M1 MØ A3 A2 A1 AØ

+5V
R1 75Ø → FRI → FRLA SCR OUTØ3 H
R2 1.2K
R3 75Ø → FJI → FRLA SCR OUTØ2 H
R4 1.2K
R5 75Ø → FKI → FRLA SCR OUTØ1 H
R6 1.2K
R7 75Ø → FLI → FRLA SCR OUTØØ H
R8 1.2K

74153 E80
ACMX <Ø7:Ø6>
FRLF FALUIØ H
FRHB FALU42 H ES1
FXPA EALUØ7 H BA1
FXPH FD (Ø) H ER1
FRLF FALUØ9
FRHB FALU41 H ES2
FXPA EALUØ6 H BR1
FXPH IL (Ø) H BF2
FRLA ACMXØ7 H
FRLA ACMXØ6 H

AC i <Ø7:Ø4>
3101 E81
[Ø,2]

+5V
R9 75Ø → FFI → FRLA SCR OUTØ7 H
R10 1.2K
R11 75Ø → EUI → FRLA SCR OUTØ6 H
R12 1.2K
R13 75Ø → FAI → FRLA SCR OUTØ5 H
R14 1.2K
R15 75Ø → FEI → FRLA SCR OUTØ4 H
R16 1.2K

74153 E84
ACMX <Ø1:ØØ>
FRLE FALUØ4 H
FRHB FALU36 H FM1
FXPA EALUØ1 H BK1
FRLP FV (Ø) H
FRLE FALUØ3 H
FRLK FALU35 H
FXPA EALUØØ H BU1
FRLP FC (Ø) H
FRLA ACMXØ1 H
FRLA ACMXØØ H

FRME ACC2 (1) H AJ1
FRMH SCR ADRS2 H AF1
FRMH SCR ADRS1 H AE1
FRMH SCR ADRSØ H AT2
FRMH BACMXCØ (1) H FD1
FRMH BACM C1 (1) H FS1

74153 E79
ACMX <Ø5:Ø4>
FRLF FALUØ8 H
FRHB FALU4Ø H ER2
FXPA EALUØ5 H BC1
FRLP FT (Ø) H
FRLF FALUØ7 H
FRHB FALU39 H ET2
FXPA EALUØ4 H BS1
FRLP FMM (Ø) H
FRLA ACMXØ5 H
FRLA ACMXØ4 H

ACMX & SCRATCH PAD BITS Ø4 TO Ø7 SLOT 3

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

		DATE
DRN	S. Roberts	9/13/71
CHK'D	[illegible]	2/17/72
ENG.	[illegible]	2/17/72
PROJ. ENG.	[illegible]	2/17/72
PROD.	[illegible]	2/17/72

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: FRACTION DATA PATH LOW ORDER (FRLA)

NEXT HIGHER ASSY. B-DD-11/45-Ø
SIZE D | CODE CS | NUMBER M8115-Ø-Ø1 | REV. C
SCALE —
SHEET 2 OF 14
DIST.

REVISIONS | REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

FRMH SCR WRITE ØL FE2
FRME ACCØ (Ø) L FD2

ACCUMULATOR MULTIPLEXER

FRLF FALU14 H — EPI — FRHC FALU46 H — AM1 — FXPB EALU11 H — FRLP FILUV(Ø) H
FRLF FALU13 H — EN1 — FRHC FALU45 H — BF1 — FXPB EALU1Ø H — FRLP FIU (Ø) H
74153 E71
FRLB ACMX11 H
FRLB ACMX1Ø H
FRMH BACMXCØ(1) H FD1
FRMH BACMXC1 (1) H FS1

ACC <11:Ø8>
3101 E73
R17 75Ø DF1 → FRLB SCR OUT11 H
R18 1.2K
R19 75Ø EA1 → FRLB SCR OUT1Ø H
R20 1.2K
R21 75Ø DU1 → FRLB SCR OUTØ9 H
R22 1.2K
R23 75Ø DS1 → FRLB SCR OUTØ8 H
R24 1.2K
+5V

ACCUMULATOR MULTIPLEXER

FRLH FALU18 H — EL1 — FRHC FALU5Ø H — AK1 — FXPB EALU15 H — FRLP FER (Ø) H
FRLH FALU17 H — EK1 — FRHC FALU49 H — AS1 — FXPB EALU14 H — FRLP FIE (Ø) H
74153 E62
FRLB ACMX15 H
FRLB ACMX14 H

ACC <15:12>
3101 E64
R25 75Ø ED1 → FRLB SCR OUT15 H
R26 1.2K
R27 75Ø EC1 → FRLB SCR OUT14 H
R28 1.2K
R30 75Ø EE1 → FRLB SCR OUT13 H
R29 1.2K
R32 75Ø EF1 → FRLB SCR OUT12 H
R31 1.2K
+5V

ACCUMULATOR MULTIPLEXER

FRLF FALU12 H — EM1 — FRHC FALU44 H — BD1 — FXPB EALUØ9 H — FRLP FIV (Ø) H
FRLF FALU11 H — EP2 — FRHB FALU43 H — BE1 — FXPB EALUØ8 H — FRLP FIC (Ø) H
74153 E72
FRLB ACMXØ9 H
FRLB ACMXØ8 H
FRME ACC2 (1) H AJ1
FRMH SCR ADRS2 H AF1
FRMH SCR ADRS1 H AE1
FRMH SCR ADRSØ H AT2

ACCUMULATOR MULTIPLEXER

FRLH FALU16 H — EJ1 — FRHC FALU48 H — AL1 — FXPB EALU13 H — FRLB +3VA H
FRLF FALU15 H — EM2 — FRHC FALU47 H — AR1 — FXPB EALU12 H — FRLB +3VA H
74153 E63
FRLB ACMX13 H
FRLB ACMX12 H

+5V
R77 33Ø
R78 68Ø
FRLB +3VA H

ACMX & SCRATCH PAD BITS Ø8 TO 15 SLOT 3

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN S. Roberts DATE 9/13/71
CHKD Dick Rose DATE 2/17/72
ENG K B Hunter DATE 2/17/72
PROJ. ENG. R E Hughes DATE 2/17/72
PROD. C. Nash DATE 2/17/72

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: FRACTION DATA PATH LOW ORDER (FRLB)

NEXT HIGHER ASSY. B-DD-11/45-Ø
SCALE —
SHEET 3 OF 4

SIZE D | CODE CS | NUMBER M8115-Ø-Ø1 | REV. C
DIST.

REVISIONS: REV | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

FRMH SCR WRITE 1 L (CF1)
FRME ACC 1 (0) L (CH)

ACCUMULATOR MULTIPLEXER
FRLH FALU22 H
FRHD FALU54 H (BS2)
FXPA EALU03 H (CE1)
FRLB +3VA H
FRLH FALU21 H
FRHD FALU53 H (CB2)
FXPA EALU02 H (BJ1)
FRLB +3VA H
FRLC ACMX19 H
FRLC ACMX18 H
74153 E33
ACMX <19:18>

ACCUMULATOR MULTIPLEXER
FRLJ FALU26 H
FXPA EALU00 H (BU1)
FXPA EALU07 H (BA1)
FRLB +3VA H
FRLJ FALU25 H
FRHD FALU57 H (BM2)
FXPA EALU06 H (BR1)
FRLB +3VA H
FRLC ACMX23 H
FRLC ACMX22 H
74153 E23
ACMX <23:22>

FRMH BACMXC0 (1) H (FD1)
FRMH BACMXC1 (1) H (FS1)

ACC <19:16> [1,3]
3101 E35
+5V
R34 750
R33 1.2K
R36 750
R35 1.2K
R38 750
R37 1.2K
R40 750
R39 1.2K
FRLC SCR OUT19 H
FRLC SCR OUT18 H
FRLC SCR OUT17 H
FRLC SCR OUT16 H

ACC <23:20> [1,3]
3101 E25
+5V
R41 750
R42 1.2K
R43 750
R44 1.2K
R45 750
R46 1.2K
R47 750
R48 1.2K
FRLC SCR OUT23 H
FRLC SCR OUT22 H
FRLC SCR OUT21 H
FRLC SCR OUT20 H

ACCUMULATOR MULTIPLEXER
FRLH FALU20 H
FRHD FALU52 H (BT2)
FXPA EALU01 H (BK1)
FRLB +3VA H
FRLH FALU19 H
FRHC FALU51 H (CD2)
FXPA EALU00 H (BU1)
FRLB +3VA H
FRLC ACMX17 H
FRLC ACMX16 H
74153 E34
ACMX <17:16>

ACCUMULATOR MULTIPLEXER
FRLJ FALU24 H
FRHD FALU56 H (BR2)
FXPA EALU05 H (BC1)
FRLB +3VA H
FRLH FALU23 H
FRHD FALU55 H (BP2)
FXPA EALU04 H (BS1)
FRLB +3VA H
FRLC ACMX21 H
FRLC ACMX20 H
74153 E24
ACMX <21:20>

FRME ACC2 (1) H (AJ1)
FRMH SCR ADRS2 H (AF1)
FRMH SCR ADRS1 H (AE1)
FRMH SCR ADRS0 H (AT2)

ACMX SCRATCH PAD BITS 16 TO 23
SLOT 3

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//—
FINISH —//—

DRN	S.Roberts	DATE 9/15/71
CHKD		DATE 2/7/72
ENG		DATE 2/7/72
PROJ ENG	J.B.Hughes	DATE 2/7/72
PROD	G.Hirsch	DATE 2/17/72

NEXT HIGHER ASSY. B-DD-11/45-0
SCALE —//—
SHEET 4 OF 14

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
FRACTION DATA
PATH LOW ORDER (FRLC)

SIZE	CODE	NUMBER	REV.
D	BS	M8115-0-01	C

DIST.

REVISIONS | REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

FRMH SCR WRITE1 L (CFI)
FRME ACC1 (Ø) L (CJI)

ACCUMULATOR MULTIPLEXER
FRLJ FALU3Ø H
FXPA EALUØ4 H (BSI)
FXPB EALU11 H (AMI)
FRLB +3VA H
FRLJ FALU29 H
FXPA EALUØ3 H (CEI)
FXPB EALU1Ø H (BFI)
FRLB +3VA H
STBI STBØ DI CI BI ACMX <27:26> AI 74153 DØ E19 CØ BØ AØ SI SØ
FRLD ACMX27 H
FRLD ACMX26 H

FRMH BACMXCØ(1) H (FDI)
FRMH BACMXC1(1) H (FSI)

W CS D3 D2 D1 DØ A3 A2 A1 AØ ACi <27:24> 31Ø1 E21 M3 M2 M1 MØ
+5V
R49 75Ø
R5Ø 1.2K
R51 75Ø
R52 1.2K
R53 75Ø
R54 1.2K
R55 75Ø
R56 1.2K
FRLD SCR OUT27 H
FRLD SCR OUT26 H
FRLD SCR OUT25 H
FRLD SCR OUT24 H

ACCUMULATOR MULTIPLEXER
FRLK FALU34 H
FRHF SD (Ø) H (AUI)
FXPB EALU15 H (AKI)
FXPF BN (Ø) H (ANI)
FRLK FALU33 H
FXPA EALUØ7 H (BAI)
FXPB EALU14 H (ASI)
FXPF BZ (1) H (API)
STBI STBØ DI CI BI ACMX <31:3Ø> AI 74153 DØ E1Ø CØ BØ AØ SI SØ
FRLD ACMX31 H (AAS2)
FRLD ACMX3Ø H

W CS D3 D2 D1 DØ A3 A2 A1 AØ ACi <31:28> 31Ø1 E12 M3 M2 M1 MØ
+5V
R57 75Ø
R58 1.2K
R59 75Ø
R6Ø 1.2K
R61 75Ø
R62 1.2K
R63 75Ø
R64 1.2K
FRLD SCR OUT31 H (CUI)
FRLD SCR OUT3Ø H
FRLD SCR OUT29 H
FRLD SCR OUT28 H

ACCUMULATOR MULTIPLEXER
FRLJ FALU28 H
FXPA EALUØ2 H (BJI)
FXPB EALUØ9 H (BDI)
FRLB +3VA H
FRLJ FALU27 H
FXPA EALUØ1 H (BKI)
FXPB EALUØ8 H (BEI)
FRLB +3VA H
STBI STBØ DI CI BI ACMX <25:24> AI 74153 DØ E2Ø CØ BØ AØ SI SØ
FRLD ACMX25 H
FRLD ACMX24 H

FRME ACC2 (1) H (AJI)
FRMH SCR ADRS2 H (AFI)
FRMH SCR ADRS1 H (AEI)
FRMH SCR ADRSØ H (ATI)

ACCUMULATOR MULTIPLEXER
FRLK FALU32 H
FXPA EALUØ6 H (BRI)
FXPB EALU13 H (AUI)
FRLB +3VA H
FRLJ FALU31 H
FXPA EALUØ5 H (BCI)
FXPB EALU12 H (ARI)
FRLB +3VA H
STBI STBØ DI CI BI ACMX <29:28> AI 74153 DØ E11 CØ BØ AØ SI SØ
FRLD ACMX29 H
FRLD ACMX28 H

ACMX AND SCRATCH PAD BITS 24 TO 31 SLOT 3

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN S.Roberts	DATE 9/17/71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHKD	DATE 2/17/72	
ENG R.B.Hughes	DATE 2/17/72	TITLE FRACTION DATA PATH LOW ORDER (FRLD)
PROJ ENG R.B.Hughes	DATE 2/17/72	
PROD J.Hunt	DATE 3/10/72	
NEXT HIGHER ASSY. B-DD-11/45-Ø		SIZE D CODE CS NUMBER M8115-Ø-Ø1 REV. C
SCALE —		DIST.
SHEET 5 OF 14		

REVISIONS | REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

M8115-Ø-Ø1 REV C SIZE D CODE CS

FRLE COUTØØ L

FRLE COUTØ1 L

FRHE ARSØ H
FRHE ARS1 H

FRME FMXCØ (Ø) H
FRLE ARØ2 (1) H

FRLL BR Ø3 (1) L

FRHE FD(1)H
FRHE CONV SPL

AR MODE CONTROL

	S1	SØ
NOP	L	L
SHIFT RIGHT	L	H
SHIFT LEFT	H	L
LOAD	H	H

FRHE CLK AR A L

FRLE +3VB H

FRLL BRØ7 (1) H
FRLL BRØ6 (1) H
FRLL BRØ5 (1) H
FRLL BRØ4 (1) H
FRLL BRØ2 (1) H
FRLL BRØ1 (1) H
FRLL BRØØ (1) H

FRMH ALUS3 H
FRMH ALUS2 H
FRMH ALUS1 H
FRMH ALUSØ H
FRMH ALUM H

FRMH ALUCIN L

FRLE FALUØ7 H
FRLE FALUØ6 H
FRLE FALUØ5 H
FRLE FALUØ4 H
FRLE FALUØ3 H
FRLE FALUØ2 H
FRLE FALUØ1 H
FRLE FALUØØ H

FRLE COUT ØØ L

FRLE ARØ7 (1) H
FRLE ARØ6 (1) H
FRLE ARØ5 (1) H
FRLE ARØ4 (1) H
FRLE ARØ3 (1) H
FRLE ARØ2 (1) H
FRLE ARØ1 (1) H
FRLE ARØØ (1) H

FRLF ARØ8 (1) H

R75 100Ω

	S3	S2	S1	SØ	M	CIN
~A	L	L	L	L	H	X
~(A v B)	L	L	L	H	H	X
A MINUS B	L	H	H	L	L	L
Ø	L	L	H	H	H	X
~(A ∧ B)	L	H	L	L	H	X
~B	L	H	L	H	H	X
A MINUS B MINUS 1	L	H	H	L	L	H
A ∧ ~B	L	H	H	H	H	X
A PLUS B PLUS 1	H	L	L	H	L	L
A PLUS B	H	L	L	H	L	H
B	H	L	H	L	H	X
A ∧ B	H	L	H	H	H	X
1	H	H	L	L	H	X
A MINUS 1	H	H	H	H	L	H
A v B	H	H	H	L	H	X
A	H	H	H	H	H	X

AR & FALU BITS ØØ TO Ø7 SLOT 3

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN. [illegible] DATE 9-16-71
CHK'D. [illegible] DATE 2/17/72
ENG. K.B. Nugent DATE 2/17/72
PROJ. ENG. [illegible] DATE 2/17/72
PROD. [illegible] DATE 2/17/72

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE
FRACTION DATA PATH LOW ORDER
(FRLE)

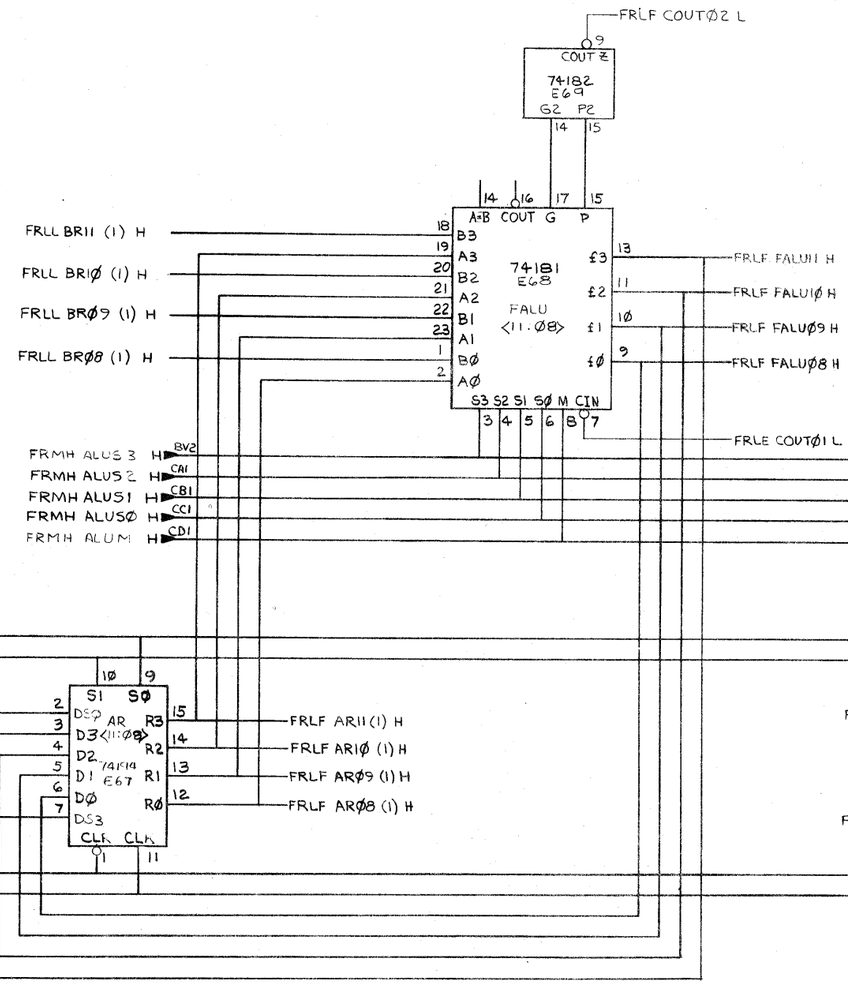
NEXT HIGHER ASSY. B-DD-11/45-Ø
SCALE —//—
SHEET 6 OF 14

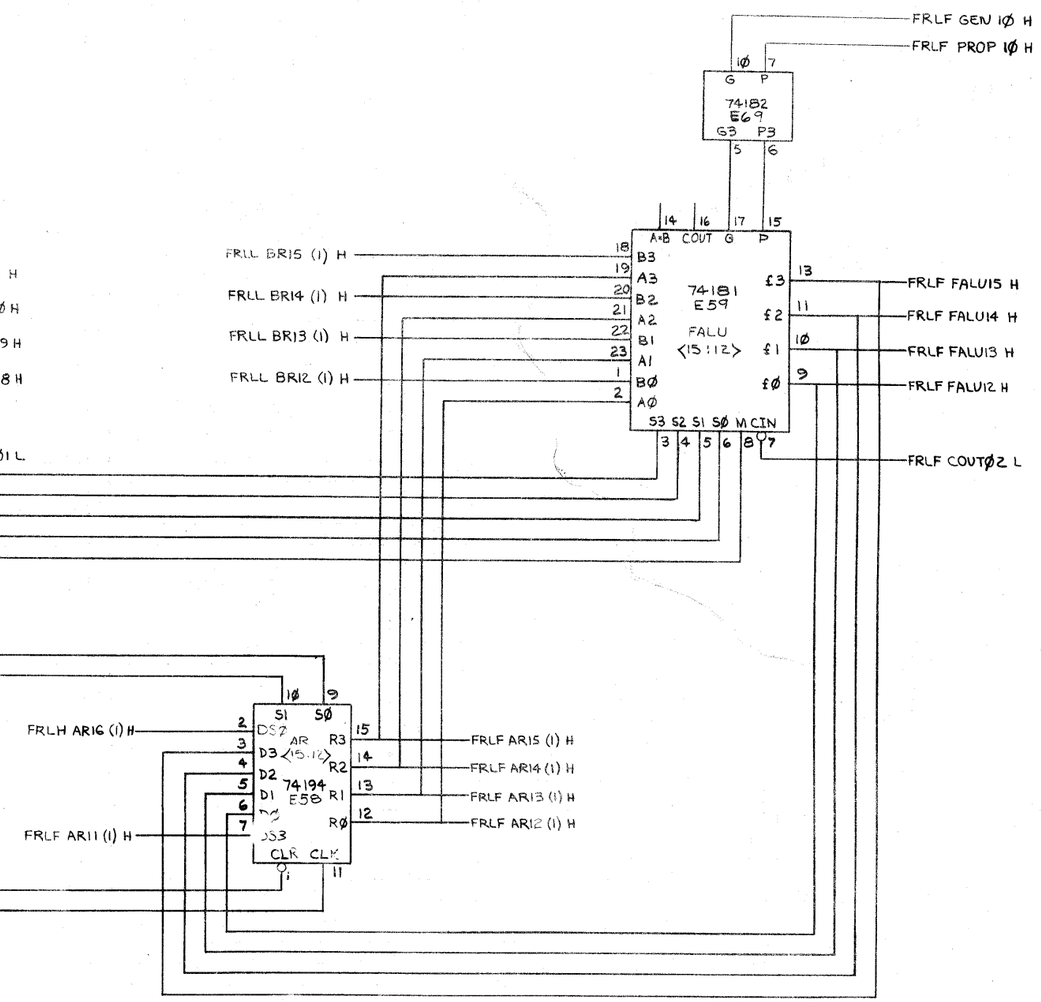
SIZE	CODE	NUMBER	REV.
D	CS	M8115-Ø-Ø1	C

DIST.

REVISIONS | REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B





AR & FALU BITS Ø8 TO 15 SLOT 3

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN.	Z Carbonneau	DATE 9-16-71
CHK'D	[illegible]	DATE 2/17/72
ENG.	RB Hughes	DATE 2/17/72
PROJ. ENG.	LB Hughes	DATE 2/17/72
PROD.	J. Smith	DATE 2/17/72

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: FRACTION DATA PATH LOW ORDER (FRLF)

MATERIAL: —//— FINISH: —//—

NEXT HIGHER ASSY.: B-DD-11/45-Ø

SCALE: —//— SHEET 7 OF 14

SIZE	CODE	NUMBER	REV.
D	CS	M8115-Ø-Ø1	C

DIST.

