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IDENTIFICATION

PRODUCT CODE: AC-F887C-MC
PRODUCT NAME: CADRECA DR11M,DRILL MODULE
PRODUCT DATE: APRIL 1979
MAINTAINER: DEC/X11 SUPPORT GROUP

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1.0 ABSTRACT

THIS MODULE IS DESIGNED TO EXERCISE THE DRILL (TWO WORD INPUT INTERFACE TO THE PDP-11 UNIBUS) AND/OR THE DRILL (TWO WORD OUTPUT INTERFACE TO THE PDP-11 UNIBUS). IT EXERCISES THE DRILL ALONE BY HAVING THE DRILL INTERRUPT THE CPU. IT EXERCISES THE DRILL ALONE BY HAVING THE DRILL INTERRUPT THE CPU AND BY WRITE/READING THE DRILL'S DR. IF THE DRILL AND DRILL OPTIONS ARE CABLED TOGETHER FOR TEST, IT EXERCISES THEM BOTH BY HAVING THE DRILL INTERRUPT FOR DATA. THE DRILL TRANSFERS DATA TO THE DRILL AND THE DRILL INTERRUPTS THE CPU WITH THE DATA.

ALL DEVICE ADDRESSES AND VECTORS MUST BE CONSECUTIVE WITHIN THE DRILL OR DRILL GROUP.

DEFINITIONS

MODULE: A MODULE IS A SUB-PROGRAM DESIGNED TO BE CONFIGURED WITH THE DEC/X11 MONITOR IN ORDER TO TEST A PARTICULAR DEVICE.

WORD: A WORD IS A SUB-SECTION OF LOGIC OF EITHER THE DRILL OR DRILL. EACH WORD COULD BE CONSIDERED A SEPARATE DEVICE SINCE IT HAS ITS OWN CSR AND DR.

2.0 REQUIREMENTS

HARDWARE:

1. DRILL OR DRILL- AN H8913 (MAINTENANCE LOOPBACK CONNECTOR) IS REQUIRED IN EACH WORD OF THE DEVICE TO BE TESTED.

AND/OR

2. DRILL AND DRILL-A 5008 CABLE (OR EQUIVALENT) IS REQUIRED FOR EACH WORD OF THE DEVICES TO BE TESTED.

STORAGE: DRP REQUIRES:

1. DECIMAL WORDS: 932
2. OCTAL WORDS: 1644
3. OCTAL BYTES: 3511

3.0 PASS DEFINITION

ONE PASS OF THIS MODULE CONSISTS OF 65,536 INTERRUPTS FROM EACH WORD UNDER TEST.

4.0 EXECUTION TIME

ONE PASS RUNNING ALONE ON A PDP-11/05 TAKES APPROXIMATELY ONE MINUTE.

5.0 CONFIGURATION REQUIREMENTS

DEFAULT PARAMETERS:

DEVcnt:1 (NUMBER OF WORDS TO BE EXERCISED)
DEVadr:0 (ADDRESS OF THE 1ST CSR OF THE 1ST DRILL)
ADDR2:1 (ADDRESS OF THE 1ST CSR OF THE 1ST DRILL)
SR1:4 (HOW DEVICES ARE SETUP TO BE TESTED)
VECT0R:1 (VECTOR ADDR. OF 1ST WORD OF 1ST DRILL)
VECT2:1 (VECTOR ADDR. OF 1ST WORD OF 1ST DRILL)

REQUIRED PARAMETERS:

TO RUN THIS MODULE, YOU MUST:

1. IF YOU ARE TESTING DRILL'S, YOU MUST SUPPLY THE MODULE WITH THE FIRST ADDRESS OF THE FIRST DRILL WORD TO BE TESTED. TO DO THIS AT CONFIGURATION TIME, YOU WOULD ENTER THAT ADDRESS IN "DEVADR". AT RUN TIME YOU WOULD MODIFY LOCATION "ADDR2" (APC 6).
2. IF YOU ARE TESTING DRILL'S, YOU MUST ALSO SUPPLY THE VECTOR ADDRESS OF THE FIRST DRILL WORD. THIS MAY BE DONE AT CONFIGURATION TIME OR RUN TIME BY SUPPLYING THE VECTOR ADDRESS TO "VECTOR" (APC 10).
3. AT CONFIGURATION TIME YOU MUST SUPPLY "DEVcnt" WITH THE TOTAL NUMBER OF WORDS, DRILL OR DRILL, YOU WISH TO EXERCISE. THIS MAY BE DONE AT RUN TIME BY MODIFYING LOCATION "EVIDI" (APC 14).
4. IF YOU ARE EXERCISING DRILL'S, AT RUN TIME YOU MUST MODIFY LOCATION "ADDR2" (APC 164) WITH THE FIRST ADDRESS OF THE FIRST DRILL WORD TO BE TESTED.
5. IF YOU ARE EXERCISING DRILL'S, AT RUN TIME YOU MUST MODIFY LOCATION "VECT2" (APC 166) WITH THE VECTOR ADDR. OF THE FIRST DRILL WORD.

