# TABLE OF CONTENTS

- **B-TC-FP11-A-4**  |  Floating Point Option (TC)
- **B-DD-FP11-A**  |  Floating Point Option
- **D-UA-FP11-A-β**  |  Floating Point Option
- **A-PL-FP11-A-β**  |  Floating Point Option (PL)
- **D-HD-FP11-A-1**  |  Block Diagram
- **D-UA-M8267-β-β**  |  Floating Point Option
- **B-PL-M8267-β-β**  |  Floating Point Option (PL)
- **D-CS-M8267-β-1**  |  Floating Point Option (CS)
- **D-UA-H8821-β-β**  |  Board Interconnect 40 Pin
- **B-PL-H8821-β-β**  |  Board Interconnect 40 Pin (PL)
- **D-CS-H8821-β-1**  |  Board Interconnect 40 Pin (CS)
- **D-UA-S412416-β-β**  |  Board Interconnect 20 Pin
- **B-PL-S412416-β-β**  |  Board Interconnect 20 Pin (PL)
- **D-CS-S412416-β-1**  |  Board Interconnect 20 Pin (CS)
- **D-UA-W9542-β-β**  |  Extender Board Assy.
- **B-PL-W9542-β-β**  |  Extender Board Assy. (PL)
- **D-CS-W9542-β-1**  |  Extender Board Assy. (CS)
- **A-PL-FP11-A-3**  |  Shipping List
- **D-FD-FP11-A-2**  |  Flow Diagram
- **D-QF-FP11-A-5**  |  Flow Diagram

### Section

#### REV. A
- Date: 7-7-76
- Field Serv. Date: 7-20-76

#### REV. B
- Date: 7-7-76
- Field Serv. Date: 7-20-76

---

**Digital Equipment Corporation**

PRINT SET ORDER NO.
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NOTES:
1. THESE CABLES STATED ARE PART OF KYW-I-L2 CONFIGURATION AND MAY NOT BE PRESENT IN SAME CONFIGURATION.
2. THE WIRE EXTENDER BD. ASSY. IS STORED IN THE BACKPLANE AND IS USED FOR SOME MAINTENANCE OPERATIONS.
3. THESE CABLES ARE INSTALLED DURING MAIN SERVICE ONLY AND ARE CLIPPED TO THE WIRE AS PART OF STORAGE. THESE CABLES ARE NOT PART OF B/W/003.
4. MODULES MBZ-051 & MBZ-055 ARE PART OF AN ISSUE SHOWN FOR REFERENCE ONLY.
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## Digital Equipment Corporation

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**Assy No.:** NONE

**Size Code:** A

**Number:** PL

**Rev:** FP11-A-3

**ECO No.:**
KEY TO MICRO FLOW SYMBOLOGY

FROM B-FO EP (P-FO) OR JUMP TO NEXT ADDRESS

NEXT MICRO ADDRESS (FROM BLOCK 27-B)

NOTES
1. MICRO ADDRESS OF CURRENT WORD.
2. SYMBOL OF EXECUTABLE STATEMENT.
3. MICRO ADDRESS OF NEXT STATEMENT.
4. MICRO ADDRESS OF THE NEXT MICRO WORD (TARGETING NO BRANCHING VIA WORD FIELD). THIS IS THE NEXT MICRO ADDRESS TO BE EXECUTED.
5. "I" STANDS FOR DISPLAY. IN THIS CASE, DCC040 WILL APPEAR ON THE CONSOLE DISPLAY IF OPERATING IN MAINTENANCE MODE.
6. INDICATES PAGE IN FLOWS WHERE THIS ENTRY IS REACHED.
7. PAGE AND ENTRY LABELS ARE USED TO INDICATE LOCATION OF ENTRY FROM PAGE TO PAGE.
8. INDICATES PAGE IN FLOWS FROM WHICH ENTRY Point 4 IS CALLED.
9. THIS ADDRESS IS THE TARGET OF THE JUMP FIELD.
10. DEFAULT VALUE OF THIS FIELD.
11. NUMBER OF BITS IN THIS FIELD.
12. LOCATION OF RIGHT MOST BIT OF THIS FIELD WITHIN MICRO WORD.
13. INDICATES THAT THE DEFAULT IS TAKEN IF NOTHING ELSE IS SPECIFIED.
14. DEFAULT VALUE OF MICRO FIELD LITERAL.
IN THIS CASE THE FORC IS ZERO
SO NO Rounding IS NECESSARY