REVISIONS

REV	CHANGE NO.	CHK

DEC FORM NO DRD 102-B

FRME FMXC1 (Ø) H
FXPH IL (1) H
FRLL BR19 (1) L
74HØØ E32
FRLK L2 COUT 1Ø L
74181 E17 (G0 P0)
FRLH COUTØ3 L
74181 E39 (G1 P1)
FRLH COUTØ4 L
FRLL BR18 (1) H
FRLL BR17 (1) H
FRLL BR16 (1) H
FRLL BR23 (1) H
FRLL BR22 (1) H
FRLL BR21 (1) H
FRLL BR2Ø (1) H
74181 E99 FALU (19:16)
74181 E39 FALU (23:2Ø)
FRLH FALU19 H
FRLH FALU18 H
FRLH FALU17 H
FRLH FALU16 H
FRLH FALU23 H
FRLH FALU22 H
FRLH FALU21 H
FRLH FALU2Ø H
FRMH ALUS3 H
FRMH ALUS2 H
FRMH ALUS1 H
FRMH ALUSØ H
FRMH ALUM H
FRHE ARSØ H
FRHE AR31 H
74194 E48 AR (19:16)
74194 E38 AR (23:2Ø)
FRLH AR2Ø (1) H
FRLF AR15 (1) H
FRLE +3VB H
FRHE CLK AR A L
FRLJ AR24 (1) H
FRLH AR19 (1) H
FRLH AR19 (1) H
FRLH AR18 (1) H
FRLH AR17 (1) H
FRLH AR16 (1) H
FRLH AR23 (1) H
FRLH AR22 (1) H
FRLH AR21 (1) H
FRLH AR2Ø (1) H

AR & FALU BITS 19 TO 23 SLOT 3

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN. R Gaberson DATE 9-16-71
CHKD. [illegible] DATE 2/17/72
ENG. R D Hughes DATE 2/17/72
PROJ. ENG. R D Hughes DATE 2/22/72
PROD. [illegible] DATE 2/17/72
NEXT HIGHER ASSY. B-DD-11/45-Ø
SCALE —
SHEET 8 OF 14

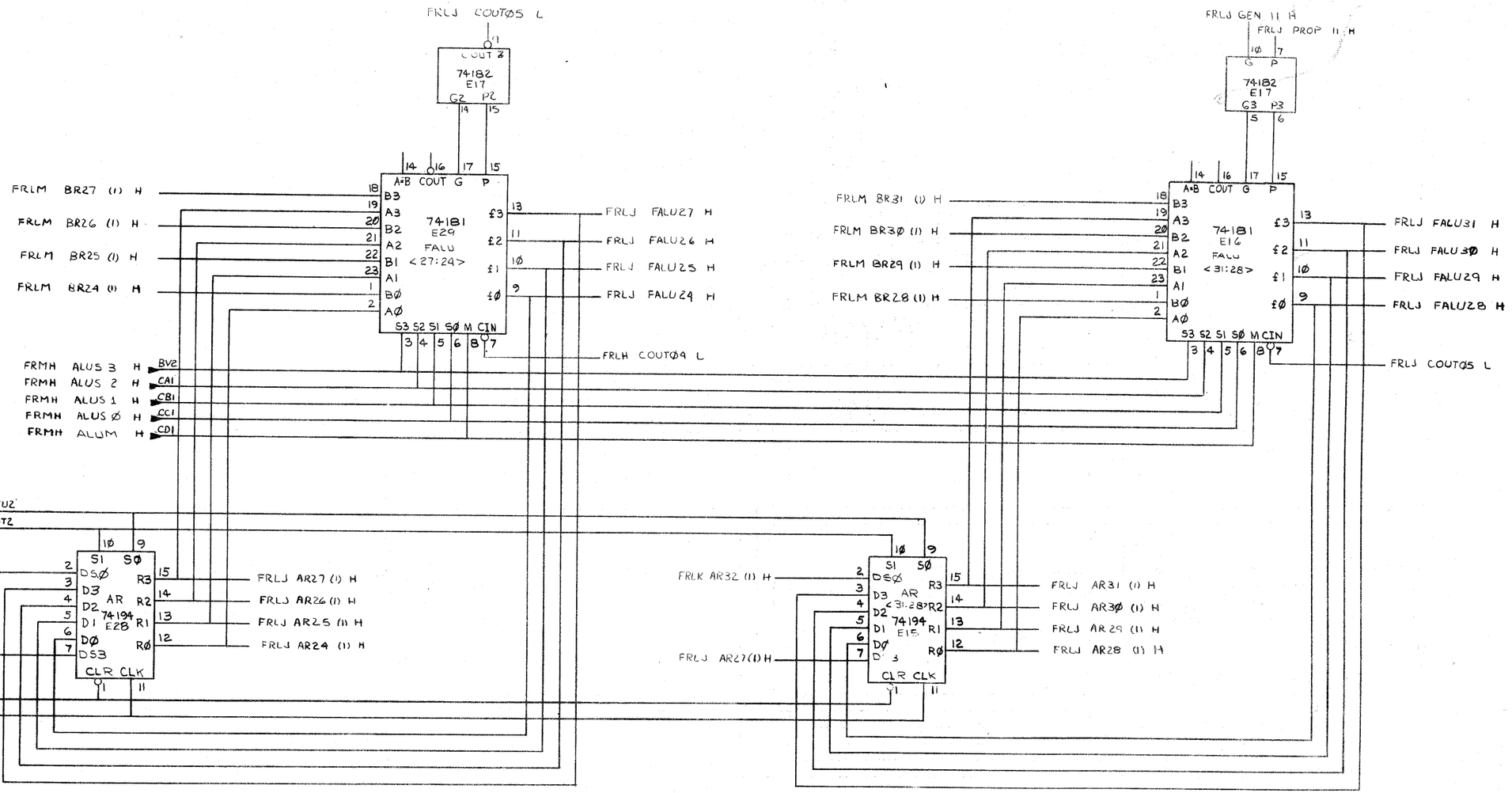
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
FRACTION DATA PATH LOW ORDER (FRLH)

SIZE D | CODE CS | NUMBER M8115-Ø-Ø1 | REV. C
DIST.

REVISIONS | REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B



AR & FALU BITS 24 TO 31 — SLOT 3

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//—

FINISH —//—

DRN.	E Gaberson	DATE 9-16-71
CHK.	[illegible]	DATE 2/17/72
ENG.	R B Hughes	DATE 2/17/72
PROJ. ENG.	R B Hughes	DATE 2/17/72
PROD.	D. Hunch	DATE 2/17/72

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: FRACTION DATA PATH LOW ORDER (FRLJ)

NEXT HIGHER ASSY. B-DD-11/45-Ø

SCALE —//—

SHEET 9 OF 14

SIZE	CODE	NUMBER	REV.
D	CS	M8115-Ø-Ø1	C

DIST.

REVISIONS	CHANGE NO.	CHK
REV.		

DEC FORM NO DRD 102-B

SIZE D CS NUMBER M8115-Ø-Ø1 REV C

FMX

FRME FMXC1 (Ø) H → CE2 — 74H00 E22
FXPH I L (Ø) H → BF2
FRME FMXCØ (Ø) H → AH2
FRLK AR34 (1) H
74H10 E9
FRLM BR35 (1) H
FXPH FD (Ø) L → AK2
FXPE CONV SP L → AL2
74H00 E22

FRLM BR34 (1) H
FRLM BR33 (1) H
FRLM BR32 (1) H
74H10 E9

74181 E7 FALU <35:32>
A=B COUT GØ PØ
B3 A3 B2 A2 B1 A1 BØ AØ
S3 S2 S1 SØ AI CIN
F3 F2 F1 FØ

AF2 → FRLK GØ H
AH2 → FRLK PØ H
FRLK FALU35 H
FRLK FALU34 H
FRLK FALU33 H
FRLK FALU32 H
FRLK L2 COUT 11 L

FRMH ALU S3 H → BV2
FRMH ALU S2 H → CA1
FRMH ALU S1 H → CB1
FRMH ALUSØ H → CC1
FRMH ALUM H → CD1

FRHE ARSØ H → FU2
FRHE ARS1 H → FT2

FRHB AR36 (1) H → AD2 — D1
FRLJ AR31 (1) H

74194 E6
S1 SØ
DSØ AR. R3 <35:32> R2 D2 D1 RØ DØ DS3
CLR CLK

AB2 → FRLK AR35 (1) H
FRLK AR34 (1) H
FRLK AR33 (1) H
FRLK AR32 (1) H

FRLE +3VB H
FRHE CLK AR A L → AM2

74182 E5Ø
GOUT POUT G3 P3

CL2 → FRLK L2 COUT 12 L
COUT Z 74182 E5Ø G2 P2

FRHC GEN 12 H → DD2
FRHC PROP 12 H → DE2

CM2 → FRLK L2 COUT 11 L
COUT Y 74182 E5Ø G1 P1

FRLJ GEN11 H
FRLJ PROP11 H

FRLK L2 COUT 1Ø L
COUT X 74182 E5Ø CIN G2 P2

FRMH ALUCIN L → DB213
FRLF GEN1Ø H
FRLF PROP1Ø H

AR & FALU BITS 32 TO 35 & 2ND CARRY LOOKAHEAD SLOT 3

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN. — DATE 12/27/71
CHK'D. — DATE 2/17/72
ENG. — DATE 2/17/72
PROJ. ENG. — DATE 2/17/72
PROD. — DATE 2/17/72

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: FRACTION DATA PATH LOW ORDER (FRLK)

NEXT HIGHER ASSY. B-DD-11/45-Ø
SCALE
SHEET 1Ø OF 14

SIZE D | CODE CS | NUMBER M8115-Ø-Ø1 | REV C | DIST.

REVISIONS	REV	CHANGE NO.	CHK

BRUNING 40-522 15M40
DEC FORM NO DRD 102-B

FRHE QRØSØ H ▶FM2
FRHE QRØS1 H ▶FL2

FRLL QR11 (1) H
FRLA SCROUTØ7 H
FRLA SCR OUTØ6 H
FRLA SCR OUTØ5 H
FRLA SCR OUTØ4 H
FRLL QRØ6 (1) H

FRHF CLK QR A L ▶FK2
FRHE CLR QR A L ▶FJ2

FRLL QRØ7 (1) H
FRLA SCR OUTØ3 H
FRLA SCR OUTØ2 H
FRLA SCR OUTØ1 H
FRLA SCR OUTØØ H
FRLL QRØ2 (1) H

FRLL QRØ3 (1) H

FRHF LSQRØØ IN H ▶FH2

74194 E65 — QR ⟨10:07⟩
74194 E74 — QR ⟨06:03⟩
74194 E86 — QR ⟨02:00⟩

FRLL QR1Ø C1) H
FRLL QR09 C1) H
FRLL QR08 C1) H
FRLL QR07 C1) H
FRLL QR06 C1) H
FRLL QR05 C1) H
FRLL QR04 C1) H ▶EL2
FRLL QR03 C1) H
FRLL QR02 C1) H
FRLL QR01 C1) H
FRLL QR00 C1) H

74175 E66 — BR ⟨11:08⟩
74175 E75 — BR ⟨07:04⟩
74175 E87 — BR ⟨03:00⟩

FRLL BR 11 (1) H
FRLL BR 10 (1) H
FRLL BR 09 (1) H
FRLL BR 08 (1) H
FRLL BR Ø7 (1) H
FRLL BR Ø6 (1) H
FRLL BR Ø5 (1) H
FRLL BR Ø4 (1) H
FRLL BR Ø3 (1) H
FRLL BR Ø2 (1) H
FRLL BR Ø1 (1) H
FRLL BR ØØ (1) H

FRMH CLR BR A L ▶FP2
FRMH CLK BR A L ▶FR2

FRLM QR23 (1) H
FRLC SCR OUT19 H
FRLC SCR OUT18 H
FRLC SCR OUT17 H
FRLC SCR OUT16 H
FRLL QR18 (1) H

FRLL QR19 (1) H
FRLB SCR OUT15 H
FRLB SCR OUT14 H
FRLB SCR OUT13 H
FRLB SCR OUT12 H
FRLL QR14 (1) H

FRLL QR15 (1) H
FRLB SCR OUT11 H
FRLB SCR OUTØ1Ø H
FRLB SCR OUTØ9 H
FRLB SCR OUTØ8 H
FRLL QR1Ø (1) H

74194 E36 — QR ⟨22:19⟩
74194 E46 — QR ⟨18:15⟩
74194 E56 — QR ⟨14:11⟩

FRLL QR22 (1) H
FRLL QR21 (1) H
FRLL QR20 (1) H
FRLL QR19 (1) H
FRLL QR18 (1) H
FRLL QR17 (1) H
FRLL QR16 (1) H
FRLL QR15 (1) H
FRLL QR14 (1) H
FRLL QR13 (1) H
FRLL QR12 (1) H
FRLL QR11 (1) H

74175 E37 — BR ⟨23:20⟩
74175 E47 — BR ⟨19:16⟩
74175 E57 — BR ⟨15:12⟩

FRLL BR 23 (1) H
FRLL BR 22 (1) H
FRLL BR 21 (1) H
FRLL BR 20 (1) H
FRLL BR 19 (1) H
FRLL BR 18 (1) H
FRLL BR 17 (1) H
FRLL BR 16 (1) H
FRLL BR 15 (1) H
FRLL BR 14 (1) H
FRLL BR13 (1) H
FRLL BR 12 (1) H

QR MODE CONTROL

	S1	SØ
NOP	L	L
SHIFT RIGHT	L	H
SHIFT LEFT	H	L
LOAD	H	H

QR BITS ØØ TO 22 & BR BITS ØØ TO 23 SLOT 3

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN. Roberts 10/22/71
CHKD. [illegible] 11/1/72
ENG. R.B. Hughes 11/7/72
PROJ. ENG. [illegible] 11/7/72
PROD. C. Lewis 11/17/72

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: FRACTION DATA PATH LOW ORDER (FRLL)

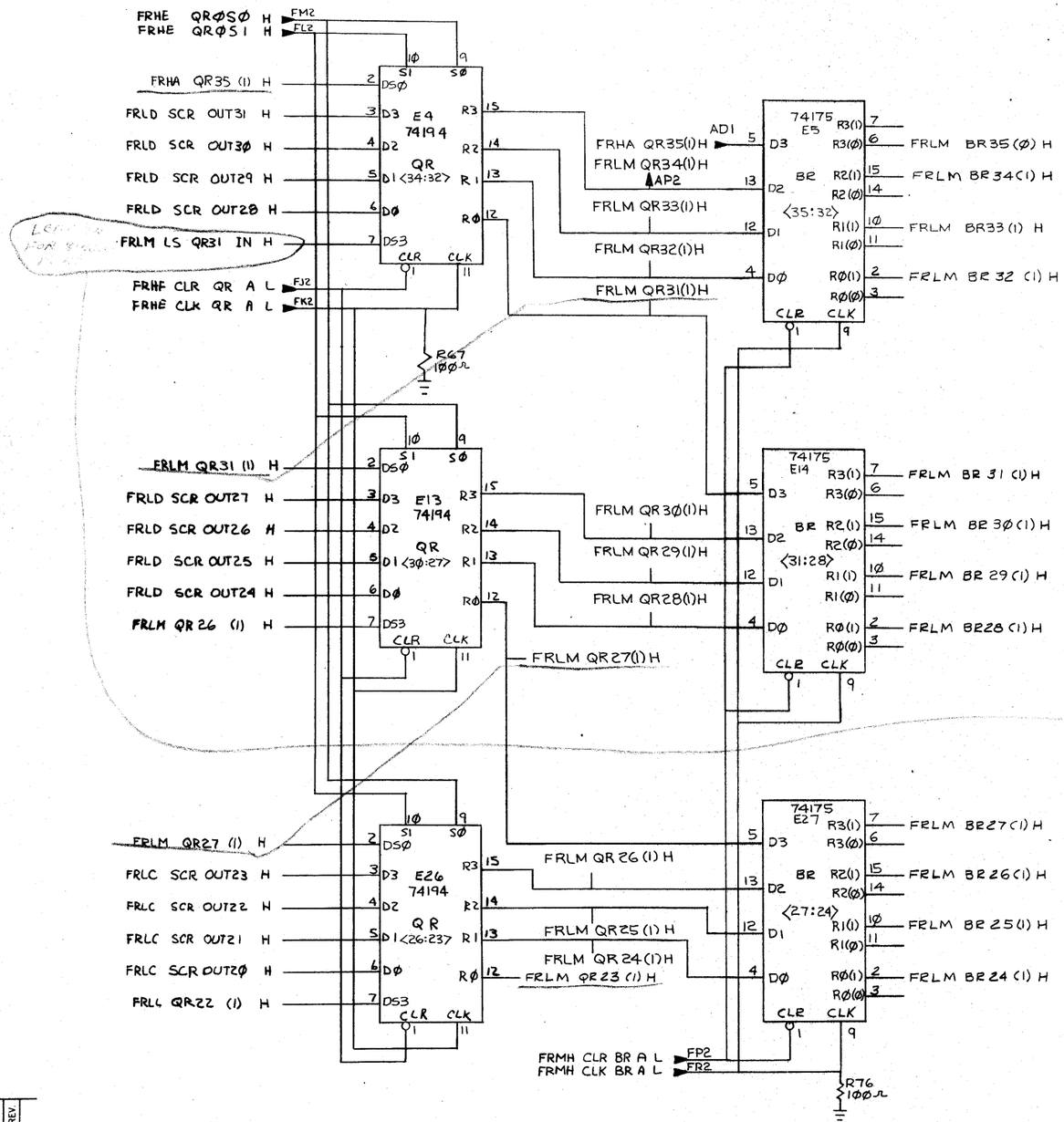
NEXT HIGHER ASSY. B-DD-11/45-Ø
SCALE —
SHEET 11 OF 14

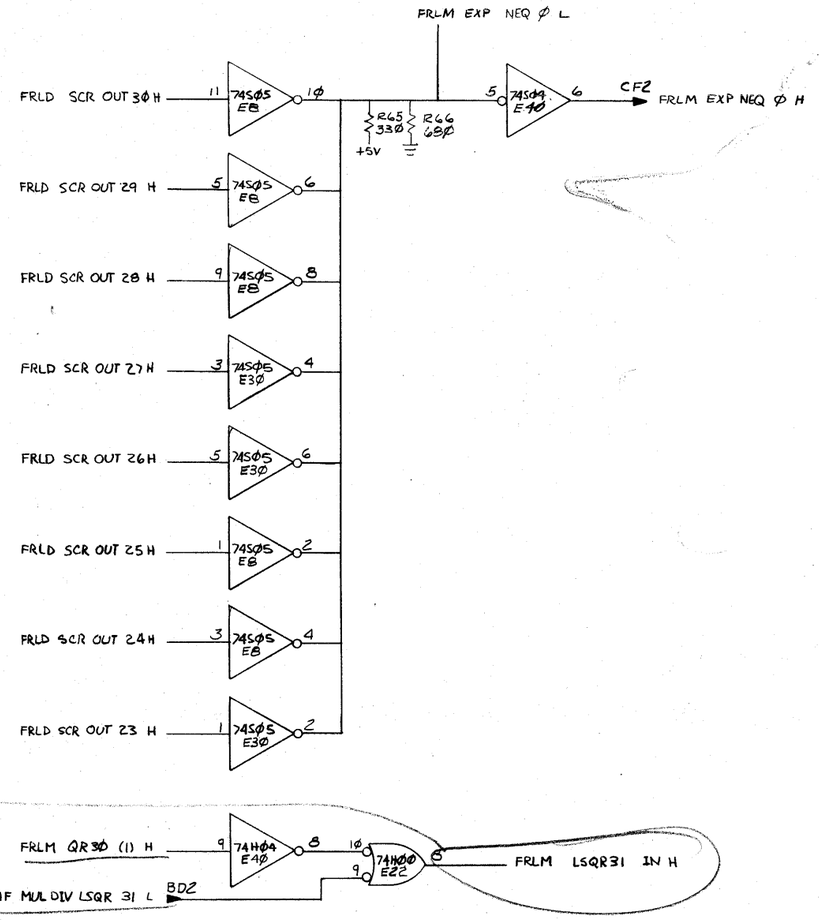
SIZE	CODE	NUMBER	REV.
D	CS	M8115-Ø-Ø1	C

DIST.

REV.	REVISIONS	CHANGE NO.	CHK

DEC FORM NO DRD 102-B





QR BITS 23 TO 34 & BR BITS 24 TO 35 & HIDDEN BIT LOGIC SLOT 3

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

	NAME	DATE
DRN.		10/22/71
CHK'D.		2/17/72
ENG.		2/17/72
PROJ. ENG.		2/17/72
PROD.		2/17/73

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: FRACTION DATA PATH LOW ORDER (FRLM)

NEXT HIGHER ASSY.: B-DD-11/45-Ø

SIZE D | CODE CS | NUMBER M8115-Ø-Ø1 | REV. C

SCALE

SHEET 12 OF 14

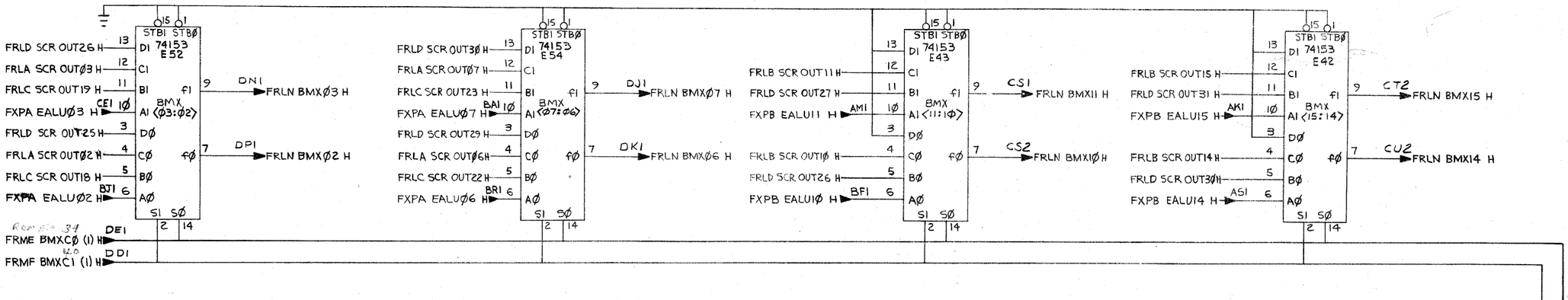
DIST.

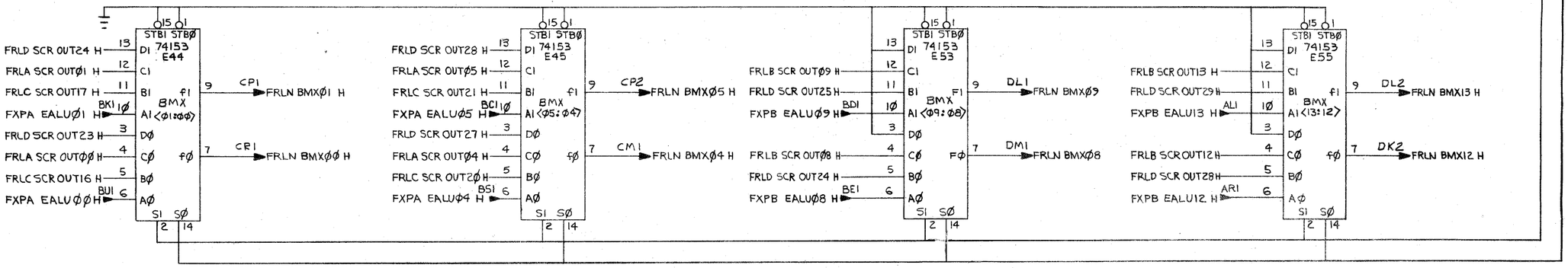
REVISIONS	CHANGE NO.	REV

CHK

DEC FORM NO DRD 102-B

SIZE D | CODE CS | NUMBER M8115-Ø-Ø1 | REV C





BMX CONTROL

	SI	SØ
EALU	L	L
ACH	L	H
ACL	H	L
EXP	H	H

BMX SLOT 3

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN. SRoberts 10/26/71
CHK'D. Kurt Shoens 2/17/72
ENG. WA Hughes 2/17/72
PROJ. ENG. RG Hughes 2/17/72
PROD. G Hough 2/17/72
NEXT HIGHER ASSY. B-DD-11/45-Ø
SCALE —//—
SHEET 13 OF 14

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE
FRACTION DATA PATH LOW ORDER (FRLN)

SIZE	CODE	NUMBER	REV.
D	CS	M8115-Ø-Ø1	C

DIST.

REVISIONS | REV. | CHANGE NO. | CHK

FRLP LD FPS H

FXPA EALUØ3 — CE1 — 74SØ4 E7Ø — 74H5Ø E91 — FRLD ACMX 31 H, FRLP LD FPS L

FXPA EALUØ2 — BJ1 — 74SØ4 E7Ø — 74H5Ø E91 — FRLP LD FPS H, FRLP STR ZERO L, FRLP LD FPS L

FXPA EALUØ1 — BK1 — 74SØ4 E7Ø — 74H5Ø E82 — FRLP LD FPS H, FRLP ENABLE F V L, FRLP LD FPS L

74175 E9Ø

D3	R3(1) 15 FV1	FRLP FN (1) H
	R3(Ø) 14	FRLP FN (Ø) H
D2	R2(1) 10 FV2	FRLP FZ (1) H
	R2(Ø) 11	FRLP FZ (Ø) H
D1	R1(1) 7 FN1	FRLP FV (1) H
	R1(Ø) 6	FRLP FV (Ø) H
DØ	RØ(1) 2 FS2	FRLP FC (1) H
	RØ(Ø) 3	FRLP FC (Ø) H
CLR	1	
CLK	9	

FXPB EALU14 H — AS1 13 — D3
FXPB EALU12 H — AR1 12 — D2
FXPB EALU11 H — AM1 5 — D1
FXPB EALUIØ H — BF1 4 — DØ

74175 E6Ø

R3(1)	15	FRLP FID (1) H
R3(Ø)	14 EH2	FRLP FID (Ø) H
R2(1)	10	
R2(Ø)	11	
R1(1)	7 DJ2	FRLP FIUV (1) H
R1(Ø)	6	FRLP FIUV (Ø) H
RØ(1)	2 EF2	FRLP FIU (1) H
RØ(Ø)	3	FRLP FIU (Ø) H

FXPB EALUØ9 H — BD1 13 — D3
FXPB EALUØ8 H — BE1 12 — D2
FXPA EALUØ5 H — BA1 5 — D1
FXPA EALUØ4 H — BS1 3, AR2 5 — 74H11 E18 — 4 — DØ

74175 E7Ø

R3(1)	15	FRLP FIV (1) H
R3(Ø)	14	FRLP FIV (Ø) H
R2(1)	10	FRLP FIC (1) H
R2(Ø)	11	FRLP FIC (Ø) H
R1(1)	7 EE2	FRLP FT (1) H
R1(Ø)	6	FRLP FT (Ø) H
RØ(1)	2 ED2	FRLP FMM (1) H
RØ(Ø)	3	FRLP FMM (Ø) H

FRLP +3VC H — FROM CPU IN KERNAL MODE

FRMC FCC1 (1) H — EK2 2
FRLP LD FPS L — 3
FRLP LD FPS H — 4
FXPA EALUØØ H — BU1 5
74H5Ø E82 — 6 — 74SØ4 E7Ø — 2

FRMF FCC1 (Ø) L — EK2 13
FRMF FCCØ (Ø) L — CH2 1
2
74H1Ø E39 — 12 — FRLP LD FPS L

FRHH T54B H — BH2 4
FRHJ CLOCKH — BJ2 5
74H1Ø E91 — 6

FXPD FIRØ6 (1) H — BK2 2
FRMF LOAD FPSC H — BL2 1
FRHH T54B H — BH2 5
FRHJ CLOCKC H — BJ2 4
74H4Ø E31 — 6 — FRLP CLK FPS L
R69 1ØØ Ω

FXPD FIRØ6(1) H — BK2 1
FRMF LOAD FPSC H — BL2 2
74HØØ E32 — 3 — 11 — 74SØ4 E3Ø — 1Ø — FRLP LD FPS H

FRMJ INIT H — EJ2 3 — 74SØ4 E7Ø — 4 — FRLP INIT L

FRLP FIC (1) H — 5
FRLP FC (1) H — 4
74HØØ E61 — 6 — DF2 — FRLP FC INT L

FRLP FIV (1) H — 2
FRLP FV (1) H — 1
74HØØ E61 — 3 — DH2 — FRLP FV INT L

12
13
74HØØ E32 — 11 — FRLP +3VC H

FRLD ACMX 3Ø H — 15
FRLD ACMX29 H — 12
FRLD ACMX28 H — 1
FRLD ACMX27 H — 2
FRLD ACMX26 H — 4
FRLD ACMX25 H — 11
FRLD ACMX24 H — 3
FRLD ACMX23 H — 6
74H3Ø E2 — 8 — AE2 — FRLP STR ZERO L
ZERO EXP.