6. NOW THE LAST THING YOU MUST MODIFY AT RUN TIME, IS SRI (APC 16). THE DEVICE REPRESENTATION BY SRI IS SIMILAR TO DVID1. EACH BIT IN SRI FROM BIT0 TO BIT15, REPRESENT THE FIRST DEVICE WORD THROUGH THE LAST DEVICE WORD. SRI TELLS THE PROGRAM WHETHER THE DEVICES SET FOR TEST ARE CABLED TO EACH OTHER, OR HAVE H8913 IN THEM.

EXAMPLE:

1. 4 DRILL'S, THE FIRST HAS ADDRESS 176000, VECTOR 300; NO DRILL'S.

DEVADR (ADDR) = 176000
VECTOR = 300
DEVGMT = 8 (2 WORDS PER DEVICE IMFS 4 DEVICES)
DVID1 = 000377
ADDR2 = 0
VECT2 = 0
SRI = 0

EACH DRILL WORD (J1, J2) WOULD HAVE AN H8913 INSTALLED. IF YOU HAD LESS THAN 5 H8913S, YOU WOULD INSTALL ALL THE H8913, AND SPECIFY WHICH WORDS HAD H8913 BY MODIFYING LOCATION "DVID1" TO INDICATE WHICH DRILL WORDS WERE TO BE TESTED.

2. 4 DRILL'S, THE FIRST ADDRESS 177000, VECTOR 400; NO DRILL'S.

VECTOR = 0
DEVGMT = 8
DVID1 = 000377
ADDR2 = 177000
VECT2 = 400
SRI = 0

3. 4 DRILL'S, THE FIRST ADDRESS 176000, VECTOR 300
4 DRILL'S, THE FIRST ADDRESS 177000, VECTOR 400
t H08 CABLES, 4 H8913S.

DEVADR (ADDR) = 176000
VECTOR = 300
DEVGMT = 8
DVID1 = 000377
ADDR2 = 177000
VECT2 = 400
SRI = 000077

SRI BITS 00-05 TO INDICATE TO THE FIRST 6 WORDS OF THE DRILL'S AND DRILL'S ARE CABLED TO EACH OTHER FOR TEST. SRI BITS 06 AND 07 = 0 JC INDICATE THAT THE LAST 2 WORDS (DRILL AND DRILL) HAVE H8913 INSTALLED

- A) MAKE CERTAIN THAT EACH WORD (SELECTED BY DVID1 THAT HAS A CORRESPONDING BIT IN SRI CLEARD) HAS AN H8913 INSTALLED IN IT.
- OR
- B) MAKE CERTAIN THAT EACH WORD (SELECTED BY DVID1 THAT HAS A CORRESPONDING BIT IN SRI SET) HAS A CABLE BETWEEN THE DR11M INPUT WORD AND THE DR11M OUTPUT WORD.

7.0 MODULE OPERATION

- A. ADDRESS EACH DRILL AND DR11M ADDRESS SELECTED FOR TEST. AT THIS TIME IF THE OPTIONS DON'T RETURN SLAVE-SYNC TO THE CPU, A "DEC/X11 SYS ERROR" WILL OCCUR.
- B. THE VECTOR ADDRESS ENTERED BY THE OPERATOR FOR EACH DEVICE WILL BE CHECKED. IF THE VECTOR ADDRESS IS LESS THAN 100, AN ERROR MESSAGE WILL BE TYPED (SEE NON-STANDARD PRINTOUTS) AND THE WORD PAIR WILL BE DESELECTED FOR THE REMAINDER OF THE MODULE RUN. IF THE VECTOR ADDRESS ENTERED BY THE OPERATOR DOESN'T AGREE WITH THE VECTOR ADDRESS READ IN THE DEVICES, CSR, AN ERROR WILL BE TYPED.
- C. IF THE INTERRUPT PRIORITY OF THE WORD IS 6 OR 7 A WARNING MESSAGE WILL BE TYPED (SEE 9 NON-STANDARD PRINTOUTS).
- D. EACH WORD OF EACH DEVICE WILL BE TESTED TO SEE IF IT WILL INTERRUPT. IF A WORD FAILS TO INTERRUPT, AN ERROR MESSAGE WILL BE TYPED AND THAT WORD (PAIR) WILL BE DESELECTED FOR THE REMAINDER OF THE MODULE RUN.
- E. (PESTET) IF ALL WORD (PAIRS) HAVE BEEN DESELECTED FROM TEST DUE TO ERRORS, THE DEC/X11 MODULE WILL DROPPED.
- F. POINT TO FIRST PATTERN.
- G. POINT TO FIRST WORD PAIR.
- H. IF NO DR11M OR DR11L TO BE TESTED, THEN STEP N. IF NO DR11M TO BE TESTED, THEN STEP N. IF SRI=0 THEN SET BIT 8 IN CSR TO CAUSE INTERRUPT, OTHERWISE REAL DR11L'S CLR. THIS WILL CAUSE DR11M TO INTERRUPT WHEN ITS INTR. ENABLE IS SET.
- I. SET DR11M'S VECTOR AND STATUS ADDRESSES.
- J. SET DR11M'S INTR. ENABLE.
- K. DEC/X11 EXIT. DR11M WILL INTR. TO I.
- L. CLEAR DR11M'S INTR. ENABLE.