THIS ROUTINE SETS UP THE FORC SO THAT
THE ROUND/FRUMP RountINE CAN BE USED
TO COMPLETE THE OPERATION.
ADD AND SUBTRACT HAVE THE FORM AC=AC+FACR
OPERATIONS FALL INTO FOUR CATEGORIES
1. BOTH OPERANDS ARE ZERO (0'), AC=0;
   AC=ZERO
2. FACR IS ZERO (0') AC=AC
3. AC IS ZERO (0') AC=AC+FACR
4. NEITHER OPERAND IS ZERO (0'); AC
   AC=AC+FACR; SUB
   SUBTRACTS THE MAXIMUM ALIGNMENT COUNT
   SIGNED ORDINARY
   8-DOUBLE 25 SINGLE
   SUBTRACT EXPONENTS
   TEST FOR INTERRUPTS OR PXRIP
   INSERT SIGN
   SUBRACT EXPONENT OVERFLOW
   TEST FOR INTERRUPTS
   INSERT AX
   8-DOUBLE 25 SINGLE
   SUBTRACT EXPONENT OVERFLOW
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IN BLOCKS 13-D AND 13-1, THE EXPONENT DIFFERENCE 18 OR 48 IS COMPARED TO THE MAXIMUM ALIGNMENT COUNT (17) TO SEE IF THE ALIGNMENT IS WITHIN BOUNDS. AN ALIGNMENT OF MORE THAN 17/25 MEANS THAT THE CORRESPONDING OPERANDS WOULD BE LESS THAN 1 X (3-1, 3-6). AN ALIGNMENT OF 13-D TAKES PLACE IN (13-E, 13-6) ALIGNMENT OF AC TAKES PLACE IN (13-1).
THIS INSTRUCTION GENERATES THE PRODUCT OF ITS TWO FLOATING POINT OPERANDS, SEPARATES THE PRODUCT INTO INTEGER AND FRACTIONAL PARTS AND THEN STORES BOTH PARTS AS NORMALIZED FLOATING POINT NUMBERS. FOR EXAMPLE, IF

\[ \text{PRODUCT} = 1.110000000000000000 \times 2^{4} \]

THEN

\[ \text{INTEGER} = 111111111111111111 \times 2^{4} \]
\[ \text{FRACTION} = 000000000000000000 \times 2^{4} \]

THE INTEGER IS STORED IN THE AC IF THE FRACTION, AFTER BEING NORMALIZED, IS STORED IN THE AC.

NOTE THAT IF THE AC IS AN ODD REGISTER, THE INTEGER IS OVERWRITTEN BY THE FRACTION.

IN THIS CASE, BOTH FRACTION AND INTEGER ARE ZERO (SINCE THE PRODUCT IS ZERO).
ALL SHITING IS DONE WHEN WE DROP OUT OF THIS LOOP (LEFT CARD BIT IS ZERO)

TEST WEB OF PRODUCT TO SEE IF IN-DIVIDUALIZATION IS NECESSARY. ALSO BREAK OUT MUL AND MOD INTO SEPARATE FLOWS.

SHIFT PRODUCT LEFT ONE PLACE

DECREMENT EXPONENT
This is how the mask (XII) is used to separate the fraction and integer.

1. **XII** Ones are zeros.
2. **XII** Ones are zeros.
3. **XII** Product.
4. **XII** Product.
5. Where **Z** = integer part.
6. **F** = fraction part.
UPON ENTERING THIS ROUTINE, THE INTEGER IS IN A AND BK. IF CONTAINING ZERO, THE INTEGER IS COMPLEMENTED (IF NEEDED) AND STORED IN AF AND BK.
<table>
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<tr>
<th>UNIT VARIATIONS COVERED BY THIS PRINT SET</th>
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<th>CKD</th>
<th>PROJECT ENG.</th>
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**FLOW DIAGRAMS**

TITLE: FP11-A

DRB 124
FP11A MACRO DEFINITIONS

AC(32).X10
AC(32).ZERO
AC.OR.1(32).X12
AC.OR.1(32).X14
AC.OR.1(32).ZERO
AC.OR.1.L1X12
AC.OR.1.L1X14
AC.OR.1.ZERO
AC.X10
AC.ZERO
BA.FC
BA.R12
BA.R12 R12_R12+2
BA.RD
BUF.FPS
BUF.RD_B.RD
BUF.RD_I.DATA
BUF.(Q.B.040)
BUF.(Q.B.040).ZBIT
BUF.BR.OR.PFAIL
BUF.BREAKOUT
BUF.COUT15
BUF.COUT65.ZBIT
BUF.DST
BUF.ENBT
BUF.EZBT
BUF.EZBT.EZBT
BUF.ENBT.Y8
BUF.EZBT.Y8
BUF.GD
BUF.GDS.T
BUF.FIC
BUF.FID
BUF.FIU
BUF.FIUU
BUF.FIV
BUF.FIVU
BUF.FIVU
BUF.FLV
BUF.FLAG
BUF.FBAR
BUF.FSFC
BUF.FT
BUF.GR7
BUF.GR7.OR.FLBAR
BUF.NBIT
BUF.NBIT.ZBIT
BUF.NOSERV
BUF.OP1B
BUF.OP1C
BUF.OP1D

*FCTL/APASS & ECTL/APASS & DCTL/LDBF & BSEL & AC & AROM & AR10 & SECT/S14*
*FCTL/ZEOR & ECTL/ZEOR & DCTL/LDBF & BSEL & AC & SECT/S14*
*FCTL/APASS & ECTL/APASS & DCTL/LDBF & BSEL & AC & OR.1 & AROM & AR10 & SECT/S14*
*FCTL/APASS & ECTL/APASS & DCTL/LDBF & BSEL & AC & OR.1 & AROM & AR10 & SECT/S14*
*FCTL/APASS & ECTL/APASS & DCTL/LDBF & BSEL & AC & OR.1 & AROM & AR10 & SECT/S14*
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*FCTL/ZERO & ECTL/ZERO & DCTL/LDBF & BSEL & AC & AR12 & SECT/S14*
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