FRMJ SET FER L — CJ2
FXPB EALU15 H — AK1 2
74H74 E51 — D 1, C, Ø, 4, 5, 6
FRLP CLK FPS L — 3
FRLP INIT L — 1
FRLP FER (Ø) H

FXPB EALUØ8 H — BE1 5 — 74SØ4 E7Ø — 6 — FRMF FCCO (1) H — CH2 11 — 74H1Ø E91 — 8 — FRLP ENABLE FV L
FXPB EALU 15 H — (AK1) — 10

FPS (EXCLUDING FD & IL MODE BITS) SLOT 3

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN.		DATE 12/5/72
CHK'D.		DATE 2/17/72
ENG.		DATE 2/17/72
PROJ. ENG.		DATE 2/17/72
PROD.		DATE 2/17/72

NEXT HIGHER ASSY. B-DD-11/45-Ø

SCALE —

SHEET 14 OF 14

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

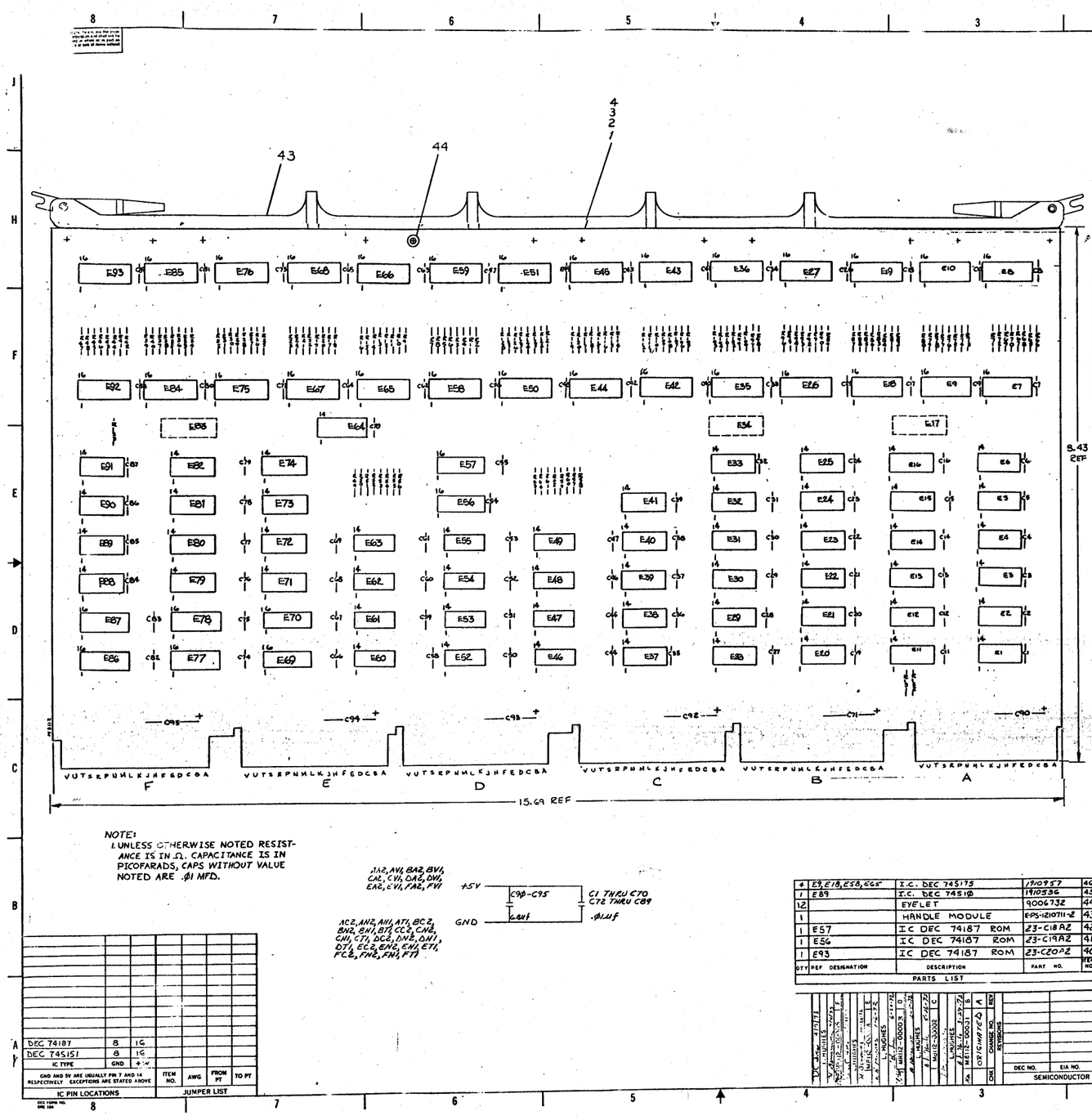
TITLE: FRACTION DATA PATH LOW ORDER (FRLP)

SIZE	CODE	NUMBER	REV.
D	CS	M-8115-Ø-Ø1	C

DIST.

REVISIONS | REV | CHANGE NO. | CHK

DEC FORM NO DRD 102-B



NOTE:
1. UNLESS OTHERWISE NOTED RESISTANCE IS IN Ω. CAPACITANCE IS IN PICOFARADS, CAPS WITHOUT VALUE NOTED ARE .01 MFD.

A1A2, AV1, BA2, BV1, CA2, CV1, DA2, DV1, EA2, EV1, FA2, FV1 — +5V — C90-C95 — C1 THRU C70, C72 THRU C89 — .01 μF

AC2, AN2, AH1, AT1, BC2, BN2, BH1, BT1, CC2, CN2, CH1, CT1, DC2, DN2, DH1, DT1, EC2, EN2, EH1, ET1, FC2, FN2, FH1, FT1 — GND — GND

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
4	E9, E18, E58, E68	I.C. DEC 74S175	1910957	46
1	E89	I.C. DEC 74S10	1910536	45
12		EYELET	9006732	44
1		HANDLE MODULE	EPS-1210711-2	43
1	E57	IC DEC 74187 ROM	23-C18A2	42
1	E56	IC DEC 74187 ROM	23-C19A2	41
1	E93	IC DEC 74187 ROM	23-C20A2	40

PARTS LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1	E85	IC DEC 74187 ROM	23-C21A2	39
1	E76	IC DEC 74187 ROM	23-C22A2	38
1	E68	IC DEC 74187 ROM	23-C23A2	37
1	E66	IC DEC 74187 ROM	23-C24A2	36
1	E59	IC DEC 74187 ROM	23-C25A2	35
1	E51	IC DEC 74187 ROM	23-C26A2	34
1	E45	IC DEC 74187 ROM	23-C27A2	33
1	E43	IC DEC 74187 ROM	23-C28A2	32
1	E36	IC DEC 74187 ROM	23-C29A2	31
1	E27	IC DEC 74187 ROM	23-C30A2	30
1	E19	IC DEC 74187 ROM	23-C31A2	29
1	E10	IC DEC 74187 ROM	23-C32A2	28
1	E8	IC DEC 74187 ROM	23-C46A2	27
1	B2	IC DEC 74H74	1909867	26
4	E5, E6, E16, E25	IC DEC 74H11	1909267	25
4	E12, E13, E30, E32	IC DEC 74H00	1909056	24
4	E4, E22, E23, E31	IC DEC 74H20	1905635	23
10	E7, E35, E26, E42, E44, E58, E67, E75, E84, E92	IC DEC 74175	1910651	22
3	E14, E33, E71	IC DEC 74H50	1909060	21
1	E11	IC DEC 74H04	1909931	20
5	E20, E28, E29, E73, E81	IC DEC 74H40	1905586	19
3	E1, E21, E24	IC DEC 74H10	1909057	18
2	E63, E79	IC DEC 74S11	1910837	17
3	E40, E82, E91	IC DEC 74S140	1910546	16
4	E41, E62, E74, E66	IC DEC 74S00	1910532	15
4	E87, E53, E61, E90	IC DEC 74S04	1910534	14
1	E88	IC DEC 74H30	1909059	13
6	E49, E70, E77, E78, E84, E87	IC DEC 74S151	1910956	12
6	E38, E39, E45, E49, E54, E55	IC DEC 74S64	1910542	11
8	E15, E37, E44, E52, E60, E72, E80, E3	IC DEC 74S74	1910544	10
1	R133	RESISTOR 100Ω, ¼W, 5%	1300229	9
65	R2, R4, R6, R8, R10, R12 R14, R16, R18, R20, R22 R24, R26, R28, R30, R32, R34, R36, R38, R40, R42, R44, R46, R48, R50, R52, R54, R56, R58, R60, R62, R64, R66, R68, R70, R72, R74, R76, R78, R80, R82, R84, R86, R88, R90, R92, R94, R96, R98, R100, R102, R104, R106, R108, R110, R112, R114, R116, R118 R120, R122, R124, R126, R128, R132	RESISTOR 680Ω, ¼W, 5%	1301424	8
65	R1, R3, R5, R7, R9, R11, R13, R15, R17, R19, R21 R23, R25, R27, R29, R31, R33, R35, R37, R39, R41, R43, R45, R47, R49, R51, R53, R55, R57, R59, R61, R63, R65, R67, R69, R71, R73, R75, R77, R79, R81, R83, R85, R87, R89, R91, R93, R95, R97, R99, R101, R103, R105, R107, R109, R111, R113 R115, R117, R119, R121, R123, R125, R127, R131	RESISTOR 330Ω, ¼W, 5%	1300295	7
88	C1 THRU C70, C72 THRU C89	CAPACITOR .01μF, 100V, 20% DISC	1001610	6
1	C90 THRU C95	CAPACITOR .1μF, 35V, 20%	1000067	5
		ETCHED CIRCUIT BOARD	5009862	4
		MODULE ECO HISTORY	B-MH-M8112-0-6	3
		ASSY/DRILLING HOLE LAYOUT	E-AH-M8112-0-5	2
		X-Y COORDINATE HOLE LOCATION	X-Y-CO-M8112-0-4	1

PARTS LIST — ETCH BOARD REV D

QTY	DESCRIPTION	PART NO.	ITEM NO.

DEC 74187	8	16
DEC 74S151	8	16
IC TYPE	GND	+5V

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

IC PIN LOCATIONS

ITEM NO.	AWG	FROM PT	TO PT

JUMPER LIST

REV	CHANGE NO.	ORIGINATED	CHG
A	8-0001	4-JAN-78	
B	8-0003	5-JAN-78	
C	M8112-00002	5-JAN-78	
D	M8112-00003	7-JAN-78	

REVISIONS

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

SEMICONDUCTOR CONVERSION CHART

NEXT HIGHER ASSY: B-DD-11/45-Ø
SCALE 2/1
SHEET 1 OF 13

DRN [illegible] 3-12
CHK [illegible] DATE
ENG [illegible] DATE
PROJ ENG [illegible] DATE
PROG [illegible] DATE

DIGITAL EQUIPMENT CORPORATION

TITLE: F.P. ROM & ROM CONTROL

SIZE/CODE E | NUMBER M8112-0-1 | REV F

CST

E M8112-0-1 F

FRLP STR ZERO L — FS1 — 74S04 E90
FRLD ACMX 31 H — FR2 — 74S04 E90
FRMJ ENABLE FMØ H
74S10 EB9

FRLP FMM (1) H — FP1
FXPJ UMATCH H — FR1
FRMJ +3VF H — 74S10 EB1

FRMJ +3VD H
FRMJ ICLR (1) H
FRHH TS3A H — AA1
74H74 E72
FRMA INITF (1) H
FRMA INITF (Ø) H

FRMJ +3VD H
74S74 E72
FRMA UBRKF (1) H
FRMA UBRKF (Ø) H

FRMJ +3VF H
74S74 EBØ
FRMA ABORTF (1) H
FRMA ABORTF (Ø) H

FRMJ +3VF H
74S74 EB9
FRMA FMØF (1) H
FRMF FMØF (Ø) H
FRMA TP4 L

FRMF DIS. B LØ (Ø) L
74S11 E79
FRMA INITF (1) L

FRHJ CLOCK A H — AN1
FRHN TS4A H — CB2
74S08 E62
FRMA TP4 L

FRMJ +3VF H
74H40 EB1
FRMA INITF (1) H
FRMA INITF B L

FRMJ +3VDH
FRMB UTRAP A L
FRMB GO TO READY L
74S11 E63
FRMA UTRAP B L

FRME UAFØ (Ø) H
FRME UAF1 (Ø) H
FRMJ +3VB H
FRMA UBRKF (Ø) H
FRMA ABORTF (Ø) H
FRMA FMØF (Ø) H
FRMJ +3VB H
74H30 EB8
FRMA SELECT UBRMXB L

STB
74S151 EB6 (FRMFX)
FXPE FIRD6 H — FM1
FXPF RNG ROM 2 H — FP2
FXPD FIRØ7 (1) H — FM2
FXPF SUB FRAC H — FL1
D7 D6 D5 D4 D3 D2 D1 DØ
S2 S1 SØ
FRME UBR2 (1) H
FRME UBR1 (1) H
FRME UBRØ (1) H

STB
74S151 EB7
FXPE FIRD5 H — FK1
FXPF RNG ROM 1 H — FN1
FXPD FIRØ6 (1) H — FL2
FXPE FIRD4 H — FJ1
D7 D6 D5 D4 D3 D2 D1 DØ
S2 S1 SØ

FRMJ +3VH H
FRMB GO TO READY L
FRMA FMØF (1) H
74S64 E55
FRMD DØ4 H
FRMA UTRAP B L
FRMJ +3V H H

FRMB GO TO READY L
FRMA UTRAP B L
FRMD DØ5 H
FRMJ +3VH H
74S64 E54

FRMJ +3VD H
74S74 E52
DEI — FRMA CRAR 4 (1) H
FRMA CRAR 4 (Ø) H
74S04 E53
FRMA CRAR 4A H
FRMA CRAR 4B H

FRMD DØ7 H
FRMA UTRAP B L
74S00 E62
+3VD H
74S74 E69
DUI — FRMA CRAR 7 (1) H
FRMA CRAR 7 (Ø) H
74S04 E61
FRMA CRAR 7A H
FRMA CRAR 7B H

FRMD DØ6 H
FRMA UTRAP B L
74S00 E62
FRMJ +3VD H
74S74 EGB
DSI — FRMA CRAR 6 (1) H
FRMA CRAR 6 (Ø) H
74S04 E61
FRMA CRAR 6A H
FRMA CRAR 6B H

FRMJ +3VD H
74S74 E52
DFI — FRMA CRAR 5 (1) H
FRMA CRAR 5 (Ø) H
74S04 E61
FRMA CRAR 5A H
FRMA CRAR 5B H

FRHJ CLOCK A H — AN1
FRHN TS2A H — BU2
FRMJ +3VE H
74S140 E40

FRMA TP2 L
FRMA INITF B L

CONTROL ROM ADDRESS REGISTER BITS 4 THROUGH 7 SLOT 4

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN. K. Davis	DATE 9-30-71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D.	DATE 2/17/72	
ENG. KB Hughes	DATE 2/17/72	TITLE: F.P. ROM & ROM CONTROL (FRMA)
PROJ. ENG. KB Hughes	DATE 2/17/72	
PROD. A. Rausch	DATE 2/17/72	
NEXT HIGHER ASSY. B-DD-11/45-Ø		SIZE D CODE CS NUMBER M8112-Ø-Ø1 REV F
SCALE		SHEET 2 OF 13 DIST.

REVISIONS — REV. — CHANGE NO. — CHK.

DEC FORM NO DRD 102-B

FRMA SELECT UBRMXB L

STB 74S151 E77 — FXPD FIRØ8 (Ø) H, FXPF RNG ROM Ø H, FXPD FIR11(1) H, FXPE FIRD3 H

STB 74S151 E78 — FRHD AR58 (1) H, FXPE CONV SP L, FRLP FT (1) H, FRLP FIU (1) H, FXPD FIRIØ(1) H, FXPE FIRD2 H

STB 74S151 E69 — FRHD B AR59 L, FRLP FV INT L, FRLP FC INT L, FXPH IL (Ø) H, FXPF BBIZ (1) H, FRHC B ARSØ L, FXPE FIRD1 H

STB 74S151 E70 — FXPF BZ (1) H, FXPD MØ H, FXPH FD (Ø) H, FXPE IMMEDIATE H, FXPF BN (Ø) H, FRHF SD (1) H, FXPE FIRDØ H → FRMB CRMPX Ø L

FRME UBR2 (1) H
FRME UBR1 (1) H
FRME UBRØ (1) H

FRME UAFI (1) H, FRMJ +3V D H, FRME UAFØ (Ø) H, FRME UBRØ (Ø) H → 74H50 E71

FRME UAFØ (1) H, FRMJ +3V D H, FRME UAFI (Ø) H, FRME UBRØ (Ø) H → 74H50 E71

FRMA UBRKF (1) L, FRMA ABORTF (1) L, FRMA FMØF (1) L → 74S11 E63 → FRMB UTRAPA L

FRHJ CLOCKA H, FRHH TS2 A H, FRMJ +3VE H → 74S140 E40 → FRMB TP2 L

FRME UJMP (Ø) H → 74S10 E89 → FRMB GO TO READY L

74S04 E90 (×3)

FRMA ABORTF (1) H, FRMD DØ3 H, FRMA UTRAP B L, FRMJ +3V H H, FRMB GO TO READY L, FRMJ +3V H H → 74S64 E48

FRMA UBRKF (1) H, FRMD DØ2 H, FRMA UTRAP B L, FRMJ +3V H H, FRMB GO TO READY L, FRMJ +3V H H → 74S64 E49

FRMB UTRAP A L, FRMD DØ1 H, FRMJ +3V E H → 74S64 E38

FRMB UTRAP A L, FRMD DØØ H, FRMJ +3V E H → 74S64 E39

FRMJ +3V E H → 74S74 E37 → CMI → FRMB CRARØ (1) H; FRMB CRARØ (Ø) H

74S04 E47 → FRMB CRARØ A H

74S04 E47 → FRMB CRARØ B H

FRMJ +3VH H → 74S74 E46 → CU3 → FRMB CRAR3 (1) H; FRMB CRAR3 (Ø) H

FRMJ +3VH H → 74S74 E46 → CU1 → FRMB CRAR2 (1) H; FRMB CRAR2 (Ø) H

FRMJ +3VE H → 74S74 E37 → CM2 → FRMB CRARI (1) H; FRMB CRARI (Ø) H

FRMB TP2 L

FRMA INITF B L

74S04 E47 → FRMB CRAR3 A H

74S04 E47 → FRMB CRAR3 B H

74S04 E47 → FRMB CRAR2 A H

74S04 E47 → FRMB CRAR2 B H

74S04 E53 → FRMB CRARI A H

74S04 E53 → FRMB CRARI B H

CONTROL ROM ADDRESS REGISTER BITS Ø THRU 3 SLOT 4

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN	J Roberts	DATE 10/5/71
CHKD	[illegible]	DATE 2/17/72
ENG	TB Hughes	DATE 2/17/72
PROJ. ENG	TB Hughes	DATE 2/17/72
PROD.	[illegible]	DATE 2/17/72

NEXT HIGHER ASSY. B-DD-11/45-Ø
SCALE —
SHEET 3 OF 13

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: F.P. ROM & ROM CONTROL (FRMB)

SIZE	CODE	NUMBER	REV.
D	CS	M8112-Ø-Ø1	F

DIST.

REVISIONS | REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

ROM: 256x4

(23-C28A2)
74187 E93
FRMB CRAR 7 A H
FRMB CRAR 6 A H
FRMB CRAR 5 A H
FRMB CRAR 4 A H
FRMA CRAR 3 A H
FRMA CRAR 2 A H
FRMA CRAR 1 A H
FRMA CRAR Ø A H
A7 A6 A5 A4 A3 A2 A1 AØ
CROM (43:40)
M3 M2 M1 MØ
CS1 CSØ
R106 R105 FRMC D43 H H
R108 R107 FRMC D42 H H
R110 R109 FRMC D41 H H
R112 R111 FRMC D40 H H
680Ω 330Ω

(23-C27A2)
74187 E45
CROM (39:36)
R114 R113 FRMC D39 H H
R116 R115 FRMC D38 H L
R118 R117 FRMC D37 H H
R120 R119 FRMC D36 H H

(23-C26A2)
74187 E51
CROM (35:32)
R122 R121 FRMC D35 H L
R124 R123 FRMC D34 H H
R126 R125 FRMC D33 H L
R128 R127 FRMC D32 H H
+5V

(23-C31A2)
74187 E19
CROM (55:52)
R82 R81 FRMC D55 H H
R84 R83 FRMC D54 H H
R86 R85 FRMC D53 H L
R88 R87 FRMC D52 H H

(23-C30A2)
74187 E27
CROM (51:48)
R90 R89 FRMC D51 H H
R92 R91 FRMC D50 H H
R94 R93 FRMC D49 H H
R96 R95 FRMC D48 H H

(23-C29A2)
74187 E36
CROM (47:44)
R98 R97 FRMC D47 H H
R100 R99 FRMC D46 H H
R102 R101 FRMC D45 H H
R104 R103 FRMC D44 H H
+5V

(23-C46A2)
74187 EB
CROM (63:60)
R66 R65 FRMC D63 H L
R68 R67 FRMC D62 H H
R70 R69 FRMC D61 H H
R72 R71 FRMC D60 H H
+5V

(23-C32A2)
74187 E10
CROM (59:56)
R74 R73 FRMC D59 H H
R76 R75 FRMC D58 H H
R78 R77 FRMC D57 H H
R80 R79 FRMC D56 H H
+5V

CONTROL ROM DATA BUFFER BITS 32 TO 63 SLOT 4

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN. K Davis	DATE 10-1-71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D [illegible]	DATE 2/17/72	
ENG. R B Hughes	DATE 2/17/72	TITLE: FP ROM¢ ROM CONTROL (FRMC)
PROJ. ENG. R B Hughes	DATE 2/17/72	
PROD. [illegible]	DATE 2/17/72	
NEXT HIGHER ASSY. B-DD-11/45-Ø		SIZE D, CODE CS, NUMBER M8112-Ø-Ø1, REV. F
SCALE —		
SHEET 4 OF 13		DIST.