- M. DEC/X11 PIRQ. WILL RETURN TO N.
- N. LOAD CURRENT PATTERN INTO DR11M'S DBR. IF SR1=1. THIS WILL CAUSE DR11L TO INTERRUPT WHEN ITS INTR. ENABLE SET. OTHERWISE IF SR1=0 SET DR11L'S CSR BIT 8=10.
- O. IF NOT TESTING A DR11L, GOTO STEP T.
- P. SET DR11L'S INTR. ENABLE.
- Q. DEC/X11 EXIT. DR11L WILL INTR. TO R.
- R. CLEAR DR11L'S INTR. ENABLE.
- S. DECX11 PIRQ. THE PROGRAM WILL RETURN TO J.
- T. IF TESTED A WORD PAIR, READ DR11L'S DBR, OTHERWISE IF TESTING A LONE DP11M, READ DR11M'S DBR.
- U. COMPARE CONTENTS TO THAT OF DATA SENT TO DR11M. IF NO ERROR STEP W.
- V. DEC/X11 DATERR.
- W. POINT TO NEXT WORD PAIR TO BE TESTED IF NO MORE WORD PAIRS THEN STEP X OTHERWISE STEP M.
- X. UPDATE PATTERN POINTER IF NOT DONE ALL PATTERNS THEN GO TO STEP G.
- Y. IF NOT DONE ENOUGH ITERATIONS GO TO STEP F, ELSE DEC/X11 END PAS.

5.0 OPERATION OPTIONS

DEVADR: THE ADDRESS OF THE CSR OF THE FIRST WORD OF THE DRILL UNDER TEST. IF RUNNING MULTIPLE DRILL'S, THEIR ADDRESSES MUST BE CONSECUTIVE. IF NO DRILL'S ARE TO BE TESTED, THIS LOCATION MUST BE ZEROED.
NOTE: SEE 5.0 CONFIGURATION REQUIREMENTS.

DEVAD2: THE ADDRESS OF THE CSR OF THE FIRST WORD OF THE FIRST DRILL UNDER TEST. IF RUNNING MULTIPLE DRILL'S THEIR ADDRESSES MUST BE CONSECUTIVE. IF NO DRILL'S ARE TO BE TESTED, THIS LOCATION MUST BE ZEROED.

NOTE: SEE SECTION 5.0 CONFIGURATION REQUIREMENTS.

DEVCT: AT CONFIGURATION TIME, YOU SUPPLY THIS LOCATION WITH THE NUMBER OF WORDS (MAX=16, TWO WORDS PER DEVICE) THAT YOU WISH TO EXERCISE. THIS COUNT IN OCTAL REPRESENTS BOTH DRILL'S AND DRILL'S. IMPORTANT: IF YOU ARE EXERCISING BOTH DRILL'S AND DRILL'S, YOU MUST PREPARE AN EQUAL NUMBER FOR TEST. IF YOU CANNOT MEET THIS REQUIREMENT, YOU MAY CONFIGURE THIS MODULE FOR THE REMAINING UNEQUAL NUMBER. FOR EXAMPLE; IF YOU HAD 2 DRILL'S AND 3 DRILL'S, YOU WOULD CONFIGURE ONE MODULE TO EXERCISE 2 DRILL'S AND 2 DRILL'S, AND A SECOND MODULE TO EXERCISE ONE DRILL.

THE CONFIGURATOR WILL TAKE THE NUMBER YOU SUPPLIED AND FILL IN A LOCATION WITHIN THE MODULE CALLED "DVID1". EACH BIT OF THE WORD DVID1 (FROM BIT0 TO BIT15) REPRESENT A WORD TO BE TESTED (FROM WORD 1 OF 1ST DEVICE TO 1 OF 2 OF THE NTH (1 TO 8) DEVICE). TO DELETE ANY OR (BOTH DRILL AND DRILL) FROM TEST, ZERO THE CORRESPONDING BIT IN DVID1.