REVISIONS: REV. / CHANGE NO. / CHK

DEC FORM NO DRD 102-B

SIZE D CODE CS NUMBER M8112-Ø-Ø1 REV F

(23-C2ØA2) 74187 E53

FRMA CRAR 7 B H
FRMA CRAR 6 B H
FRMA CRAR 5 B H
FRMA CRAR 4 B H
FRMB CRAR 3 B H
FRMB CRAR 2 B H
FRMB CRAR 1 B H
FRMB CRAR Ø B H

CROM <11:Ø8>

M3	R42 68Ø	R41 33Ø	FRMD D11 H H
M2	R44 68Ø	R43 33Ø	FRMD D1Ø H H
M1	R46 68Ø	R45 33Ø	FRMD Ø9 H H
MØ	R48 68Ø	R47 33Ø	FRMD Ø8 H H

CS1 CSØ 14 13

(23-C19A2) 74187 E56

CROM <Ø7:Ø4>

M3	R5Ø 68Ø	R49 33Ø	FRMD Ø7 H L
M2	R52 68Ø	R51 33Ø	FRMD Ø6 H L
M1	R54 68Ø	R53 33Ø	FRMD Ø5 H L
MØ	R56 68Ø	R55 33Ø	FRMD Ø4 H L

CS1 CSØ 14 13

(23-C18A2) 74187 E57

CROM <Ø3:ØØ>

M3	R58 68Ø	R57 33Ø	FRMD Ø3 H L
M2	R6Ø 68Ø	R59 33Ø	FRMD Ø2 H H
M1	R62 68Ø	R61 33Ø	FRMD Ø1 H H
MØ	R64 68Ø	R63 33Ø	FRMD ØØ H L

CS1 CSØ 14 13 +5V

(23-C23A2) 74187 E68

FRMA CRAR 7 B H
FRMA CRAR 6 B H
FRMA CRAR 5 B H
FRMA CRAR 4 B H
FRMB CRAR 3 B H
FRMB CRAR 2 B H
FRMB CRAR 1 B H
FRMB CRAR Ø B H

CROM <23:2Ø>

M3	R18 68Ø	R17 33Ø	FRMD D23 H H
M2	R2Ø 68Ø	R19 33Ø	FRMD D22 H L
M1	R22 68Ø	R21 33Ø	FRMD D21 H L
MØ	R24 68Ø	R23 33Ø	FRMD D2Ø H L

CS1 CSØ 14 13

(23-C22A2) 74187 E76

CROM <19:16>

M3	R24 68Ø	R25 33Ø	FRMD D19 H H
M2	R26 68Ø	R27 33Ø	FRMD D18 H H
M1	R3Ø 68Ø	R29 33Ø	FRMD D17 H H
MØ	R32 68Ø	R31 33Ø	FRMD D16 H H

CS1 CSØ 14 13

(23-C21A2) 74187 E85

CROM <15:12>

M3	R34 68Ø	R33 33Ø	FRMD D15 H H
M2	R36 68Ø	R35 33Ø	FRMD D14 H H
M1	R38 68Ø	R37 33Ø	FRMD D13 H H
MØ	R4Ø 68Ø	R39 33Ø	FRMD D12 H H

CS1 CSØ 14 13 +5V

(23-C25A2) 74187 E59

FRMA CRAR 7 B H
FRMA CRAR 6 B H
FRMA CRAR 5 B H
FRMA CRAR 4 B H
FRMB CRAR 3 B H
FRMB CRAR 2 B H
FRMB CRAR 1 B H
FRMB CRAR Ø B H

CROM <31:28>

M3	R2 68Ø	R1 33Ø	FRMD D31 H L
M2	R4 68Ø	R3 33Ø	FRMD D3Ø H L
M1	R6 68Ø	R5 33Ø	FRMD D29 H H
MØ	R8 68Ø	R7 33Ø	FRMD D28 H H

CS1 CSØ 14 13 +5V

(23-C24A2) 74187 E66

FRMA CRAR 7 B H
FRMA CRAR 6 B H
FRMA CRAR 5 B H
FRMA CRAR 4 B H
FRMB CRAR 3 B H
FRMB CRAR 2 B H
FRMB CRAR 1 B H
FRMB CRAR Ø B H

CROM <27:24>

M3	R1Ø 68Ø	R9 33Ø	FRMD D27 H H
M2	R12 68Ø	R11 33Ø	FRMD D26 H H
M1	R14 68Ø	R13 33Ø	FRMD D25 H H
MØ	R16 68Ø	R15 33Ø	FRMD D24 H H

CS1 CSØ 14 13 +5V

REVISIONS

REV	CHANGE NO.	CHK

CONTROL ROM BITS ØØ TO 31 SLOT 4

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45	PARTS LIST			

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS	ANGLES
.XXX = .005 .XX = .02 .X = .1	±Ø° 3Ø'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

DRN. T. Davis	DATE 10-9-71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. Paul Gillen.	DATE 2/11/72	
ENG. A.B. Hughes	DATE 2/11/72	TITLE F.P. ROM & ROM CONTROL (FRMD)
PROJ. ENG. A.B. Hughes	DATE 2/10/72	
PROD. J. Hirsh	DATE 2/11/72	

NEXT HIGHER ASSY. B-DD-11/45-Ø

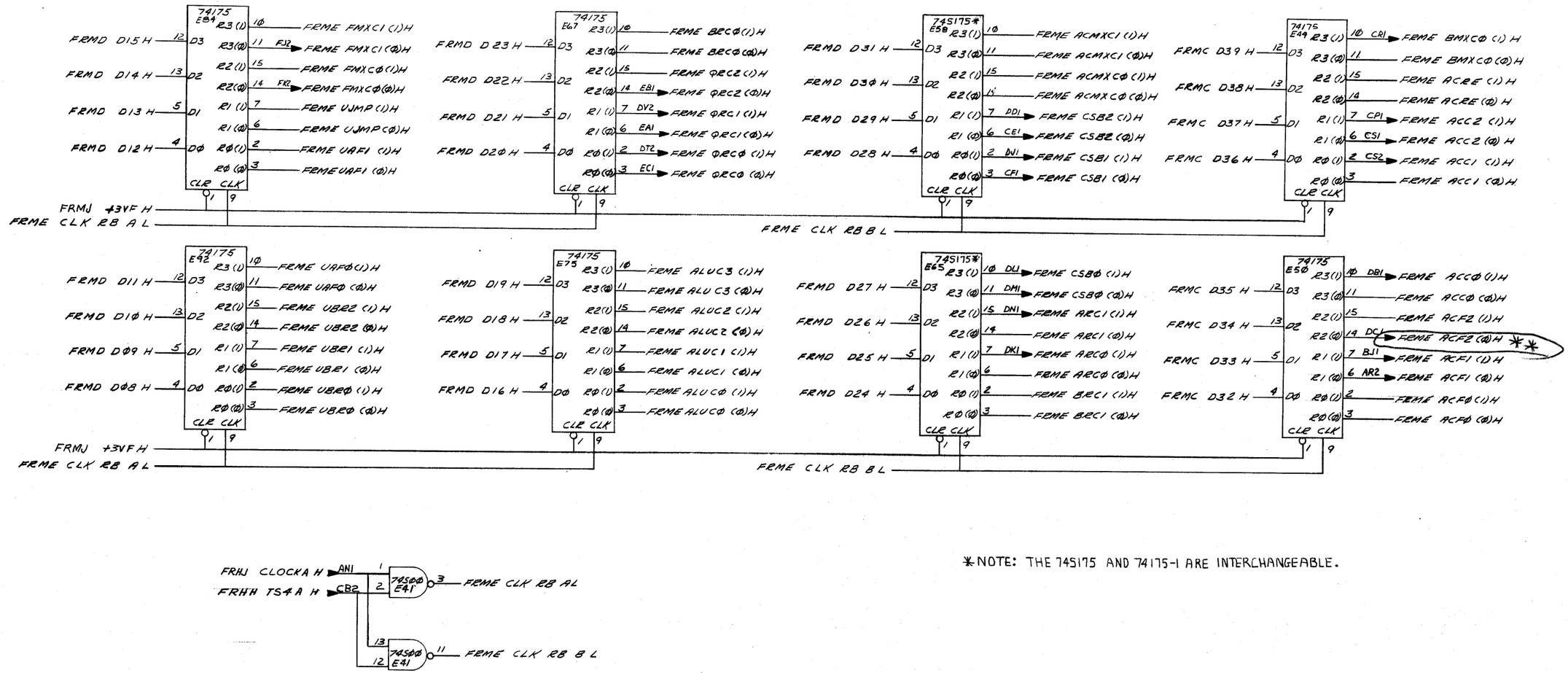
SCALE

SHEET 5 OF 13

SIZE	CODE	NUMBER	REV.
D	CS	M8112-Ø-Ø1	F

DIST.

DEC FORM NO DRD 102-B



*NOTE: THE 74S175 AND 74175-1 ARE INTERCHANGEABLE.

SEE MAN. FOR ROM BITS Page 4-13 : 4-18

CONTROL ROM DATA BUFFER BITS Ø8 TO 39 SLOT 4

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

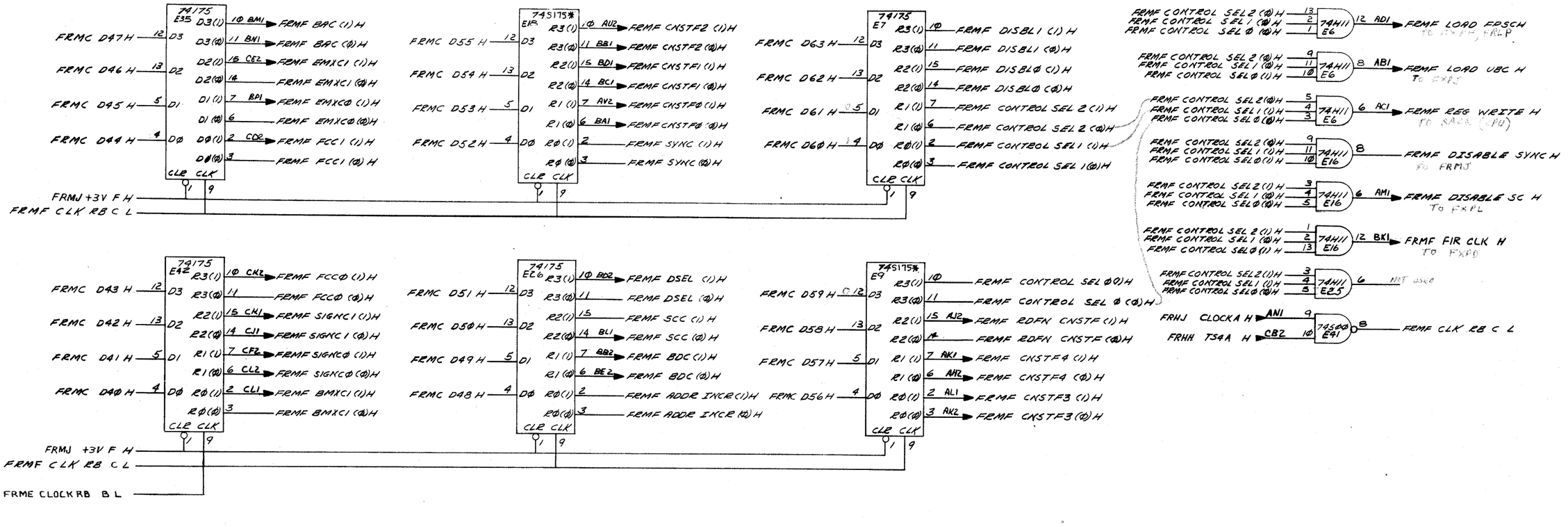
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —

DRN. K Davis	DATE 10-9-71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D [illegible]	DATE 2/17/72	TITLE F.P. ROM& ROM CONTROL (FRME)
ENG. AB Hughes	DATE 2/17/72	
PROJ. ENG. AB Hughes	DATE 2/17/72	
PROD. R. Edwards	DATE 2/17/72	
NEXT HIGHER ASSY. B-DD-11/45-Ø		SIZE D CODE CS NUMBER M8112-Ø-Ø1 REV. F
SCALE —		
SHEET 6 OF 13		DIST.

REVISIONS: REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

SIZE D CODE CS NUMBER M8112-Ø-Ø1 REV F



*NOTE: THE 74S175 AND 74175-1 ARE INTERCHANGEABLE.

CONTROL ROM DATA BUFFER BITS 4Ø TO 63 SLOT 4

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

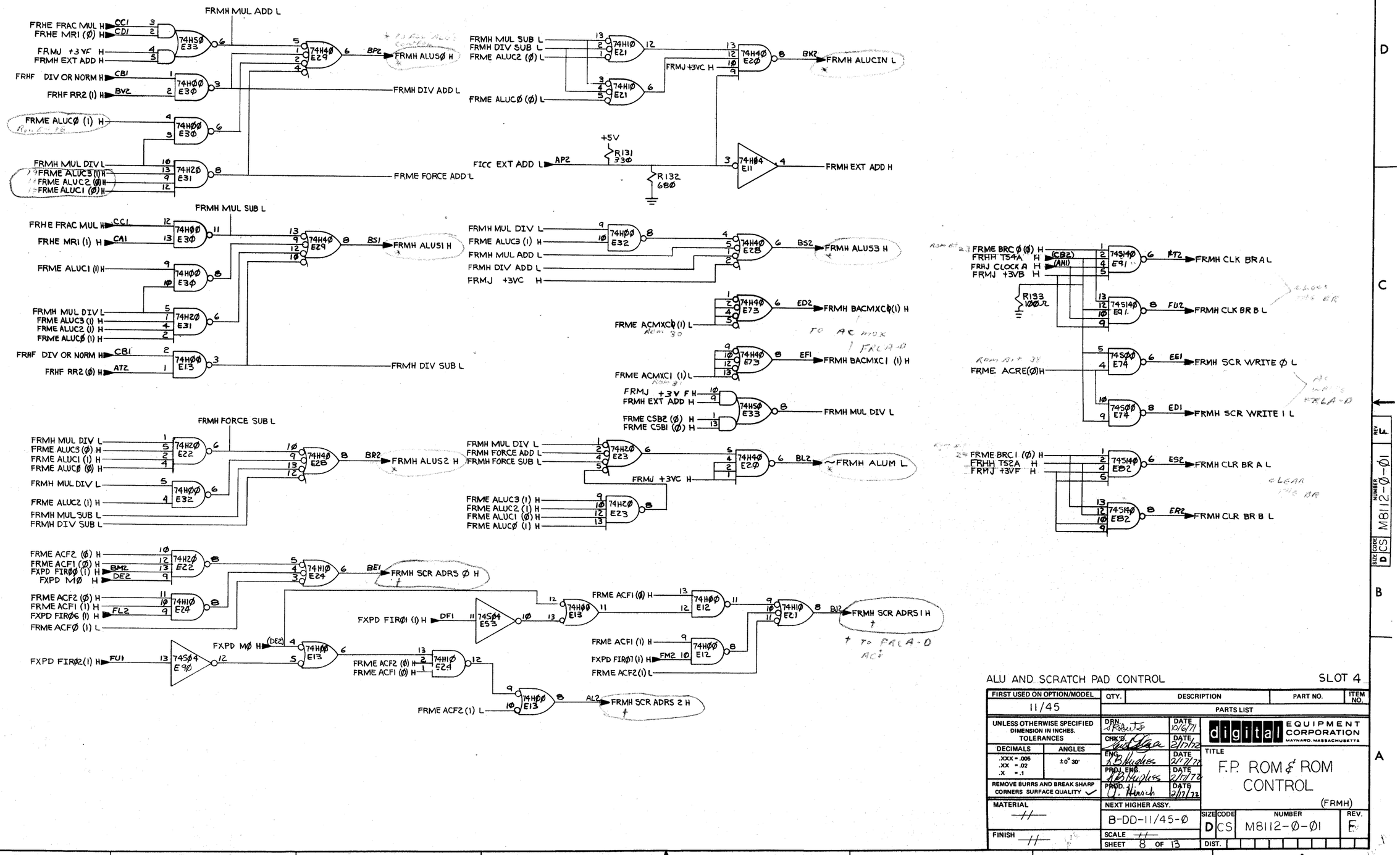
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —

DRN. T. Dunn	DATE 10-5-71	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CH'D. Scott Logan	DATE 2/17/72	
ENG. R B Hughes	DATE 2/17/72	TITLE: F.P. ROM & ROM CONTROL (FRMF)
PROJ. ENG. R B Hughes	DATE 2/17/72	
PROD. D. Hirsch	DATE 2/17/72	
NEXT HIGHER ASSY. B-DD-11/45-Ø		SIZE D, CODE CS, NUMBER M8112-Ø-Ø1, REV. F
SCALE —		DIST.
SHEET 7 OF 13		

REVISIONS: REV. | CHANGE NO | CHK

DEC FORM NO DRD 102-B

SIZE D CODE CS NUMBER M8112-Ø-Ø1 REV F



ALU AND SCRATCH PAD CONTROL — SLOT 4

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

		DATE
DRN. J Roberts		10/6/71
CHK'D.		2/7/72
ENG.		2/7/72
PROJ. ENG.		2/7/72
PROD.		2/7/72

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: F.P. ROM & ROM CONTROL (FRMH)

NEXT HIGHER ASSY. B-DD-11/45-Ø

SCALE —

SHEET 8 OF 13

SIZE	CODE	NUMBER	REV.
D	CS	M8112-Ø-Ø1	F

DIST.

REVISIONS | REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

ROM

52 FRMF SYNC (Ø) H
FRHH TS3A H → AA1
FRMA FMØF (1) H
74H50 E17 → 8 FRMJ SET SYNCF L

FRMJ FPSYNC (1) H
FRHH TS2A H → BU2
74S00 E41 → 6 OPR → TO CPU UBCE → FRMJ FP SYNC L

74S74 E15
FRMJ FP SYNC L
FRMJ CLR SYNC L
FRMJ ICLR (1) L
FRMJ RESPOND (1) H
74H11 E5 → 12

FRMF RD FN CNSTF (1) H
FRMF CNSTF 3 (Ø) H
FRMJ EEQ (1) H
74H10 E1 → 8 AF1 → FRMJ FPC 1 H

FRMF RD FN CNSTF (1) H
FRMF CNSTF 4 (Ø) H
FRLP FIUV (1) H → BF2
74H11 E25 → 8 → FRMJ ENABLE FMØ H

FRMF RDFN CNSTF (1) H
FRMF CNSTFØ (Ø) H
FRHH TS4A H → CB2
74H10 E1 → 6 AE2 → FRMJ SET FER L

FRMJ +3VA H
74S74 E3 → 8 AB2 → FRMJ ATTENTION (1) H
TO FRHH RESET LOGIC
UBCD FP ATTN L → AR1
74H04 E11 → 6
FRMJ ATTENTION (Ø) H

FRMF ADDR INCR (Ø) H → 1
74H04 E11 → 2 AN1 → FRMJ FPADR INC L

FRMJ SET SYNCF L
TMCE INIR CLR L → AE1
UBCE INIT L → AP1
74H11 E5 → 8

FRMF DISABLE SYNC H
FRHH TS4A H → (CB2)
FRHJ CLOCKA H → AN1
74H20 E4 → 6 → FRMJ CLR SYNC L

FRMB CRMP X ØL → 1
74S00 E64 → 3
FXPE CONV SP L → EF1 2

FRMF DSEL (Ø) H → 2
FRHH TS3A H → AA1
74H00 E32 → 3 BR1 → FRMJ READY CLR L

TMCE INTR CLR L → AE1
74H04 E11 → 10 → FRMJ FP REQ (1) H
74H50 E17
UBCE INIT L (FICE) → AP1
74H04 E11 → 8 → AP2 → FRMJ INIT H

FRMF DSEL (Ø) H
FRMJ ATTENTION (1) H
74H00 E32 → 11

74S74 E2
FRMJ FP REQ (1) H
FRMF DISBL1 (Ø) H
FRMJ +3VA H
FRMJ ICLR (1) L
74H11 E5 → 6
FRMJ +3VA H
74H04 E11 → 12 A31 → FRMJ FPREQ L
TO CPU RACK
FRMJ FP REQ (Ø) H

FRMJ ATTENTION (1) L

FRMJ FPSYNC (1) H
74H00 E12 → 6

74S74 E3
FRMJ RESPOND (1) H
FRMJ RESPOND (Ø) H
FRMJ +3VA H

FRMF DISBLØ (Ø) H
FRMB CRAR3 (Ø) H
74H10 E1 → 12

74S74 E2
FRMJ ICLR (Ø) H
FRMJ +3VA H
74S04 E53 → 12 AF2
FRMJ ICLR (1) H
TO FRMA SET INIT FLAG

* DP1 → FRMJ FP PRESENT L TO CPU
AD2 → FRMJ 20 ABORT (1) H

74H10 E4 → 8 FRMJ +3VA H
74H40 E81 → 8 FRMJ +3VF H
74S04 E90 → 10 FRMJ +3VB H
74S00 E74 → 3 FRMJ +3VD H
74H00 E12 → 3 FRMJ +3VC H
74S00 E74 → 11 FRMJ +3VE H
74S00 E62 → 8 FRMJ +3VH H

NOTE
* THIS GROUND IS GENERATED ON FRM BOARD

INTERFACE SIGNALS SLOT 4

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN. T. Davis	DATE 10-5-71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHKD. [illegible]	DATE 2/17/72	
ENG. A.D. Hughes	DATE 2/17/72	TITLE F.P. ROM & ROM CONTROL (FRMJ)
PROJ. ENG. A.D. Hughes	DATE 2/17/72	
PROD. J. Hirsch	DATE 2/17/72	
NEXT HIGHER ASSY. B-DD-11/45-Ø		SIZE D CODE CS NUMBER M8112-Ø-Ø1 REV. F
SCALE		
SHEET 9 OF 13		DIST.

REVISIONS | REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

REV F | NUMBER 10-0-8112-0-01 | SIZE D CODE CS M8112 | 8 7 6 5 4 3 2 1

FLOWS	STATE	ADR	DL1	DLØ	CSL	RDF	CST	SYN	DSL	SCC	BDC	AIC	BAC	EMX	FCC	SGN	BMX	ACR	ACC	ACF	ACM	CSB	ARC	BRC	QRC	ALU	FMX	UJP	UAF	UBR	NAD
Ø1	TRP,ØØ	ØØØ	1	Ø	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	3	7	ØØ7
11	DIV,12	ØØ1	1	1	7	Ø	ØØ	1	1	1	Ø	1	1	2	3	1	Ø	1	7	7	3	7	3	2	7	11	3	1	3	7	32Ø
Ø1	TRP,7Ø	ØØ2	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	Ø	5	3	7	3	3	7	Ø5	3	Ø	3	7	ØØ7
Ø1	RDY,ØØ	ØØ3	Ø	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	6	5	Ø	7	3	3	7	17	3	1	3	7	ØØ6
Ø1	TRP,1Ø	ØØ4	Ø	1	7	Ø	16	1	1	1	1	1	1	2	3	3	3	Ø	2	5	1	7	3	3	7	Ø5	3	1	3	7	242
02	NOM,Ø4	ØØ5	1	1	7	1	37	1	1	1	1	1	1	3	3	Ø	3	1	4	Ø	3	7	3	2	4	17	3	1	3	7	Ø21
Ø1	RDY,1Ø	ØØ6	1	1	7	1	37	1	1	1	Ø	1	1	3	3	3	2	1	6	5	3	7	3	3	7	17	3	1	3	7	Ø72
Ø9	ADD,62	ØØ7	1	1	7	1	37	1	1	1	Ø	1	1	3	3	3	Ø	1	7	3	7	Ø	3	7	Ø	32	3	1	3	1	342
Ø1	TRP,4Ø	ØlØ	1	Ø	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	6	5	1	7	3	3	7	14	3	1	3	7	275
12	NRM,Ø8	Ø11	1	1	7	Ø	Ø1	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	2	1	7	11	3	1	Ø	4	262
02	NOM,Ø8	Ø12	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	4	2	3	7	3	3	7	Ø5	3	Ø	3	7	ØØ7
12	NRM,Ø2	Ø13	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	3	3	3	7	17	3	1	3	7	321
Ø4	LD,,16	Ø14	1	1	7	1	25	Ø	1	1	1	1	1	1	3	3	3	Ø	6	4	1	7	3	3	7	Ø5	3	1	3	7	237
12	NRM,1Ø	Ø15	1	1	7	Ø	Ø1	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	2	1	7	11	3	1	Ø	4	262
02	NOM,16	Ø16	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	4	Ø	3	7	3	3	7	Ø5	3	Ø	3	7	ØØ7
12	NRM,Ø6	Ø17	1	1	7	1	37	1	1	1	Ø	1	1	3	3	3	Ø	1	7	7	3	7	3	1	7	17	3	1	Ø	4	262
Ø1	TRP,5Ø	Ø2Ø	Ø	1	7	Ø	14	1	1	1	1	1	1	2	3	3	3	Ø	6	5	1	7	3	3	7	Ø5	3	1	3	7	275
Ø2	NOM,Ø6	Ø21	1	1	7	1	37	1	1	1	1	1	1	Ø	3	3	Ø	Ø	2	2	7	3	3	3	7	Ø5	3	Ø	1	4	Ø12
Ø2	NOM,2Ø	Ø22	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	4	Ø	1	7	3	3	7	14	3	Ø	3	7	ØØ7
1Ø	MUL,1Ø	Ø23	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	Ø	3	1	7	3	3	7	14	3	1	1	4	3Ø4
02	NOM,12	Ø24	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	4	2	3	7	3	2	4	17	3	1	3	7	Ø25
Ø2	NOM,14	Ø25	1	1	7	1	37	1	1	1	1	1	1	Ø	3	3	3	Ø	Ø	2	7	3	3	3	7	Ø5	3	Ø	1	4	Ø16
Ø5	LD,,56	Ø26	1	1	7	1	37	1	1	1	Ø	1	1	3	3	3	1	1	1	4	3	7	3	3	7	17	3	1	3	7	Ø75
Ø3	NOM,52	Ø27	1	1	7	1	37	1	1	1	Ø	1	1	3	3	3	Ø	Ø	4	4	1	7	3	3	7	14	3	1	3	7	247
Ø4	LD,,Ø6	Ø3Ø	1	1	7	1	25	Ø	1	1	1	1	1	1	3	3	3	Ø	6	4	1	7	3	3	7	Ø5	3	1	Ø	1	Ø6Ø
02	NOM,28	Ø31	1	1	7	1	37	1	1	1	1	1	1	3	Ø	3	3	1	7	7	1	7	3	3	7	ØØ	3	Ø	3	7	ØØ7
Ø1	TRP,3Ø	Ø32	1	1	7	1	37	1	1	1	1	1	1	Ø	3	3	3	Ø	1	5	1	7	3	3	7	Ø5	3	Ø	3	7	ØØ7
1Ø	MUL,12	Ø33	1	1	7	1	37	1	1	1	1	1	1	3	Ø	3	3	Ø	Ø	2	1	7	3	3	7	14	3	Ø	1	4	216
Ø5	LD,,7Ø	Ø34	Ø	1	7	Ø	ØØ	1	1	1	1	1	Ø	2	3	3	Ø	1	7	7	3	7	3	2	7	11	3	1	3	7	Ø35
Ø5	LD,,72	Ø35	1	1	7	1	37	1	1	1	1	1	1	Ø	1	3	3	Ø	Ø	2	2	7	3	3	7	Ø5	3	1	1	6	226
11	LCI,4Ø	Ø36	1	1	7	Ø	17	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	5	3	2	7	11	3	1	3	7	326
Ø8	ADD,38	Ø37	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	3	7	11	3	1	3	7	273

FLOWS	STATE	ADR	63 DL1	62 DLØ	61:59 CSL	58 RDF	57:53 CST	52 SYN	51 DSL	50 SCC	49 BDC	48 AIC	47 BAC	46:45 EMX	44:43 FCC	42:41 SGN	40:39 BMX	38 ACR	37:35 ACC	34:32 ACF	31:30 ACM	29:27 CSB	26:25 ARC	24:23 BRC	22:21 QRC	19:16 ALU	15:14 FMX	13 UJP	12:11 UAF	10:8 UBR	7:0 NAD
Ø2	NOM,34	Ø4Ø	1	1	7	1	37	1	1	1	1	1	1	3	Ø	3	3	Ø	1	Ø	1	7	3	3	7	ØØ	3	Ø	3	7	ØØ7
Ø2	NOM,18	Ø41	Ø	1	7	1	37	1	1	1	1	1	1	3	Ø	3	3	Ø	Ø	Ø	1	7	3	3	7	14	3	Ø	1	4	Ø22
Ø2	NOM,Ø2	Ø42	Ø	1	7	1	37	1	1	1	1	1	Ø	3	3	3	3	1	Ø	Ø	3	7	3	2	4	17	3	1	3	7	Ø05
Ø2	NOM,24	Ø43	Ø	1	7	1	37	1	1	1	Ø	1	1	3	3	3	1	1	Ø	Ø	3	7	3	3	7	17	3	1	3	7	Ø73
Ø2	NOM,1Ø	Ø44	Ø	1	7	1	37	1	1	1	1	1	Ø	3	3	3	3	1	Ø	2	3	7	3	2	4	17	3	1	1	4	Ø24
Ø2	NOM,22	Ø45	Ø	1	4	1	37	1	1	Ø	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	ØØ	3	Ø	3	7	ØØ7
Ø8	ADD,12	Ø46	1	1	7	1	37	1	1	1	1	1	Ø	3	3	3	3	1	7	7	3	7	3	3	7	Ø2	3	1	Ø	6	347
Ø8	ADD,11	Ø47	1	1	7	1	37	1	1	1	1	1	1	3	3	2	3	1	7	7	3	7	3	3	7	17	3	1	Ø	6	327
Ø3	NOM,54	Ø5Ø	Ø	1	Ø	1	37	1	1	1	1	1	1	3	Ø	3	3	Ø	Ø	2	1	7	3	3	7	17	3	1	Ø	6	347
Ø2	NOM,32	Ø51	1	1	7	Ø	11	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	3	3	7	17	3	Ø	3	7	ØØ7
Ø3	NOM,56	Ø52	Ø	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	Ø	2	2	7	3	3	7	Ø7	3	1	1	6	Ø4Ø
Ø3	NOM,5Ø	Ø53	Ø	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	2	4	1	7	3	3	7	ØØ	3	1	Ø	4	376
14	SCI,14	Ø54	1	1	7	Ø	Ø7	1	1	Ø	1	1	1	2	3	3	3	1	7	7	3	7	3	3	7	ØØ	3	1	3	7	Ø27
14	SCI,22	Ø55	1	1	7	1	37	1	1	1	1	1	1	3	2	3	Ø	Ø	4	1	7	3	3	3	7	14	3	1	3	7	333
Ø3	NOM,64	Ø56	Ø	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	Ø	2	3	7	3	3	4	17	3	1	3	7	734
14	SCI,2Ø	Ø57	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	4	4	3	7	3	3	7	ØØ	3	1	3	7	13Ø
1Ø	MUL,ØØ	Ø6Ø	Ø	1	7	Ø	31	1	1	Ø	Ø	1	1	2	3	3	3	1	Ø	2	3	7	3	2	Ø	Ø5	3	1	1	4	22Ø
Ø9	ADD,54	Ø61	1	1	7	1	37	1	1	1	1	1	1	3	3	Ø	3	1	7	7	3	7	3	2	Ø	Ø5	3	1	1	4	22Ø
Ø3	NOM,62	Ø62	Ø	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	3	7	ØØ	3	1	3	7	273
Ø9	ADD,52	Ø63	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	3	7	1Ø	3	1	2	6	271
Ø8	ADD,ØØ	Ø64	Ø	1	7	1	37	1	1	1	Ø	1	1	3	3	3	3	1	Ø	2	3	7	3	2	Ø	17	3	1	1	4	114
Ø3	NOM,6Ø	Ø65	Ø	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	2	3	6	17	3	Ø	3	7	ØØ7
Ø2	NOM,ØØ	Ø66	Ø	1	1	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	3	7	ØØ7
Ø2	NOM,36	Ø67	Ø	1	Ø	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	3	7	ØØ7
11	DIV,ØØ	Ø7Ø	Ø	1	7	Ø	35	1	1	Ø	Ø	1	1	2	3	3	3	1	Ø	2	3	7	3	2	Ø	Ø5	3	1	1	4	31Ø
Ø2	NOM,3Ø	Ø71	1	1	7	Ø	11	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	3	3	7	11	3	1	1	6	Ø4Ø
Ø1	RDY,2Ø	Ø72	1	1	5	1	35	1	Ø	1	1	1	1	1	3	3	3	1	7	7	1	7	3	3	7	12	3	1	3	7	Ø76
Ø2	NOM,26	Ø73	1	1	7	1	37	1	1	1	1	1	Ø	3	3	3	3	1	1	Ø	3	7	3	3	7	17	3	1	Ø	1	Ø11
11	LCF,ØØ	Ø74	Ø	1	7	1	37	1	1	1	Ø	1	1	3	3	3	3	1	Ø	Ø	3	7	3	2	Ø	17	3	1	1	4	324
Ø5	LD,,58	Ø75	1	1	7	1	37	1	1	1	1	1	Ø	3	3	3	3	1	1	4	3	7	3	3	7	17	3	1	Ø	1	111
Ø1	RDY,3Ø	Ø76	1	1	3	1	37	Ø	Ø	1	1	1	1	1	3	3	3	Ø	5	5	1	7	3	3	7	12	3	1	Ø	5	21Ø
Ø8	ADD,4Ø	Ø77	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	3	7	Ø2	3	1	3	7	174

DRN. M. River	DATE 3/21/72	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHKD.	DATE 3/22/72	TITLE
ENG. L B Hughes	DATE 3/27/72	F.P. ROM & ROM CONTROL
PROJ. ENG. L B Hughes	DATE 3/27/72	(ROM MAP ØØØ TO Ø77)
PROD. D. Hinch	DATE 3/22/72	SIZE K · CODE CS · NUMBER M8112-Ø-1 · REV. F
SHEET 10 OF 13		DIST.

FLOWS	STATE	ADR	DL1	DLØ	CSL	RDF	CST	SYN	DSL	SCC	BDC	AIC	BAC	EMX	FCC	SGN	BMX	ACR	ACC	ACF	ACM	CSB	ARC	BRC	QRC	ALU	FMX	UJP	UAF	UBR	NAD
Ø7	STR,64	100	1	1	7	1	35	Ø	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	2	4	121
Ø7	STR,62	101	Ø	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	2	4	121
1Ø	MUL,24	102	1	1	7	Ø	ØØ	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	1	3	7	Ø6	3	1	3	7	36Ø
1Ø	MOD,Ø6	103	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	Ø	3	1	7	3	3	7	14	3	1	1	4	26Ø
Ø6	STR,38	104	1	1	7	1	35	Ø	1	1	Ø	Ø	1	3	3	3	1	1	1	5	3	7	3	3	7	17	3	Ø	1	3	132
Ø6	STR,4Ø	105	1	1	2	1	35	Ø	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	3	7	Ø07
1Ø	MUL,26	106	1	1	7	Ø	ØØ	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	3	3	7	Ø2	3	1	3	7	36Ø
Ø8	ADD,3Ø	107	1	1	7	1	37	1	1	Ø	1	1	1	2	3	3	3	1	7	7	3	7	3	3	7	15	3	1	3	7	125
12	NRM,3Ø	110	1	1	7	Ø	12	1	1	1	1	1	1	2	3	3	3	Ø	6	5	1	7	3	3	7	Ø5	3	1	Ø	3	271
12	NRM,32	111	1	1	7	Ø	1Ø	1	1	1	1	1	1	2	3	3	3	Ø	6	5	1	7	3	3	7	Ø5	3	Ø	2	5	275
1Ø	MUL,2Ø	112	1	1	7	1	37	1	1	1	Ø	1	1	3	3	3	Ø	1	7	7	3	7	1	1	7	15	3	1	Ø	4	262
1Ø	MOD,Ø4	113	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	Ø	3	1	7	3	3	7	14	3	1	1	4	26Ø
Ø8	ADD,Ø4	114	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	4	2	3	7	3	2	4	17	3	1	3	7	12Ø
Ø8	ADD,Ø2	115	1	1	7	1	37	1	1	1	1	1	Ø	3	3	3	3	1	Ø	Ø	3	7	Ø	3	4	12	3	1	1	6	37Ø
1Ø	MUL,22	116	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	1	7	17	3	1	Ø	4	262
Ø8	ADD,36	117	1	1	7	1	37	1	1	1	1	1	1	3	3	Ø	3	1	7	7	3	7	3	3	7	17	3	1	3	7	Ø21
Ø8	ADD,Ø6	120	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	4	Ø	3	7	3	3	4	17	3	1	3	7	115
Ø7	STR,54	121	Ø	1	7	Ø	Ø6	1	1	1	1	1	1	2	3	3	3	Ø	6	5	1	7	3	3	7	Ø5	3	1	3	7	275
Ø4	LD,,Ø2	122	1	1	7	1	25	Ø	1	1	1	Ø	1	1	3	3	3	Ø	2	4	1	7	3	3	7	Ø5	3	1	1	4	232
Ø4	LD,,Ø8	123	Ø	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	2	4	1	7	3	3	7	14	3	1	3	7	233
Ø8	ADD,28	124	1	1	7	1	37	1	1	1	Ø	1	1	3	3	3	3	1	Ø	2	3	4	3	2	7	17	3	1	Ø	Ø	037
Ø8	ADD,32	125	1	1	7	1	37	1	1	1	Ø	1	1	3	3	3	3	1	Ø	Ø	3	2	3	3	7	17	3	1	Ø	Ø	037
Ø4	LD,,2Ø	126	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	4	4	1	7	3	3	7	14	3	1	3	7	237
1Ø	MOD,Ø2	127	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	1	Ø	2	103
14	SCI,34	130	1	1	7	Ø	ØØ	1	1	1	1	1	1	2	Ø	3	3	1	7	7	2	7	3	3	7	Ø5	3	1	3	7	235
Ø5	LD,,6Ø	131	1	1	7	1	37	Ø	1	1	1	1	1	3	Ø	3	3	1	7	7	1	7	3	3	7	ØØ	3	Ø	3	7	Ø07
Ø6	STR,Ø8	132	1	1	7	1	35	Ø	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	3	7	Ø07
Ø6	STR,34	133	1	1	2	1	35	Ø	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	3	7	Ø07
12	NRM,24	134	1	1	7	Ø	Ø1	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	2	3	7	11	3	1	1	4	266
12	NRM,22	135	1	1	7	Ø	Ø1	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	2	3	7	11	3	1	1	4	266
12	NRM,26	136	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	3	2	11Ø
12	NRM,28	137	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	1	3	7	11Ø

FLOWS	STATE	ADR	DL1	DLØ	CSL	RDF	CST	SYN	DSL	SCC	BDC	AIC	BAC	EMX	FCC	SGN	BMX	ACR	ACC	ACF	ACM	CSB	ARC	BRC	QRC	ALU	FMX	UJP	UAF	UBR	NAD
Ø5	LD,,66	140	1	1	7	1	35	Ø	1	1	1	1	1	3	Ø	3	3	1	7	7	1	7	3	3	7	ØØ	3	Ø	3	7	Ø07
Ø6	STR,ØØ	141	1	1	7	1	37	Ø	1	1	Ø	1	1	3	3	3	Ø	1	7	7	3	7	3	3	7	Ø3	3	1	3	7	21Ø
Ø6	STR,1Ø	142	1	1	7	1	37	Ø	1	1	Ø	1	1	3	3	3	1	1	1	2	3	7	3	3	7	17	3	1	3	7	17Ø
1Ø	MOD,14	143	1	1	7	1	37	1	1	Ø	1	1	1	3	3	3	3	1	7	7	3	7	3	3	3	ØØ	3	1	3	7	211
Ø6	STR,42	144	Ø	1	7	Ø	1Ø	Ø	1	1	1	1	1	2	3	3	3	Ø	6	5	1	7	3	3	7	Ø5	3	Ø	2	5	275
Ø6	STR,24	145	1	1	7	1	35	Ø	1	1	Ø	Ø	1	3	3	3	2	1	6	4	3	7	3	3	7	17	3	1	3	7	265
Ø6	STR,18	146	1	1	7	1	37	Ø	1	1	Ø	1	1	3	3	3	1	1	1	4	3	7	3	3	7	17	3	1	3	7	353
Ø8	ADD,26	147	1	1	7	1	37	1	1	Ø	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	ØØ	3	1	3	7	124
Ø7	STR,5Ø	150	1	1	7	1	37	Ø	1	1	Ø	1	1	3	3	3	2	1	2	4	3	7	3	3	7	17	3	1	3	7	366
Ø5	LD,,64	151	1	1	3	Ø	11	Ø	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	3	3	7	Ø7	3	1	1	6	14Ø
Ø7	STR,56	152	1	1	7	1	37	Ø	1	1	Ø	1	1	3	3	3	2	1	2	4	3	7	3	3	7	17	3	1	2	3	361
1Ø	MOD,Ø8	153	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	Ø	3	1	7	3	3	7	14	3	1	1	4	26Ø
Ø6	STR,32	154	1	1	7	1	37	Ø	1	1	Ø	1	1	3	3	3	2	1	2	4	3	7	3	3	7	17	3	1	1	5	132
Ø6	STR,3Ø	155	1	1	7	1	37	Ø	1	1	Ø	1	1	3	3	3	2	1	6	5	3	7	3	3	7	17	3	1	1	5	132
Ø6	STR,Ø4	156	1	1	7	1	35	Ø	1	1	1	Ø	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	1	4	172
Ø8	ADD,24	157	1	1	7	1	37	1	1	1	Ø	1	1	Ø	3	3	Ø	1	7	7	3	7	3	3	7	12	3	1	Ø	Ø	037
Ø6	STR,36	160	1	1	7	1	37	Ø	1	1	Ø	1	1	3	3	3	2	1	2	5	3	7	3	3	7	17	3	1	1	5	104
11	LCI,3Ø	161	1	1	7	Ø	2Ø	1	1	1	Ø	1	1	2	3	3	Ø	1	4	4	3	7	3	3	4	12	3	1	3	7	Ø36
13	SCF,3Ø	162	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	1	7	17	3	1	3	7	332
11	LCI,1Ø	163	1	1	7	Ø	2Ø	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	5	3	2	7	11	3	1	3	7	326
13	SCF,7Ø	164	1	1	7	Ø	Ø1	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	2	3	7	11	3	1	3	7	165
13	SCF,6Ø	165	1	1	7	1	37	1	1	1	1	1	1	3	1	3	3	Ø	Ø	Ø	2	7	3	3	7	ØØ	3	1	2	6	164
13	SXP,4Ø	166	1	1	7	1	37	Ø	1	1	Ø	1	1	3	3	3	2	1	6	5	3	7	3	3	7	17	3	1	3	7	274
13	SXP,2Ø	167	1	1	7	1	37	1	1	1	1	1	1	3	Ø	3	3	1	7	7	Ø	7	3	3	7	17	3	1	3	7	235
Ø6	STR,12	170	1	1	7	1	35	Ø	1	1	Ø	Ø	1	3	3	3	2	1	2	2	3	7	3	3	7	17	3	Ø	1	3	356
Ø5	LD,,62	171	1	1	3	Ø	11	Ø	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	3	3	7	11	3	1	1	6	14Ø
Ø6	STR,Ø6	172	1	1	7	1	35	Ø	1	1	1	Ø	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	1	3	7	132
1Ø	MOD,24	173	1	1	7	Ø	ØØ	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	3	3	7	11	3	1	3	7	302
Ø9	ADD,5Ø	174	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	1	7	15	3	1	2	6	Ø61
1Ø	MOD,13	175	1	1	7	1	37	1	1	1	1	1	1	Ø	3	3	3	Ø	Ø	3	2	7	3	3	7	Ø4	3	1	1	4	3Ø4
Ø6	STR,16	176	1	1	7	1	35	Ø	1	1	Ø	Ø	1	3	3	3	2	1	6	2	3	7	3	3	7	17	3	1	3	7	132
Ø8	ADD,34	177	1	1	7	1	37	1	1	1	1	1	1	3	1	3	3	1	7	7	2	7	3	3	7	ØØ	3	Ø	3	7	Ø07

DRN. M. Price	DATE 3/21/72	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D [signature]	DATE 3/22/72	
ENG. [signature]	DATE 3/22/72	TITLE
PROJ. ENG. [signature]	DATE 3/22/72	F.P. ROM & ROM CONTROL
PROD. [signature]	DATE 3/22/72	(ROM MAP 100 TO 177)
SHEET 1 OF 13		SIZE K · CODE CS · NUMBER M8112-Ø-1 · REV. F
		DIST.

FLOWS	STATE	ADR	DL1	DLØ	CSL	RDF	CST	SYN	DSL	SCC	BDC	AIC	BAC	EMX	FCC	SGN	BMX	ACR	ACC	ACF	ACM	CSB	ARC	BRC	QRC	ALU	FMX	UJP	UAF	UBR	NAD
XX	XXX,XX	200	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	1	3	7	377
XX	XXX,XX	201	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	1	3	7	377
Ø4	LD,,13	202	1	1	7	1	25	Ø	1	1	1	Ø	1	1	3	3	3	Ø	2	4	1	7	3	3	7	Ø5	3	1	1	4	236
Ø4	LD,,18	203	Ø	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	2	4	1	7	3	3	7	14	3	1	3	7	126
Ø9	ADD,70	204	1	1	7	1	37	1	1	1	1	1	1	3	3	2	3	1	7	7	3	7	3	3	7	17	3	1	1	2	350
Ø9	ADD,68	205	1	1	7	1	37	1	1	1	1	1	1	3	3	2	3	1	7	7	3	7	Ø	3	7	15	3	1	2	6	350
Ø4	LD,,26	206	1	1	7	1	25	Ø	1	1	1	Ø	1	1	3	3	3	Ø	2	4	1	7	3	3	7	Ø5	3	1	1	4	212
Ø4	LD,,3Ø	207	Ø	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	2	4	1	7	3	3	7	14	3	1	3	7	233
Ø6	STR,02	210	1	1	7	1	35	Ø	1	1	1	Ø	1	3	Ø	3	3	1	7	7	1	7	3	3	7	ØØ	3	Ø	1	3	156
1Ø	MOD,16	211	1	1	7	Ø	ØØ	1	1	1	Ø	1	Ø	2	3	3	Ø	1	7	7	3	6	3	2	7	11	3	1	3	7	175
11	LCF,1Ø	212	Ø	1	7	1	37	1	1	1	Ø	1	1	3	3	3	3	1	Ø	Ø	3	7	3	2	Ø	17	3	1	1	4	324
Ø4	LD,,28	213	1	1	7	1	25	Ø	1	1	1	Ø	1	1	3	3	3	Ø	5	4	1	7	3	3	7	Ø5	3	1	3	7	Ø74
Ø1	RDY,4Ø	214	1	1	7	1	35	Ø	1	1	1	1	1	3	3	3	Ø	1	7	7	3	7	3	3	7	Ø3	3	1	3	7	272
14	SCI,32	215	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	4	4	3	7	3	3	7	ØØ	3	1	3	7	130
Ø9	ADD,58	216	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	4	2	1	7	3	3	7	14	3	Ø	3	7	ØØ7
14	SCI,3Ø	217	1	1	7	1	37	1	1	1	1	1	1	3	2	3	3	Ø	Ø	4	1	7	3	3	7	14	3	1	3	7	333
1Ø	MUL,Ø4	220	1	1	7	Ø	33	1	1	Ø	1	1	1	2	3	3	3	1	4	2	3	7	3	2	4	Ø5	3	1	3	7	221
1Ø	MUL,Ø2	221	1	1	7	1	37	1	1	1	1	1	Ø	3	3	3	3	1	Ø	Ø	3	7	Ø	3	4	Ø3	3	1	1	6	224
13	SCF,Ø5	222	1	1	7	1	37	1	1	1	1	1	1	Ø	Ø	3	3	Ø	Ø	Ø	2	7	3	3	7	Ø5	3	1	1	4	330
13	SCF,15	223	1	1	7	1	37	1	1	1	1	1	1	3	3	Ø	3	1	7	7	3	7	3	1	7	17	3	1	3	7	222
1Ø	MUL,Ø8	224	1	1	7	1	37	1	1	1	Ø	1	1	Ø	3	3	Ø	1	4	Ø	3	7	3	3	4	11	3	1	1	6	230
1Ø	MUL,Ø6	225	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	1	Ø	6	Ø23
Ø5	LD,,74	226	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	3	2	110
Ø5	LD,,76	227	1	1	7	1	37	1	1	1	1	1	1	3	Ø	3	3	1	7	7	1	7	3	3	7	14	3	1	3	7	110
1Ø	MUL,16	230	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	Ø	3	3	7	17	3	1	3	7	362
1Ø	MUL,14	231	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	1	Ø	6	Ø23
Ø4	LD,,Ø4	232	1	1	7	1	25	Ø	1	1	1	Ø	1	1	3	3	3	Ø	5	4	1	7	3	3	7	Ø5	3	1	3	7	Ø3Ø
Ø4	LD,,1Ø	233	Ø	1	7	1	37	1	1	1	1	1	1	3	3	3	Ø	4	4	1	7	3	3	7	14	3	1	Ø	1	Ø6Ø
Ø1	RDY,6Ø	234	1	1	7	1	35	Ø	1	1	Ø	1	1	1	3	3	Ø	1	7	7	3	7	3	3	7	12	3	1	Ø	Ø	Ø4Ø
13	SXP,3Ø	235	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	6	5	Ø	7	3	3	7	17	3	1	3	7	166
Ø4	LD,,2Ø	236	1	1	7	1	25	Ø	1	1	1	Ø	1	1	3	3	3	Ø	5	4	1	7	3	3	7	Ø5	3	1	3	7	Ø14
Ø4	LD,,22	237	Ø	1	7	1	37	1	1	1	1	1	Ø	3	3	3	3	1	Ø	Ø	3	7	3	2	4	17	3	1	3	7	Ø05

FLOWS	STATE	ADR	DL1	DLØ	CSL	RDF	CST	SYN	DSL	SCC	BDC	AIC	BAC	EMX	FCC	SGN	BMX	ACR	ACC	ACF	ACM	CSB	ARC	BRC	QRC	ALU	FMX	UJP	UAF	UBR	NAD
Ø4	LD,,ØØ	240	1	1	7	1	Ø5	Ø	1	1	1	Ø	1	1	3	3	3	Ø	1	4	1	7	3	3	7	Ø5	3	1	1	3	122
Ø4	LD,,12	241	1	1	7	1	Ø5	Ø	1	1	1	Ø	1	1	Ø	3	3	Ø	1	4	1	7	3	3	7	Ø5	3	1	1	3	202
Ø1	TRP,2Ø	242	1	1	7	1	36	1	1	1	1	1	Ø	3	3	3	1	1	5	5	3	7	3	3	7	17	3	1	3	7	Ø32
Ø5	LD,,54	243	1	1	7	1	Ø5	1	1	1	1	1	1	1	Ø	3	3	Ø	1	4	1	7	3	3	7	Ø5	3	1	3	7	Ø26
Ø4	LD,,24	244	1	1	7	1	Ø5	Ø	1	1	1	Ø	1	1	Ø	3	3	Ø	1	4	1	7	3	3	7	Ø5	3	1	1	3	206
Ø4	LD,,36	245	1	1	7	1	25	Ø	1	1	1	1	1	1	3	3	3	Ø	5	4	1	7	3	3	7	Ø5	3	1	3	7	247
13	SCF,ØØ	246	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	4	2	3	7	3	2	4	17	3	1	1	6	222
11	LCI,ØØ	247	Ø	1	7	Ø	1Ø	1	1	Ø	1	1	1	2	3	2	3	1	Ø	4	3	7	3	3	Ø	Ø6	3	1	2	3	161
Ø4	LD,,32	250	1	1	7	1	25	1	1	1	1	Ø	1	1	3	3	3	Ø	2	4	1	7	3	3	7	Ø5	3	1	1	3	276
14	SCI,Ø2	251	1	1	7	Ø	21	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	3	3	7	Ø2	3	1	1	2	374
14	SCI,ØØ	252	1	1	7	Ø	ØØ	1	1	1	1	1	Ø	2	3	3	Ø	1	7	7	3	7	3	3	7	Ø6	3	1	2	3	251
14	SCI,Ø4	253	1	1	7	1	37	1	1	1	Ø	1	1	3	3	3	Ø	1	7	7	3	7	3	3	7	15	3	1	1	2	374
Ø1	RDY,7Ø	254	1	1	7	1	35	Ø	1	1	1	1	1	3	3	3	Ø	1	7	7	3	7	3	3	7	12	3	1	Ø	Ø	240
Ø5	LD,,68	255	1	1	7	1	25	Ø	1	1	Ø	1	1	1	3	3	Ø	1	1	Ø	2	3	7	3	3	4	12	3	1	3	7	Ø34
13	SXP,ØØ	256	1	1	7	Ø	ØØ	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	3	3	7	Ø2	3	1	3	7	340
Ø5	LD,,3Ø	257	1	1	Ø	1	25	Ø	1	1	1	1	1	1	3	3	3	1	7	7	3	7	3	3	7	12	3	Ø	3	7	ØØ7
1Ø	MOD,1Ø	260	1	1	7	1	37	1	1	1	1	1	1	3	3	3	Ø	Ø	4	3	1	7	3	3	7	14	3	1	3	7	261
1Ø	MOD,12	261	1	1	7	Ø	ØØ	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	3	1	7	11	3	1	Ø	4	262
12	NRM,16	262	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	3	7	11	2	1	3	7	266
12	NRM,12	263	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	3	7	11	2	1	3	7	267
Ø5	LD,,52	264	Ø	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	3	7	ØØ7
Ø6	STR,26	265	1	1	7	1	35	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	1	3	7	144
12	NRM,18	266	1	1	7	1	37	1	1	1	1	1	1	3	1	3	3	Ø	Ø	2	2	7	3	3	7	ØØ	3	1	3	7	322
12	NRM,14	267	1	1	7	1	37	1	1	1	1	1	1	3	1	3	3	Ø	Ø	2	2	7	3	3	7	ØØ	3	1	3	6	134
Ø1	RDY,9Ø	270	1	1	7	1	37	1	1	1	Ø	1	Ø	3	3	3	3	1	Ø	2	3	7	3	2	Ø	17	3	1	Ø	Ø	242
Ø9	ADD,36	271	1	1	7	1	37	1	1	1	1	1	1	3	Ø	3	3	Ø	Ø	2	1	7	3	3	7	14	3	Ø	1	4	216
Ø1	RDY,5Ø	272	Ø	1	7	Ø	Ø2	1	1	1	1	1	1	2	3	3	3	Ø	6	5	1	7	3	3	7	Ø5	3	1	3	7	275
12	NRM,ØØ	273	1	1	7	1	37	1	1	Ø	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	Ø3	3	1	Ø	6	Ø11
Ø1	RDY,8Ø	274	1	1	7	1	35	1	1	1	1	1	1	1	3	3	Ø	1	7	7	3	7	3	3	7	12	3	1	Ø	Ø	140
Ø1	TRP,6Ø	275	Ø	1	7	1	36	1	1	1	1	1	1	3	3	3	3	1	4	5	3	7	3	2	4	17	3	1	3	7	Ø02
Ø4	LD,,34	276	1	1	7	1	27	Ø	1	1	Ø	1	1	3	3	3	Ø	Ø	4	4	1	7	3	3	7	14	3	1	2	3	245
Ø4	LD,,38	277	1	1	7	1	37	Ø	1	1	Ø	1	1	3	3	3	Ø	Ø	4	4	1	7	3	3	7	14	3	1	3	7	247

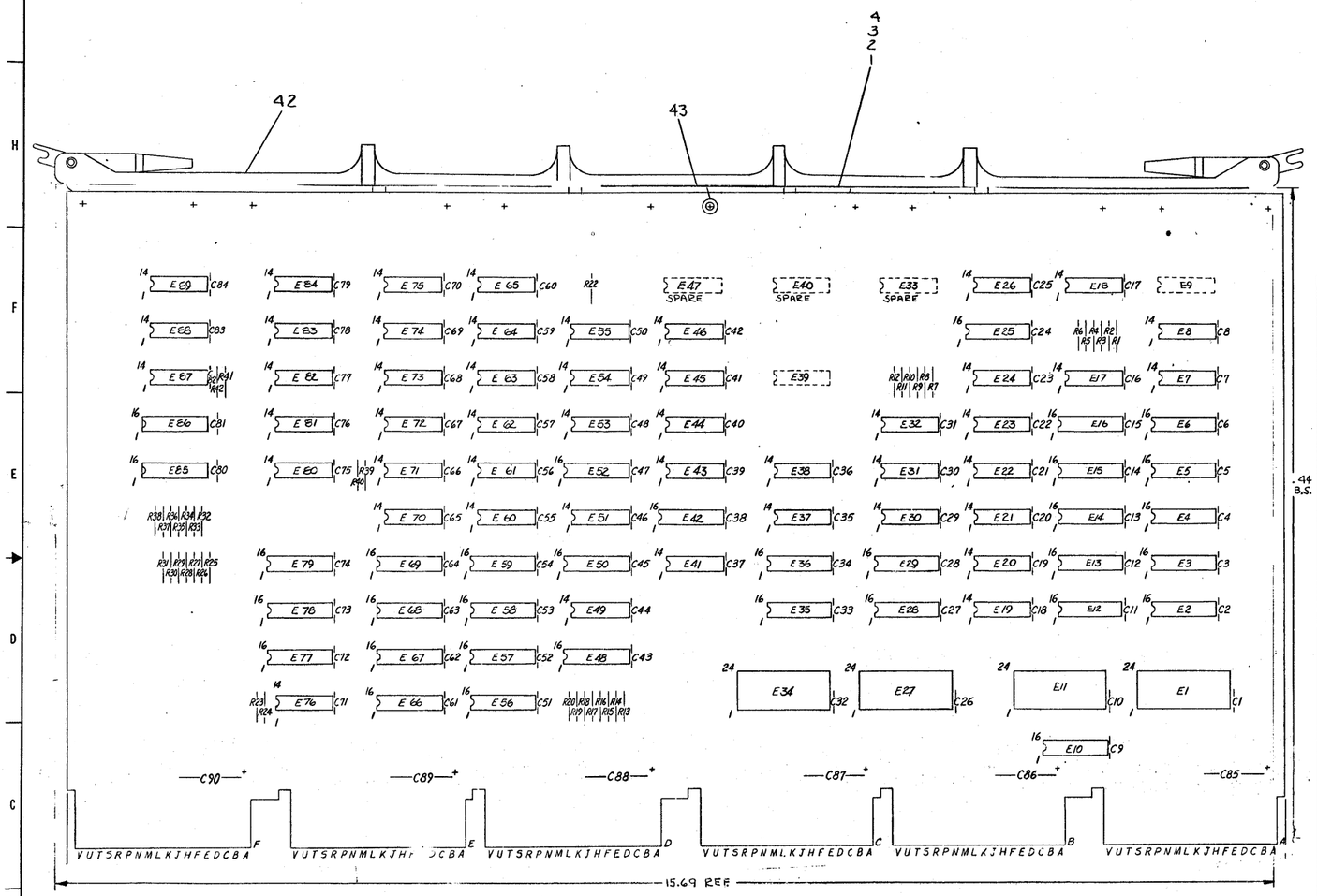
DRN. M. Riese	DATE 3/21/72	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D [illegible]	DATE 3/22/72	
ENG. R.B. Hughes	DATE 3/22/72	TITLE
PROJ. ENG. R.B. Hughes	DATE 3/22/72	F.P. ROM & ROM CONTROL
PROD. [illegible]	DATE 3/22/72	(ROM MAP 2ØØ TO 277)
SHEET 2 OF 3		SIZE K · CODE CS · NUMBER M8112-Ø-1 · REV. F · DIST.

FLOWS	STATE	ADR	DL1	DLØ	CSL	RDF	CST	SYN	DSL	SCC	BDC	AIC	BAC	EMX	FCC	SGN	BMX	ACR	ACC	ACF	ACM	CSB	ARC	BRC	QRC	ALU	FMX	UJP	UAF	UBR	NAD
1Ø	MOD,28	3ØØ	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	4	3	3	7	3	3	7	ØØ	3	1	3	7	3Ø3
1Ø	MOD,32	3Ø1	1	1	7	1	37	1	1	1	1	1	1	3	Ø	3	3	Ø	Ø	2	1	7	3	3	7	14	3	1	3	7	136
1Ø	MOD,26	3Ø2	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	Ø	3	2	7	3	3	7	ØØ	3	1	1	4	3ØØ
1Ø	MOD,3Ø	3Ø3	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	4	2	1	7	3	3	7	14	3	1	3	7	3Ø1
1Ø	MOD,2Ø	3Ø4	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	4	3	3	7	3	3	7	Ø4	3	1	3	7	3Ø5
1Ø	MOD,22	3Ø5	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	3	7	Ø7	3	1	3	7	174
Ø6	STR,22	3Ø6	1	1	7	1	35	Ø	1	1	Ø	Ø	1	3	3	3	1	1	5	4	3	7	3	3	7	17	3	1	1	4	144
Ø6	STR,28	3Ø7	Ø	1	7	Ø	1Ø	1	1	1	1	1	1	2	3	3	3	Ø	6	5	1	7	3	3	7	Ø5	3	Ø	2	5	275
11	DIV,Ø4	31Ø	1	1	7	Ø	37	1	1	Ø	1	1	1	2	3	3	3	1	4	2	3	7	3	2	4	Ø5	3	1	3	7	346
11	DIV,Ø2	311	1	1	7	1	37	1	1	1	1	1	Ø	3	3	3	3	1	Ø	Ø	3	7	Ø	3	4	12	3	1	1	6	312
11	DIV,Ø8	312	1	1	7	1	37	1	1	1	Ø	1	1	Ø	3	3	Ø	1	7	7	3	7	3	2	7	Ø2	3	1	1	6	314
11	DIV 18	313	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	1	1	6	316
11	DIV 1Ø	314	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	1	3	3	7	17	3	1	3	7	ØØ1
11	DIV 16	315	1	1	7	Ø	Ø4	1	1	1	1	1	1	2	3	3	3	Ø	6	5	1	7	3	3	7	Ø5	3	1	3	7	275
11	DIV 22	316	1	1	7	1	37	1	1	1	1	1	1	3	Ø	3	3	Ø	Ø	2	1	7	3	3	7	14	3	Ø	1	4	216
11	DIV 2Ø	317	1	1	7	Ø	Ø4	1	1	1	1	1	1	2	3	3	3	Ø	6	5	1	7	3	3	7	Ø5	3	1	3	7	275
11	DIV 14	32Ø	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	3	7	12	3	1	3	7	273
12	NRM Ø4	321	1	1	7	1	37	1	1	1	Ø	1	1	3	3	3	Ø	1	7	7	3	7	3	1	7	Ø2	3	1	Ø	4	262
12	NRM 2Ø	322	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	4	2	3	7	3	3	7	ØØ	3	1	3	6	134
14	SCI,28	323	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	Ø	4	2	7	3	3	7	ØØ	3	1	2	1	215
11	LCF,2Ø	324	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	3	7	12	3	1	1	6	354
11	LCF,3Ø	325	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	4	Ø	3	7	3	2	4	17	3	1	3	7	324
11	LCI,2Ø	326	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	3	7	12	3	1	3	7	174
Ø8	ADD,13	327	1	1	7	1	37	1	1	1	1	1	1	3	3	1	3	1	7	7	3	7	3	3	7	17	3	1	3	7	343
13	SCF,2Ø	33Ø	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	3	7	12	3	1	Ø	4	162
13	SCF,1Ø	331	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	4	Ø	1	7	3	3	7	14	3	1	3	7	166
13	SCF,3Ø	332	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	3	7	11	2	1	3	7	165
14	SCI,Ø8	333	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	4	4	1	7	3	3	7	14	3	1	3	7	235
14	SCI,18	334	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	Ø	4	2	7	3	3	7	ØØ	3	1	2	1	Ø55
14	SCI,24	335	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	1	7	ØØ	3	1	3	7	336
14	SCI,26	336	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	3	7	11	1	1	3	7	323
Ø8	ADD,15	337	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	3	7	Ø07

FLOWS	STATE	ADR	DL1	DLØ	CSL	RDF	CST	SYN	DSL	SCC	BDC	AIC	BAC	EMX	FCC	SGN	BMX	ACR	ACC	ACF	ACM	CSB	ARC	BRC	QRC	ALU	FMX	UJP	UAF	UBR	NAD
13	SXP,1Ø	34Ø	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	2	4	1	7	3	3	7	ØØ	3	1	3	7	167
Ø9	ADD,78	341	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	3	7	Ø07
Ø9	ADD,66	342	1	1	7	Ø	ØØ	1	1	1	1	1	1	2	Ø	3	3	1	7	7	2	7	3	3	7	Ø5	3	1	1	6	2Ø4
Ø9	ADD,64	343	1	1	7	Ø	ØØ	1	1	1	1	1	1	2	Ø	3	3	1	7	7	2	7	3	3	7	Ø5	3	Ø	3	7	Ø07
XX	XXX,XX	344	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	1	3	7	377
14	SCI,16	345	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	2	3	3	7	17	3	1	1	1	334
11	DIV,Ø6	346	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	4	Ø	3	7	3	3	4	17	3	1	3	7	311
Ø9	ADD,6Ø	347	1	1	7	1	37	1	1	1	1	1	1	3	3	1	3	1	7	7	3	7	3	2	7	17	3	1	3	7	Ø07
Ø9	ADD,74	35Ø	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	3	7	Ø07
Ø9	ADD,76	351	1	1	7	1	37	1	1	1	1	1	1	3	3	1	3	1	7	7	3	7	3	3	7	17	3	1	3	7	343
Ø9	ADD,72	352	1	1	7	1	37	1	1	1	1	1	1	3	Ø	1	3	1	7	7	1	7	3	3	7	14	3	1	2	6	341
Ø6	STR,2Ø	353	1	1	7	1	35	Ø	1	1	Ø	Ø	1	3	3	3	2	1	2	4	3	7	3	3	7	17	3	1	1	3	3Ø6
11	LCF,4Ø	354	1	1	7	1	37	1	1	1	1	1	1	3	3	Ø	3	1	7	7	3	7	3	1	7	17	3	1	Ø	4	262
11	LCF,5Ø	355	1	1	7	1	37	1	1	1	1	1	1	3	Ø	3	3	Ø	Ø	2	1	7	3	3	7	14	3	Ø	1	4	216
Ø6	STR,14	356	1	1	7	1	35	Ø	1	1	Ø	Ø	1	3	3	3	1	1	5	2	3	7	3	3	7	17	3	Ø	1	4	176
Ø8	ADD,22	357	1	1	7	1	37	1	1	1	Ø	1	1	Ø	3	3	Ø	1	7	7	3	7	3	2	7	Ø2	3	1	Ø	2	1Ø7
1Ø	MOD,ØØ	36Ø	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	1	3	7	127
Ø7	STR,58	361	1	1	7	1	35	Ø	1	1	Ø	Ø	1	3	3	3	1	1	5	4	3	7	3	3	7	17	3	1	1	3	1ØØ
1Ø	MUL,18	362	1	1	7	Ø	ØØ	1	1	1	Ø	1	1	2	3	1	Ø	1	7	7	3	7	3	3	7	Ø2	3	1	Ø	6	1Ø2
Ø7	STR,6Ø	363	1	1	7	1	35	Ø	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	2	4	121
14	SCI,11	364	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	4	2	3	7	3	2	4	17	3	1	3	7	365
14	SCI,12	365	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	Ø	3	7	12	3	1	1	2	Ø54
Ø7	STR,52	366	1	1	2	1	35	Ø	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	Ø	2	4	121
Ø8	ADD,2Ø	367	1	1	7	1	37	1	1	1	1	1	1	Ø	Ø	3	3	1	7	7	2	7	3	3	7	Ø5	3	Ø	3	7	Ø07
Ø8	ADD,Ø8	37Ø	1	1	7	1	37	1	1	1	1	1	1	3	Ø	3	3	1	7	7	2	7	3	3	7	ØØ	3	1	1	6	Ø46
Ø8	ADD,1Ø	371	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	1	7	7	3	7	3	3	7	17	3	1	1	6	372
Ø8	ADD,14	372	1	1	7	1	37	1	1	1	1	1	1	3	3	Ø	3	1	7	7	3	7	3	2	7	17	3	1	Ø	6	367
Ø8	ADD,16	373	1	1	7	1	37	1	1	1	1	1	1	3	Ø	3	3	Ø	Ø	2	1	7	3	3	7	14	3	Ø	1	4	216
14	SCI,Ø6	374	1	1	7	1	37	1	1	1	1	1	1	3	Ø	3	3	Ø	4	1	7	3	3	7	14	3	1	3	7	333
14	SCI,1Ø	375	1	1	7	Ø	2Ø	1	1	1	Ø	1	1	2	3	3	Ø	1	7	7	3	7	3	3	7	Ø2	3	1	1	4	364
Ø3	NOM,38	376	1	1	7	1	37	1	1	1	1	1	1	3	3	3	3	Ø	4	2	3	7	3	3	7	ØØ	3	Ø	3	7	Ø07
Ø8	ADD,18	377	1	1	7	1	37	1	1	1	1	1	1	Ø	Ø	3	3	Ø	Ø	2	2	7	3	3	7	Ø5	3	Ø	1	4	Ø12

DRN. M. Peirce	DATE 3/21/72	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D.	DATE 3/22/72	
ENG. R.B. Hughes	DATE 3/22/72	TITLE
PROM ENG. R.B. Hughes	DATE 3/22/72	F.P. ROM & ROM CONTROL (ROM MAP 3ØØ TO 377)
PROD. A. Hirsch	DATE 3/22/72	
SHEET 13 OF 13		SIZE K · CODE CS · NUMBER M8112-Ø-1 · REV. F
		DIST.

NOTES:
1. UNLESS OTHERWISE NOTED RESISTANCE IS IN Ω AND CAPACITANCE IS IN PICOFARADS. CAPS. WITHOUT VALUE NOTED ARE .01 MFD



AA2, AV1, BA2, BV1, CA2, CV1, DA2, DV1, EA2, EV1, FA2, FV1 — +5V — 6.8 μF — .01 MFD — C85 THRU C90 — C1 THRU C84

AC2, AN2, AH1, AT1, BC2, BN2, BH1, BT1, CC2, CN2, CH1, CT1, DC2, DN2, DH1, DT1, EC2, EN2, EH1, ET1, FC2, FN2, FH1, FT1 — GND

IC TYPE	GND	+5V
DEC DM8698	8	16
DEC 74187	8	16
DEC 74174	8	16
DEC 74175	8	16
DEC 745182	8	16
DEC 745158	8	16
DEC 745112	8	16
DEC 7485	8	16
DEC 74191	8	16
DEC 74181	12	24
DEC 74153	8	16

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

IC PIN LOCATIONS

ITEM NO.	AWG	FROM PT	TO PT

JUMPER LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
12		EYELET	9006732	43
1		HANDLE MODULE	E-PS-1210711-Z	42
84	C1 THRU C84	CAPACITOR .01μF, 100V, 20%	1001610	41
6	C85 THRU C90	CAPACITOR 6.8μF, 35V, 20%	1000067	40
1	E86	IC DEC DM8698 ROM	23-C05A1	39
1	E85	IC DEC DM8698 ROM	23-C04A1	38
1	E48	IC DEC 74187 ROM	23-C18A2	37
4	E5, E6, E15, E16	IC DEC 74174	1910652	36
8	E4, E14, E25, E58, E59, E77, E78, E79	IC DEC 74175	1910651	35
1	E10	IC DEC 74182-1	1910551	34
4	E66, E67, E68, E69	IC DEC 745158	1910549	33
2	E42, E52	IC DEC 745112	1910545	32
1	E61	IC DEC 74S65	1910543	31
2	E41, E82	IC DEC 74S64	1910542	30
4	E37, E45, E72, E87	IC DEC 74S20	1910539	29
5	E30, E32, E44, E65, E73	IC DEC 74S11	1910537	28
6	E23, E24, E31, E43, E71, E83	IC DEC 74S10	1910536	27
4	E7, E8, E17, E76	IC DEC 74S05	1910535	26
4	E26, E38, E53, E88	IC DEC 74S04	1910534	25
3	E51, E62, E89	IC DEC 74S00	1910532	24
2	E56, E57	IC DEC 7485	1910224	23
1	E50	IC DEC 74191	1910096	22
1	E80	IC DEC 74H22	1910055	21
4	E1, E11, E27, E34	IC DEC 74181	1909982	20
8	E2, E3, E12, E13, E28, E29, E35, E36	IC DEC 74S153	1910547	19
1	E70	IC DEC 74H04	1909931	18
5	E19, E20, E21, E22, E49	IC DEC 74H01	1909849	17
3	E46, E60, E74	IC DEC 74H74	1909667	16
2	E18, E81	IC DEC 74H11	1909267	15
2	E63, E75	IC DEC 74H10	1909057	14
3	E54, E64, E84	IC DEC 74H00	1909056	13
1	E55	IC DEC 74H20	1905635	12
1	R12	RESISTOR 270Ω, ¼W, 5%	1301972	11
5	R28, R30, R34, R36, R38	RESISTOR 2.4K, ¼W, 5%	1303177	10
14	R1, R3, R5, R7, R9, R13, R15, R17, R19, R26, R28, R32, R40, R41	RESISTOR 680Ω, ¼W, 5%	1301424	9
14	R2, R4, R6, R8, R10, R14, R16, R18, R20, R23, R25, R33, R39, R42	RESISTOR 330Ω, ¼W, 5%	1300295	8
5	R27, R29, R31, R35, R37	RESISTOR 1.2K, ¼W, 5%	1301320	7
1	R11	RESISTOR 470Ω, ¼W, 5%	1300316	6
1	R22	RESISTOR 100Ω, ¼W, 5%	1300229	5
1		ETCHED CIRCUIT BOARD	5009860	4
REF		MODULE ECO HISTORY	5-MM-M8113-0-6	3
REF		ASSY/DRILLING HOLE LAYOUT	5-MM-M8113-0-5	2
REF		X-Y COORDINATE HOLE LOCATION	5-CO-M8113-0-4	1

44 B.S.

PARTS LIST

ETCH BOARD REV C

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

SEMICONDUCTOR CONVERSION CHART

REV	CHG	DESCRIPTION	DATE	APPROVED
C	000314	UNCOATED	6-19-72	L. HUGHES
B	000174	ORIGINAL	11-13-72	L. HUGHES

D. IVES 7/72 — Microcode 7/11/72 — 5-CS-M8113-0-0001 Rev C

DRN 11-8-72 — CHK — ENG — PROJ ENG — PROJ — NEXT HIGHER ASSY B-DD-11/45-Ø — SCALE 2/1 — SHEET 1 OF 12

DATE 11-7-72 — DATE — DATE — DATE — DATE

digital EQUIPMENT CORPORATION — MAYNARD, MASSACHUSETTS

TITLE: F P EXPONENT DATA PATH

SIZE/CODE E — NUMBER 5-CS-M8113-0-1 — REV E — DIST 1

REV E — 5-CS-M8113-0-1

EMX CONTROL

	S1	SØ
BA	L	L
DATA	L	H
CNST	H	L
SC	H	H

EALU CONTROL

	S3	S2	S1	SØ	M	CIN
~A	L	L	L	H	H	X
~(AvB)	L	L	H	L	H	X
A MINUS B	L	L	H	H	H	L
Ø	L	H	L	L	H	X
~(AʌB)	L	H	L	H	H	X
~B	L	H	H	L	H	X
A MINUS B MINUS 1	L	H	H	H	H	X
AʌB	H	L	L	L	H	X
A PLUS B PLUS 1	H	L	L	H	H	X
A PLUS B	H	L	H	L	H	X
B	H	L	H	H	H	X
AʌB-1	H	H	L	L	H	X
A MINUS 1	H	H	L	H	H	X
AvB	H	H	H	L	H	X
A	H	H	H	H	H	X

EXPONENT DATA PATH BITS ØØ THROUGH Ø7 SLOT 5

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

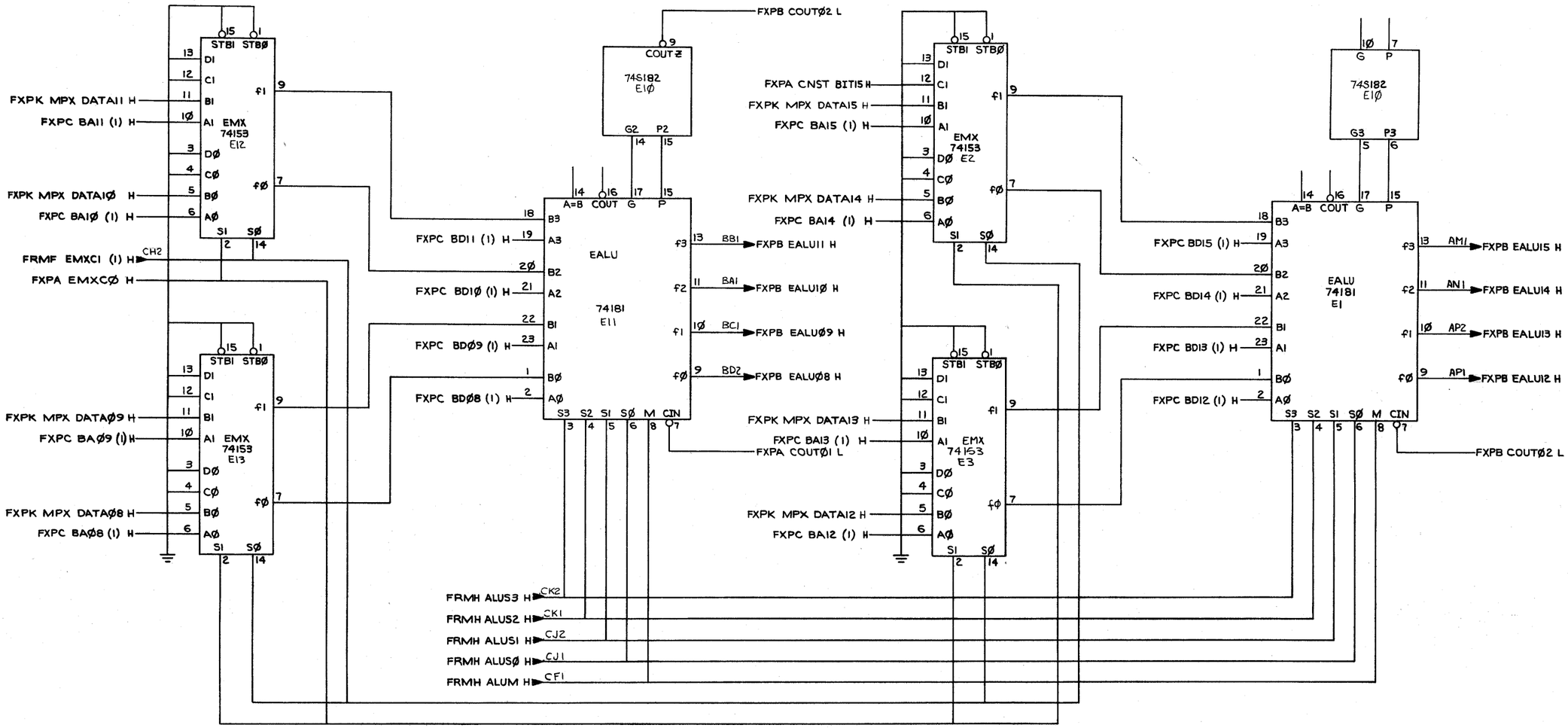
DRN. F. Sands 9-16-71
CHK. [illegible] DATE 9/17/71
ENG. R.B. Hughes DATE 2/17/72
PROJ. ENG. R.B. Hughes DATE 2/17/72
PROD. [illegible] DATE 2/17/72

NEXT HIGHER ASSY. B-DD-11/45-Ø
SCALE — SHEET 2 OF 12

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: F.P EXPONENT DATA PATH (FXPA)

SIZE D | CODE CS | NUMBER M8113-Ø-Ø1 | REV E | DIST.



EXPONENT DATA PATH BITS Ø8 THROUGH 15 SLOT 5

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45	PARTS LIST			

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//—

FINISH —//—

DRN. S. Roberts	DATE 9/23/71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D.	DATE 2/17/72	
ENG. R.B. Hughes	DATE 2/17/72	
PROJ. ENG. R.B. Hughes	DATE 2/17/72	
PROD. R. Hirsch	DATE 2/17/72	

TITLE: F.P. EXPONENT DATA PATH (FXPB)

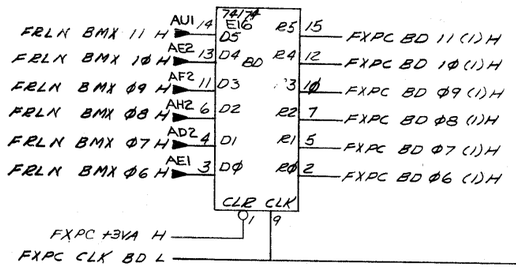
NEXT HIGHER ASSY. B-DD-11/45-Ø

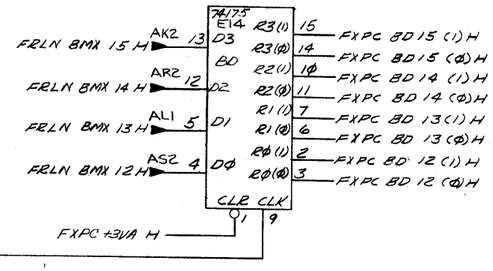
SCALE —//—

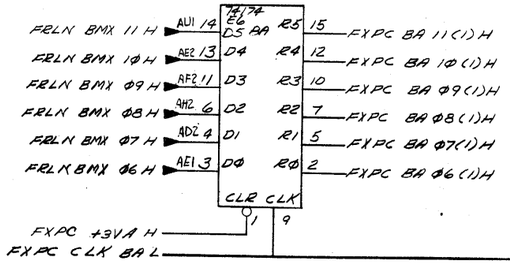
SHEET 3 OF 12

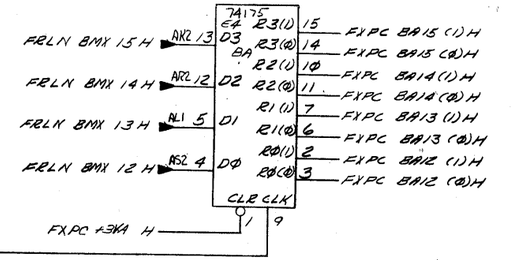
SIZE	CODE	NUMBER	REV.
D	CS	M8113-Ø-Ø1	E

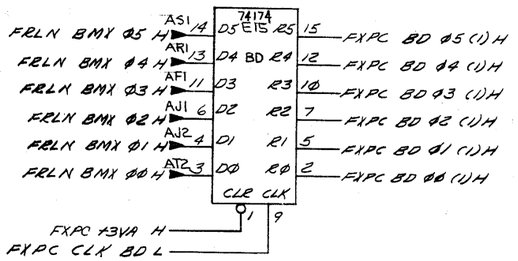
DIST.

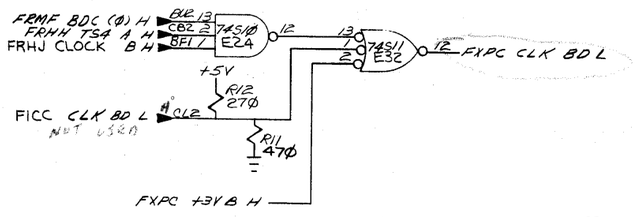


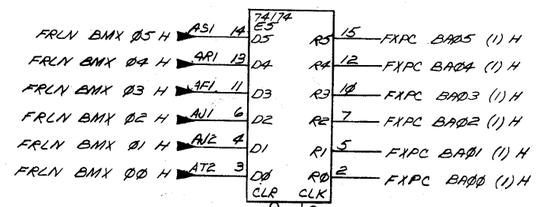


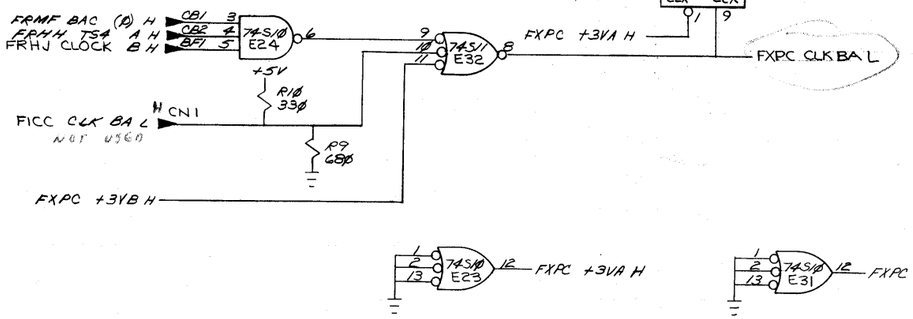


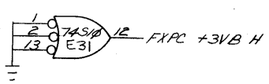










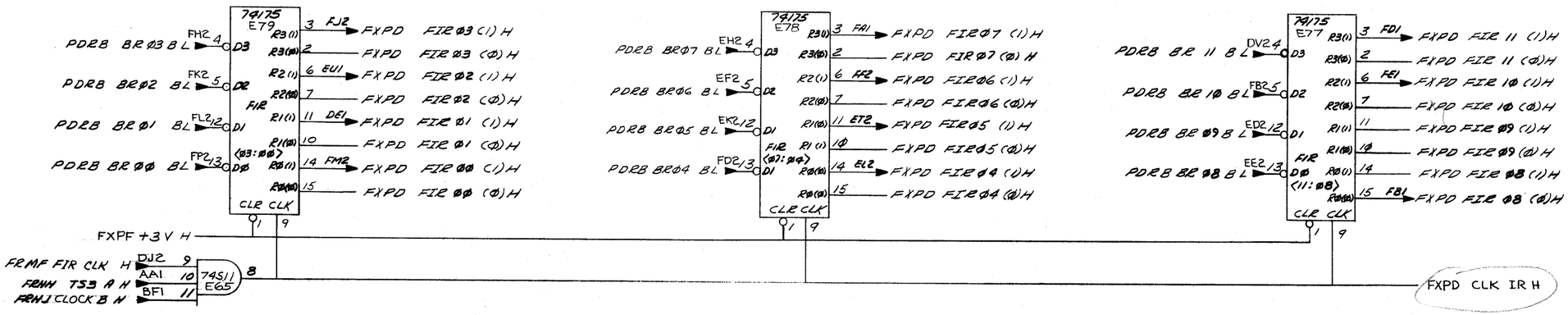


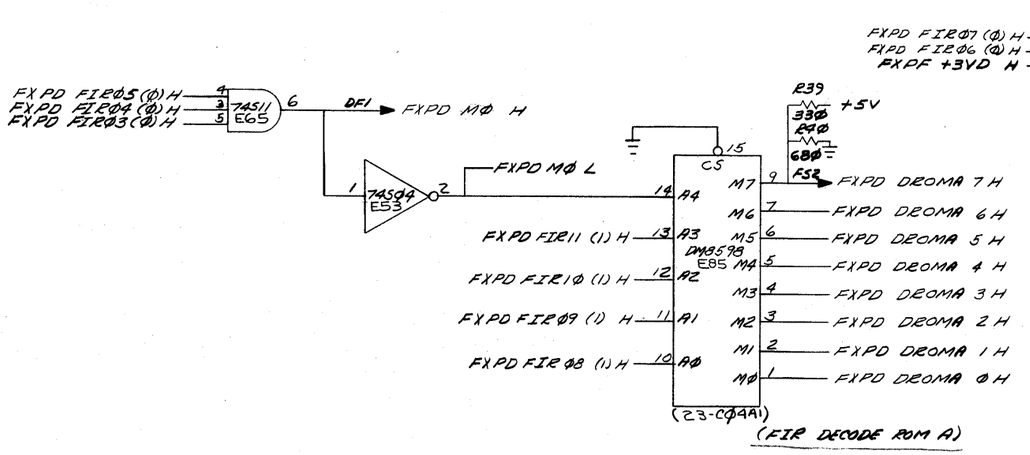
BD & BA REGISTERS SLOT 5

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES	DRN. K. Dano	DATE 9-17-71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
DECIMALS .XXX = .005 .XX = .02 .X = .1 / ANGLES ±0° 30'	CHK'D. [illegible]	DATE 2/1/72	TITLE F.P. EXPONENT DATA PATH (FXPC)
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓	ENG. R.B. Hughes	DATE 2/7/72	
	PROJ. ENG. R.B. Hughes	DATE 2/17/72	
MATERIAL —	PROD. [illegible]	DATE 2/17/72	
FINISH —	NEXT HIGHER ASSY. B-DD-11/45-Ø	SIZE D / CODE CS / NUMBER M8113-Ø-Ø1 / REV E	
	SCALE —	SHEET 4 OF 12	DIST.

REV	CHANGE NO
SEE SHEET 1	





FOP CODE L = (OP CODE 170003:170377)

ROM A & B and Rom B B's Ø:6 are OR on FXPE

TRUTH TABLE on FXPM

F.P INSTRUCTION REGISTER SLOT 5

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN. R. Davis	DATE 9-23-71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. R. Glazer	DATE 2/1/72	
ENG. A. B. Hughes	DATE 2/17/72	TITLE
PROJ. ENG. A. B. Hughes	DATE 2/17/72	F.P. EXPONENT DATA PATH (FXPD)
PROD. M. Rinchi	DATE 2/17/72	
NEXT HIGHER ASSY. B - DD-11/45-Ø		SIZE D CODE CS NUMBER M8113-Ø-Ø1 REV. E
SCALE —		
SHEET 5 OF 12		DIST.

REVISIONS | REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

FXPD DROMA 7 H
FXPD FIR Ø7 (1) H
FXPD FIR Ø1 (1) H
FXPF +3VE H
74H22 E8Ø
FXPD DROMA 6 H
FXPD DROMB 6 H
R25 33Ø
R32 68Ø
FFI
FXPE FIRD 6 H
FXPF ILL OP CODE (1) H
74S Ø5 E76
FXPD DROMA 7 L
FXPE REG6 OR 7 H
FXPD DROMB 7 L
FXPE MØ OR 1 L
FXPF ILL OP CODE (Ø) H
FXPF FIR(11:Ø9) Ø H
FXPD FIRØ8 (1) H
FXPD ACØ L
FXPD MØ L
74S65 E61
FXPD DROMA 5 H
FXPD DROMB 5 H
R33 33Ø
R26 68Ø
FJI
FXPE FIRD 5 H
FXPD DROMA 4 H
FXPD DROMB 4 H
R27 1.2K
R34 2.4K
FKI
FXPE FIRD 4 L
74HØ4 E7Ø
FXPE FIRD 4 H
FXPD DROMA 3 H
FXPD DROMB 3 H
R35 1.2K
R28 2.4K
FLI
FXPE FIRD 3 L
FXPE FIRD 3 H
FXPD DROMA 2 H
FXPD DROMB 2 H
R29 1.2K
R36 2.4K
FMI
FXPE FIRD 2 L
FXPE FIRD 2 H
FXPD DROMA 1 H
FXPD DROMB 1 H
R37 1.2K
R30 2.4K
FNI
FXPE FIRD 1 H
FXPD DROMA Ø H
FXPD DROMB Ø H
R31 1.2K
R38 2.4K
FPI
FXPE FIRD Ø H
FXPE FIR(11:Ø9) Ø H
FXPD FIRØ8 (1) H
FXPD FIRØ7 (Ø) H
FXPD FIRØ6 (Ø) H
74H22 E8Ø
+5V

FXPE FIR (11:Ø9) 5 L
74S Ø4 E68
FXPD FIR11 (1) H
FXPD FIRIØ (Ø) H
FXPD FIRØ9 (Ø) H
74S11 E73
FXPD MØ H
FXPD FIR Ø2 (1) H
FXPD FIR Ø1 (1) H
74S1Ø E83
FXPD FIRØ8 (Ø) H
FXPF ILL OP CODE (Ø) H
74S64 E82
FT2
FXPE CONV SP L

FXPD MØ H
FXPD DROMB 7 L
74HØØ E84
74HØØ E84
74S Ø4 E88
FSI
FXPE FCLD EN L
TO CPU IRCE
LOAD CODE EDGE
FXPD FIR11 (1) H
FXPD FIRIØ (Ø) H
FXPD FIRØ9 (1) H
74S1Ø E83
FXPE FIR (11:Ø9) 5 L
FXPD FIRØ5 (1) H
FXPD FIRØ4 (Ø) H
FXPD FIRØ3 (Ø) H
74HIØ E63
FXPD FIRØ5 (Ø) H
FXPD FIRØ4 (1) H
FXPD FIRØ3 (Ø) H
74HIØ E63
74S1Ø E83
FXPD FIRØ2 (1) H
FXPD FIRØ1 (1) H
FXPD FIRØØ (1) H
74S2Ø E87
74HØ4 E7Ø
DU2
FXPE IMMEDIATE H
FXPE IMMEDIATE L
FXPD FIRØ5 (Ø) H
FXPD FIRØ4 (Ø) H
FXPD FIRØ3 (1) H
74HIØ E63
FXPH FD (Ø) H
74S1Ø E71
FXPH FD (1) H
74S1Ø E71
FXPE FIRD 4 L
74S2Ø E72
74SØØ E62
FXPE MØ OR 1 L
74SØØ E62
DJI
FXPE ADI H
FXPH IL (1) H
74S1Ø E71
FXPH IL (Ø) H
74HØØ E84
74HIØ E75
FXPE MØ OR 1 L
FXPE IMMEDIATE L
74S2Ø E72
DS2
FXPE AD2 H

	AD2	AD1
ADD v SUB Ø	L	L
ADD v SUB 4	L	H
ADD v SUB 2	H	L
ADD v SUB Ø	H	H

FXPD FIR11 (Ø) H
FXPD FIRIØ (Ø) H
FXPD FIRØ9 (Ø) H
74S11 E73
FXPE FIR(11:Ø9) Ø H
FXPD FIRØ2 (1) H
FXPD FIRØ1 (1) H
FXPF +3VD H
74S11 E73
FXPE REG6 OR 7 H
FXPD FIRØ5 (Ø) H
FXPD FIRØ4 (Ø) H
74SØØ E62
FXPE MØ OR 1 L

FXPE FIR(11:Ø9) 3 H
FXPD FIRØ8 (Ø) H
FXPF +3VE H
74HII E81
FR2
FXPE SUB H

F.P. INSTRUCTION DECODE SLOT 5

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN.	Roberts	DATE 2/28/72
CHK'D		DATE 2/17/72
ENG.	P.B. Hughes	DATE 2/17/72
PROJ. ENG.	P.B. Hughes	DATE 2/17/72
PROD.		DATE 2/17/72

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: F.P. EXPONENT DATA PATH (FXPE)

NEXT HIGHER ASSY. B-DD-11/45-Ø

SIZE	CODE	NUMBER	REV.
D	CS	M8113-Ø-Ø1	E

SCALE —
SHEET 6 OF 12
DIST.

(B CONDITION CODES)

74175 E25

FXPF B BMX 15 L
FXPH BMX (14:9) Ø H
FXPF B BMX Ø8 L → 74H11 E18 → D2

FRLN BMX 15 H (AK2) → D1

FXPH BMX 15 AND (8:6) Ø H
FXPH BMX (14:9) Ø H
FXPH BMX (5:0) Ø H → 74H11 E18 → DØ

FXPC +3VA H → CLR

FRMF BAC (Ø) L (AD1)
FX PC +3VA H (AB2) → 74S1Ø E24 → CB2

FRM H TS4 A H
FRM J CLOCK B H (BF1) → 74S1Ø E23 → CLK

R3(1) 2
R3(Ø) 3
R2(1) 7 CA1 → FXPF BB1Z (1) H
R2(Ø) 6 → FXPF BB1Z (Ø) H
R1(1) 10 → FXPF BN (1) H
R1(Ø) 11 BV2 → FXPF BN (Ø) H
RØ(1) 15 BU1 → FXPF BZ (1) H
RØ(Ø) 19 → FXPF BZ (Ø) H

FRLN BMX 15 H (AK2) → 74S04 E26 → FXPF B BMX 15 L

FRLN BMX Ø8 H (AH2) → 74S04 E26 → FXPF B BMX Ø8 L

74S1Ø E43 → FXPF +3VC H

74S04 E53 → FXPF +3VD H

74S04 E53 → FXPF +3VE H

PDRB BR15 B L (EK1) → 74S05 E76 (12)

PDRB BR14 B L (EC1) → 74S05 E76 (6)

PDRB BR13 B L (EL1) → 74S05 E76 (8)

PDRB BR12 B L (EB1) → 74S05 E76 (4)

R24 68Ø, R23 33Ø → +5V

(RANGE ROM)
(23-C48A2)

FXPB EALU Ø9 H
FXPB EALU Ø8 H
FXPA EALU Ø7 H
FXPA EALU Ø6 H
FXPA EALU Ø5 H
FXPA EALU Ø4 H
FXPA EALU Ø3 H → 74S287 E48 (CS1, CSØ)

FXPF +3VC H
FXPA EALUØ2 H
FXPA EALUØ1 H
FXPA EALUØØ H → 74S64 E41

M3: R13 68Ø, R14 33Ø
M2: R15 68Ø, R16 33Ø
M1: R17 68Ø, R18 33Ø
MØ: R19 68Ø, R20 33Ø
+5V

DD2 → FXPF RNG ROM 2 H

74HØ1 E49 (FXPH FD(1) H) → DD1 → FXPF RNG ROM 1 H

74HØ1 E49 → DE2 → FXPF RNG ROM Ø H

Rom 2	Rom 1	Rom Ø	
#Ø2	DD1	DE2	
1	Ø	1	EQ
1	Ø	Ø	GT
Ø	Ø	Ø	LT
1	1	1	MGT
Ø	Ø	1	MLT

FXPD FIR11 (Ø) H
FXPD FIR1Ø (1) H
FXPD FIR Ø9 (1) H → 74H11 E81 → FXPF FIR (11:Ø9) 3H

FXPD FIR Ø8 (Ø) H
FRHF SS XOR SDL (FR1) → 74HHØ E75

74HHØ E84 → FUI → FXPF SUB FRAC H

FXPD FIR11 (Ø) H
FXPD FIR1Ø (1) H
FXPD FIR Ø9 (1) H → 74H11 E81

FXPD FIR Ø8 (Ø) H
FXPF SS XOR SD H → 74HHØ E75

FXPF +3VE H → 74H79 E60 (D, C)

FXPD CLK IR H → 74H79 E60

74H79 E60 → FXPF ILL OP CODE (1) H

74H79 E60 → FXPF ILL OP CODE (Ø) H

FXPF +3VE H

FRHF SS XOR SD L (FR1) → 74S04 E88 → FXPF SS XOR SD H

B CONDITION CODES & RANGE ROM — SLOT 5

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

		DATE
DRN. T. Davis		9-27-71
CHK'D.		2/17/72
ENG. L.B. Hughes		2/17/72
PROJ. ENG. L.B. Hughes		2/17/72
PROD. T. Rusch		2/17/72

NEXT HIGHER ASSY. B-DD-11/45-Ø

SCALE —

SHEET 7 OF 12

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

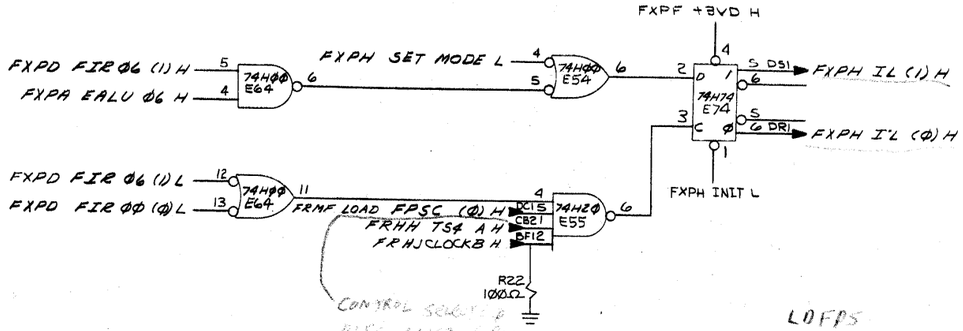
TITLE: F.P. EXPONENT DATA PATH (FXPF)

SIZE	CODE	NUMBER	REV.
D	CS	M8113-Ø-Ø1	E

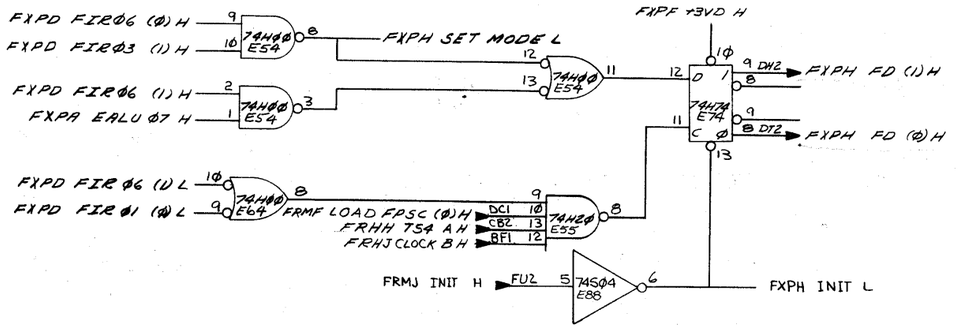
DIST.

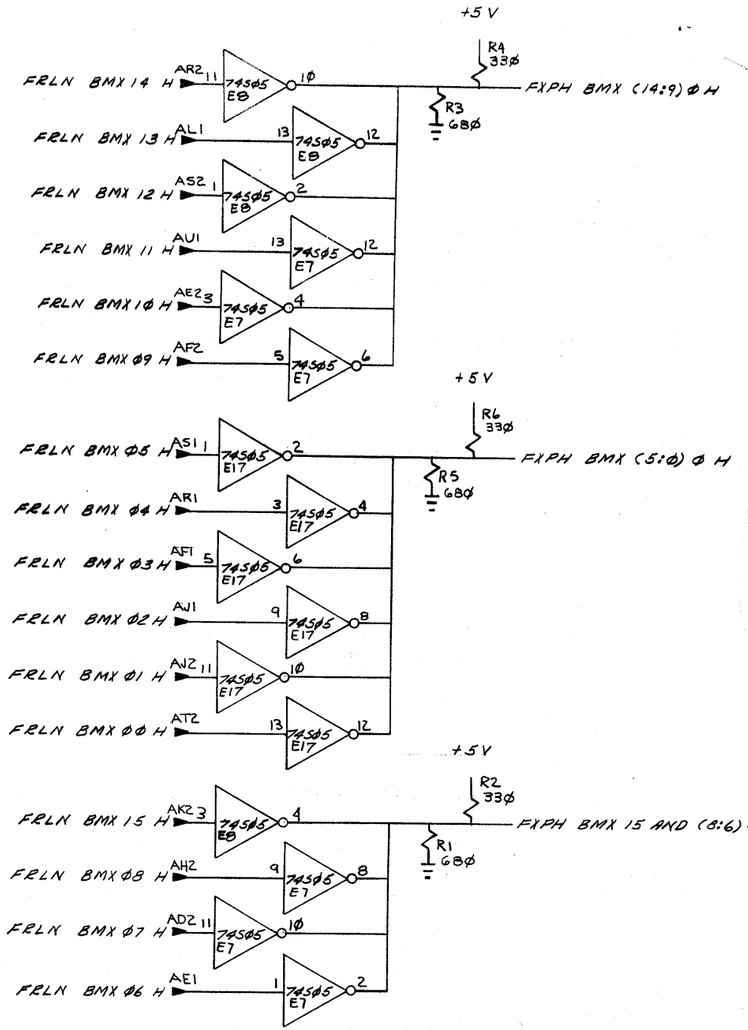
REVISIONS	REV.	CHANGE NO.	CHK

DEC FORM NO 1PS, 102-B



LDFPS
SET I
SET L
SET F
SETD





B cond. code
FXPF

FD & IL MODE BITS & BMX DECODE SLOT 5

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN.	DATE	7/13/71
CHK'D.	DATE	2/10/72
ENG.	DATE	2/17/72
PROJ ENG. R.D. Hughes	DATE	2/17/72
PROD. C. Hurst	DATE	3/1/72

NEXT HIGHER ASSY. B-DD-11/45-Ø

SCALE —

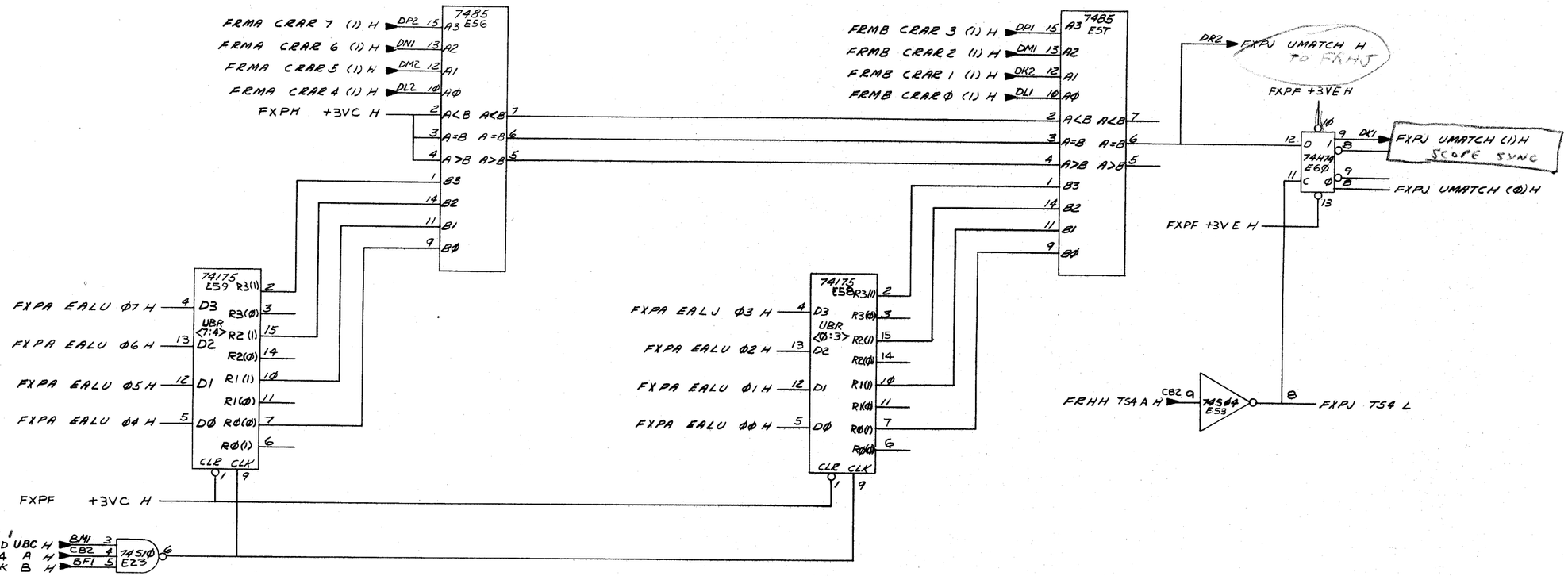
SHEET 8 OF 12

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE
F.P. EXPONENT DATA PATH (FXPH)

SIZE	CODE	NUMBER	REV.
D	CS	M8113-Ø-Ø1	E

DIST.



MICROBREAK LOGIC SLOT 5

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

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

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

DRN. T. Davis	DATE 9-20-71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D	DATE 2/17/72	
ENG.	DATE 2/17/72	
PROJ. ENG.	DATE 2/17/72	
PROD.	DATE 2/17/72	

TITLE: F. P. EXPONENT DATA PATH (FXPJ)

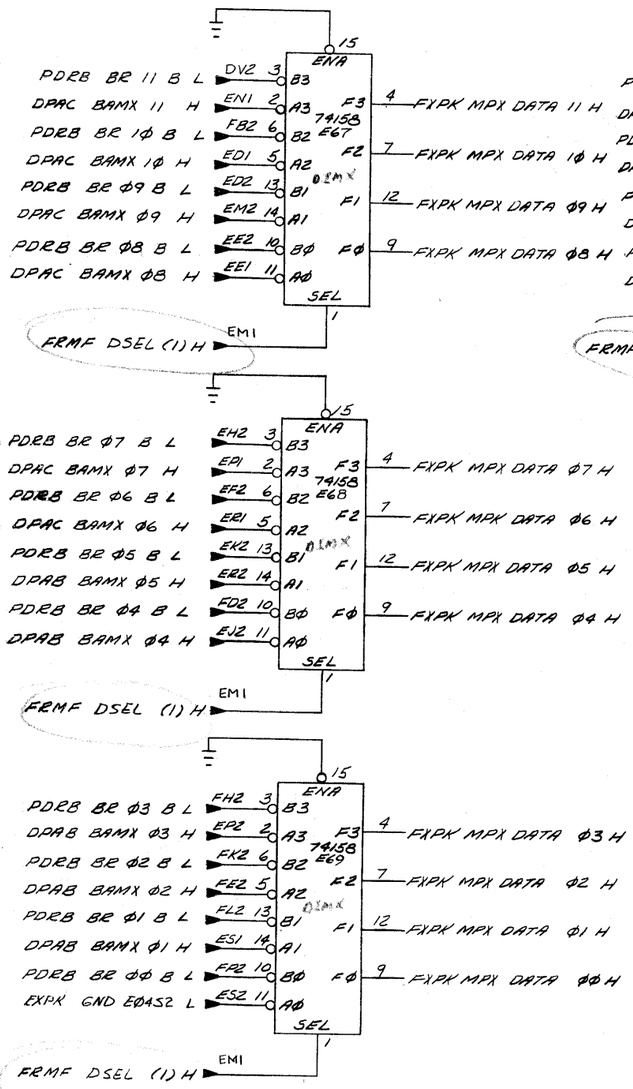
NEXT HIGHER ASSY.: B-DD-11/45-Ø

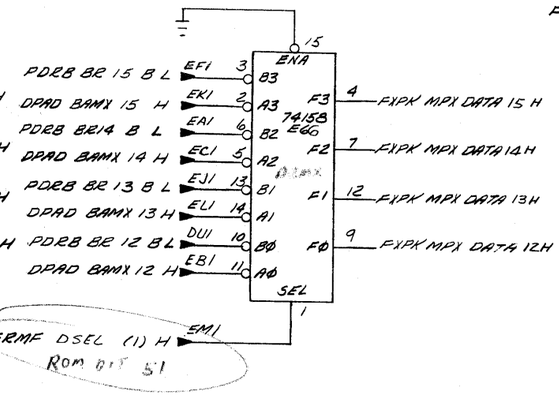
SIZE	CODE	NUMBER	REV.
D	CS	M8113-Ø-Ø1	E

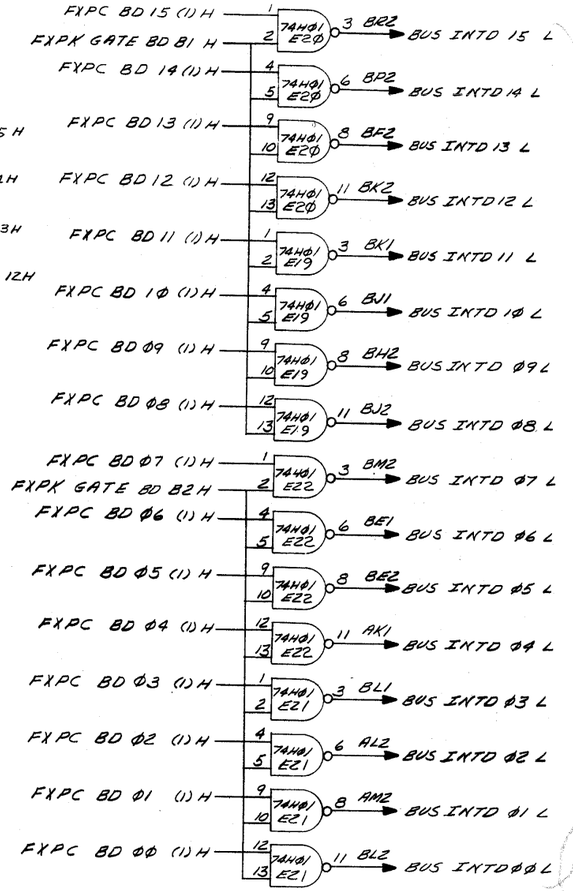
SCALE

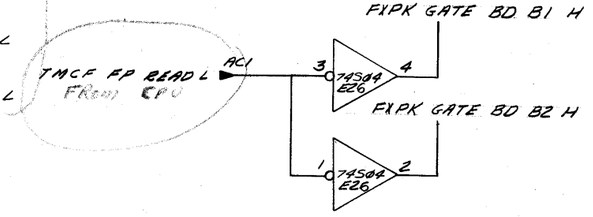
SHEET 9 OF 12

DIST.









F. P. DATA RECEIVERS AND DRIVERS SLOT 5

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN. T. Dano	DATE 9-20-71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHKD. [illegible]	DATE 2/1/72	
ENG. R. Hughes	DATE 2/17/72	TITLE: F. P. EXPONENT DATA PATH (FXPK)
PROJ ENG. R. Hughes	DATE 2/17/72	
PROD. D. Hench	DATE 2/17/72	
NEXT HIGHER ASSY. B-DD-11/45-Ø		SIZE D · CODE CS · NUMBER M8113-Ø-Ø1 · REV. E
SCALE —		
SHEET 10 OF 12		DIST.

REVISIONS: REV | CHANGE NO. | Chk

FXPA EALUØØ H
FXPL LD SC H
74S00 E51

FXPA EALUØ1 H
74S00 E51

FRHF CLK SC H (DF2)

FXPF +3VD H

74S112 E52
FXPL SCØØ (1) H
FXPL SCØØ (Ø) H

74S112 E52
FXPL SCØ1 (1) H
FXPL SCØ1 (Ø) H

74S10 E43

FXPL SC EQ XX1111 H

74191 E58Ø
MAX MIN, RIPPLE CLK, DN, UP, ENA, LD
FXPA EALU Ø5 H
FXPA EALU Ø4 H
FXPA EALU Ø3 H
FXPA EALU Ø2 H
R3(1) FXPL SCØ5 (1) H
R2(1) FXPL SCØ4 (1) H
R1(1) FXPL SCØ3 (1) H
RØ(1) FXPL SCØ2 (1) H
FXPL LD SC L

FXPL LD SC H
FXPA EALU ØØ H
74S04 E38
74S00 E51

FXPA EALU Ø1 H
74S04 E38
74S00 E51

FXPF +3VC H
FXPL SC EQXX1111 H
FXPL SCØØ (Ø) H
FXPL SCØ1 (1) H
74S11 E44
FRHF CLK SC H (DF2)
74S112 E42
DA1 FXPL SCZ (1) H
CS2 FXPL SCZ (Ø) H
74S10 E43
FRHH WAIT (1) H CS1

STEP COUNTER IS ZERO
TO FRHE, H

FXPF +3D H
FRMF DISABLE SC H DB2
74H74 E46
FXPL SC LOADED(Ø)H DZ
FRLP FMM (Ø) L DB1
FXPF +3VD H
FXPL SCZ (1) L
74S11 E44
FXPL LD SC L
FRMF SCC (Ø) H CT2
FRHH TS4 A H CB2
74S20 E45
FXPL SC LOADED (Ø) H
74S04 E53
FXPL LD SC H

STEP COUNTER SLOT 5

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN. J. Roberts 9/23/71
CHK'D. [illegible] 2/2/72
ENG. R.B. Hughes 2/17/72
PROJ. ENG. R.B. Hughes 2/17/72
PROD. O. Hirsch 2/17/72
NEXT HIGHER ASSY. B-DD-11/45-Ø
SCALE —
SHEET 11 OF 12

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: F.P. EXPONENT DATA PATH (FXPL)

SIZE	CODE	NUMBER	REV.
D	CS	M8113-Ø-Ø1	E

DIST.

REVISIONS: REV | CHANGE NO | CHK

SIZE D | CODE CS | NUMBER M8113-Ø-Ø1 | REV E

CONTENTS OF DECODE ROM A (DROMA)

ADDRESS	DATA 7 6 5 4 3 2 1 Ø	INSTRUCTION
Ø	1 1 1 1 1 1 1	FOP, CODE Ø ∧ MØ
1	1 Ø 1 Ø Ø Ø 1 1	(CLRF, TSTF, ABSF, NEGF) ∧ MØ
2	1 Ø 1 1 Ø Ø Ø Ø	MULF ∧ MØ
3	1 Ø 1 1 Ø Ø Ø Ø	MODF ∧ MØ
4	1 Ø 1 1 Ø 1 Ø Ø	ADDF ∧ MØ
5	1 Ø 1 Ø Ø Ø 1 Ø	LDF ∧ MØ
6	1 Ø 1 1 Ø 1 Ø Ø	SUBF ∧ MØ
7	1 Ø 1 1 Ø 1 Ø Ø	CMPF ∧ MØ
1Ø	1 Ø 1 Ø Ø 1 Ø Ø	STF ∧ MØ
11	1 Ø 1 1 1 Ø Ø Ø	DIVF ∧ MØ
12	Ø 1 1 Ø 1 1 Ø Ø	STEXP ∧ MØ
13	Ø 1 1 Ø 1 Ø Ø Ø	STCFI ∧ MØ
14	1 1 1 Ø Ø 1 Ø Ø	STCFD ∧ MØ
15	Ø Ø 1 Ø 1 1 1 Ø	LDEXP ∧ MØ
16	Ø Ø 1 Ø 1 Ø 1 1	LDCIF ∧ MØ
17	1 Ø 1 1 1 1 Ø Ø	LDCDF ∧ MØ
2Ø	Ø 1 1 1 1 1 1 1	FOP, CODE Ø ∧~MØ
21	Ø 1 1 Ø Ø Ø 1 1	(CLRF, TSIF, ABSF, NEGF) ∧~MØ
22	Ø 1 Ø Ø Ø Ø Ø Ø	MULF ∧~MØ
23	Ø 1 Ø Ø Ø Ø Ø Ø	MODF ∧~MØ
24	Ø 1 Ø Ø Ø Ø Ø Ø	ADDF ∧~MØ
25	Ø 1 Ø Ø Ø Ø Ø 1	LDF ∧~MØ
26	Ø 1 Ø Ø Ø Ø Ø Ø	SUBF ∧~MØ
27	Ø 1 Ø Ø Ø Ø Ø Ø	CMPF ∧~MØ
3Ø	Ø 1 1 Ø Ø Ø 1 Ø	STF ∧~MØ
31	Ø 1 Ø Ø Ø Ø Ø Ø	DIVF ∧~MØ
32	Ø 1 1 Ø Ø 1 Ø Ø	STEXP ∧~MØ
33	Ø 1 1 Ø 1 Ø 1 Ø	STCFI ∧~MØ
34	Ø 1 1 Ø Ø 1 1 Ø	STCFD ∧~MØ
35	Ø 1 Ø Ø Ø 1 Ø 1	LDEXP ∧~MØ
36	Ø 1 Ø Ø 1 Ø Ø Ø	LDCIF ∧~MØ
37	Ø 1 Ø Ø Ø 1 Ø Ø	LDCDF ∧~MØ

NOTE:

1) FOP CODE Ø ALSO ENABLES DROMB. DATA BITS <6:Ø> OF DROMB ARE COLLECTOR OR'D WITH DATA BITS <6:Ø> OF DROMA.
2) DATA BIT 7 IS USED TO DECODE F.P. CLASS MØ. F CLASS CONTAINS ALL INSTRUCTIONS THAT REFERENCE AN AC FOR ADDRESS MODE Ø.
3) DATA BITS <6:5> ENCODE THE INSTRUCTIONS INTO 4 CLASSES.
   Ø ILL·OP·CODE; UNDEFINED FOR CODES
   1 NO·MEM·CL; THESE REQUIRE NO MEMORY CYCLES
   2 LOAD·CL; THESE REQUIRE DATI'S
   3 STORE·CL; THESE REQUIRE DATO'S
   ONE LEG OF THE AND-OR-INVERT GATE THAT IS COLLECTOR OR'D WITH DATA BIT 5 FORCES TSTF, ABSF & NEGF & MØ INTO THE LOAD CLASS. THE REMAINING INPUTS TO THIS GATE FORCE AN ILLEGAL OP CODE
4) DATA BITS <4:Ø> ENCODE THE INSTRUCTIONS INTO 6 CLASSES. THIS GROUPING DEFINES THE CONSTANT THAT IS ADDED TO OR SUBTRACTED FROM THE GENERAL REGISTER FOR ADDRESSING MODES 2 OR 4.
   Ø CLASS Ø; USE 4 (FD(Ø)) OR Ø (FD(1))
   1 CLASS 1; USE 2 (FD(Ø)) OR 4 (FD(1))
   2 CLASS 2; USE 2 (IL(Ø)) OR 4 (IL(1))
   3 CLASS 3; USE 2
   4 CLASS 4; USE 4

5,6&7 CLASS 5; DON'T CARE (MØ ONLY)

CONTENTS OF DECODE ROM B (DROMB)

ADDRESS	DATA 7 6 5 4 3 2 1 Ø	INSTRUCTION
Ø	Ø 1 Ø 1 Ø 1 Ø Ø	CFCC
1	1 Ø 1 Ø 1 Ø Ø Ø	SETF
2	1 Ø 1 Ø 1 Ø Ø Ø	SETI
3	1 Ø 1 1 Ø 1 1 Ø	LDUB
4	1 Ø 1 Ø Ø 1 Ø 1	LDSC
5	1 Ø 1 Ø 1 Ø 1 Ø	STAØ
6	1 Ø 1 1 Ø 1 Ø 1	MRS
7	1 Ø 1 1 Ø Ø 1 Ø	STQØ
1Ø	1 Ø Ø 1 1 1 1 1	ILLEGAL OP CODE
11	Ø Ø 1 Ø 1 Ø Ø Ø	SETD
12	Ø Ø 1 Ø 1 Ø Ø Ø	SETL
13	1 Ø Ø 1 1 1 1 1	ILLEGAL OP CODE
14	1 Ø Ø 1 1 1 1 1	ILLEGAL OP CODE
15	1 Ø Ø 1 1 1 1 1	ILLEGAL OP CODE
16	1 Ø Ø 1 1 1 1 1	ILLEGAL OP CODE
17	1 Ø Ø 1 1 1 1 1	ILLEGAL OP CODE
2Ø	X X X X X X X X	NOT USED
21	1 Ø 1 1 Ø 1 1 1	LDFPS ∧ MØ
22	1 1 1 Ø 1 1 Ø 1	STFPS ∧ MØ
23	1 1 1 1 Ø Ø Ø Ø	STST ∧ MØ
24	X X X X X X X X	NOT USED
25	1 Ø 1 1 Ø 1 1 1	LDFPS ∧ MØ
26	1 1 1 Ø 1 1 Ø 1	STFPS ∧ MØ
27	1 1 1 1 Ø Ø Ø Ø	STST ∧ MØ
3Ø	X X X X X X X X	NOT USED
31	1 1 Ø Ø 1 1 1 1	LDFPS ∧~MØ
32	1 1 1 Ø 1 1 Ø 1	STFPS ∧~MØ
33	1 1 1 1 Ø Ø Ø Ø	STST ∧~MØ
34	X X X X X X X X	NOT USED
35	1 1 Ø Ø 1 1 1 1	LDFPS ∧~MØ
36	1 1 1 Ø 1 1 Ø 1	STFPS ∧~MØ
37	1 1 1 1 Ø Ø Ø Ø	STST ∧~MØ

NOTE:

1) FOP CODE Ø ENABLES DROMB.
2) FIR <Ø7:Ø6>(Ø) ∧ MØ CAUSES THE LOWER QUARTER OF DROMB TO BE ADDRESSED BY THE LOWER 3 BITS OF THE FIR. ALL OF THESE OP CODES ARE USED DATA BIT 7 IS USED TO DECODE CFCC FOR THE GENERATION OF FCLD EN.
3) FIR <Ø7:Ø6>(Ø) ∧~MØ CAUSES THE SECOND QUARTER OF DROMB TO BE ADDRESSED BY THE LOWER 3 BITS OF THE FIR. ONLY TWO OP CODES ARE USED (SET D & SET L). DATA BIT 7 IS USED TO FORCE AN ILL OP CODE IF ADDRESSES 11 & 12 ARE ACCESSED & FIR <Ø5:Ø3> IS NOT 1
4) FIR <Ø7:Ø6>(1), (2) OR (3) CAUSE THE UPPER HALF OF DROMB TO BE ADDRESSED. THE INSTRUCTIONS LDFPS, STFPS, & STST USE ALL OF THIS OP CODE SPACE. NOTE THAT FIR Ø6 & FIR Ø7 ARE ALSO USED AS THE LEAST SIGNIFICANT TWO BITS OF THE ADDRESS.

CONTENTS OF RANGE ROM

ADDRESS	DATA 3 2 1 Ø	OUTPUT OF EALU	RANGE FD(Ø)	RANGE FD(1)
Ø	Ø 1 Ø Ø	1 TO 7	GT	GT
1	Ø 1 Ø 1	Ø	EQ	EQ
2 TO 5	Ø 1 Ø Ø	1Ø TO 27	GT	GT
6	1 1 1 1	31 TO 37	MGT	GT
7	Ø 1 Ø Ø	3Ø	GT	GT
1Ø TO 15	1 1 1 1	41 TO 67	MGT	GT
16	Ø 1 1 1	71 TO 77	MGT	MGT
17	1 1 1 1	7Ø	MGT	GT
2Ø TO 177	Ø 1 1 1	1ØØ TO 777	MGT	MGT
2ØØ TO 361	Ø Ø Ø 1	-71 TO -1ØØ	MLT	MLT
362 TO 371	1 Ø Ø 1	-31 TO -7Ø	MLT	LT
372 TO 377	Ø Ø Ø Ø	-1 TO -3Ø	LT	LT

NOTE:

DATA BITS <2:Ø> ARE USED TO PERFORM THE MLT, LT, EQ, GT & MGT BRANCH DATA BIT 3, WHEN TRUE IS USED TO ENABLE HARDWARE THAT MODIFIES MLT TO LT AND MGT TO GT IF FD(1).

AUX ROM MAPS

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45		PARTS LIST		

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

DRN. — DATE 12/10/72
CHK'D. — DATE 2/7/72
ENG. — DATE 2/17/72
PROJ. ENG. — DATE 2/17/72
PROD. J. Nash DATE 2/17/72
NEXT HIGHER ASSY. B-DD-11/45-Ø
SCALE —
SHEET 12 OF 12

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TITLE: F.P. EXPONENT DATA PATH (FXPM)

SIZE	CODE	NUMBER	REV.
D	CS	M8113-Ø-Ø1	E

DIST.

REV	REVISIONS	CHANGE NO	DATE	APPROVED

BRUNING 40-522 15840

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ACCESSORY LIST

MADE BY [illegible] DATE 6-15-72	CHECKED [illegible] DATE 6-15-72	SECTION
ENG D. Jes DATE 6-20-72	PROD Carol Hamman DATE 6-20-72	ISSUED SECT.

LEGEND

D	DOCUMENT
DN	DOCUMENT CHANGE NOTICE
PA	PAPER TAPE ASCII
PB	PAPER TAPE BINARY
PM	PAPER TAPE READ-IN-MODE

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION	KIT CHECK BY ____ DATE ____	INSTALLATION CHECK BY ____ DATE ____
	FP11-B	Print Set	1		
	Lib Kit11-FPP11-A-K	Software Kit	1		
	Dec11-HFPA-D	Maint. Manual (FP11B)	1		

TITLE	ASSY. NO.	SIZE	CODE	NUMBER	REV.	ECO NO
Floating Point Processor	SHEET 1 OF 1	A	AL	FP11-B -16		
		DIST.				

DEC 16-(325)-1075-N172 DRA 121

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