SRI: SRI IS USED BY THE MODULE TO DETERMINE WHETHER YOU ARE TESTING THE DEVICES ALONE (USING AN H8913) OR WHETHER YOU HAVE THEM CABLED. EACH BIT OF SRI (FROM BIT0 TO BIT15) REPRESENT A WORD TO BE TESTED (FROM WORD 1 OF FIRST DEVICE (PAIR) TO WORD 1 OR 2 OF THE NTH (1 TO 8) DEVICE (PAIR)).

IF AN SRI BIT (BIT0 TO BIT15) IS ZERO, AND THE CORRESPONDING BIT IN DVID1 IS SET, THE PROGRAM WILL ASSUME YOU WISH TO EXERCISE THE CORRESPONDING WORD OF THE DRILL AND/OR DRILL WITH AN H8913 INSTALLED.

IF AN SRI BIT (BIT0 TO BIT15) IS SET (=1) AND THE CORRESPONDING BIT IN DVID1 IS SET, THE PROGRAM WILL ASSUME YOU WISH TO EXERCISE THE CORRESPONDING WORDS OF THE DRILL AND DRILL TOGETHER, AS THEY ARE CABLED.

9.0 NON-STANDARD PRINTOUTS

- A. MOST PRINTOUTS HAVE THE STANDARD FORMATS DESCRIBED IN THE DEC/X11 DOCUMENT.
- B. IF A VECTOR ADDRESS IS LESS THAN 100, THE MODULE WILL NOT EXERCISE THE MODULE. IT WILL DROP THE OPTIONS WORD FROM TEST AND TYPE THIS MESSAGE:
"DF11(L OR M) ADDR: XXXXX VECTOR ADDRESS LESS THAN 100
RESET VECTOR SWITCHES ON DF11 (L OR M)."
- C. IF THE PRIORITY OF A DF11 (L OR M) WORD IS EITHER 6 OR 7 A WARNING MESSAGE WILL BE TYPED:
"DF11 (L OR M) PRIORITY OF 6 OR 7 MAY INTERFERE WITH ERROR
FREE EXECUTION OF OTHER MODULES."
- D. IF A WORD OR WORD PAIR (DF11L AND/OR DF11M) IS DROPPED FROM TEST:
"DEFORING DF11(L OR M) DROPPED FROM TEST".
- E. IF ALL WORDS HAVE BEEN DROPPED FROM TEST, THE FOLLOWING MESSAGE WILL BE TYPED:
"DREA? NO MORE WORDS TO EXERCISE".
FOLLOW BY A DEC/X11 "END" (OR DROPPED) MESSAGE.


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375
376 000000 IOMOD <DREC >,1,1,4,4,,0,72
377 000000 MODULE 140000,DREC ,1,1,4,4,,0,72
378 ,TITLE DRFC DEC/X11 SYSTEM EXERCISER MODULE
379 ; DDXCOM VERSION 6 23-MAY-78
380 ,LIST RTN
381 ;*****
382 000000 BEGIN
383 000000 051104 041505 0400 MODNAM: ,ASCII /DREC / ;MODULE NAME.
384 000005 0000 XFLAG: ,BYTE OPEN ;USED TO KEEP TRACK OF WBUFF USAGE
385 000006 000001 ADDR: 1+0 ;1ST DEVICE ADDR.
386 000010 000001 VECTOR: 1+0 ;1ST DEVICE VECTOR.
387 000012 2000 BR1: ,BYTE PRTY4+0 ;1ST BR LEVEL.
388 000013 2000 BR2: ,BYTE PRTY4+0 ;2ND BR LEVEL.
389 000014 000001 DVID1: +1 ;DEVICE INDICATOR 1.
390 000016 000000 SR1: OPEN ;SWITCH REGISTER 1
391 000020 000000 SR2: OPEN ;SWITCH REGISTER 2
392 000022 000000 SR3: OPEN ;SWITCH REGISTER 3
393 000024 000000 SR4: OPEN ;SWITCH REGISTER 4
394 ;*****
395 000026 140000 STAT: 140000 ;STATUS WORD.
396 000030 000274 INJT: START ;MODULE START ADDR.
397 000032 000224 SPOINT: MODSP ;MODULE STACK POINTER.
398 000034 000000 PASCNT: 0 ;PASS COUNTER.
399 000036 000000 ICONT: 0 ;# OF ITERATIONS PER PASS=0
400 000040 000000 ICONF: 0 ;LOC TO COUNT ITERATIONS
401 000042 000000 SOFCNT: 0 ;LOC TO SAVE TOTAL SOFT ERRORS
402 000044 000000 HRDCNT: 0 ;LOC TO SAVE TOTAL HARD ERRORS
403 000046 000000 SOFPAS: 0 ;LOC TO SAVE SOFT ERRORS PER PASS
404 000050 000000 HRDPAS: 0 ;LOC TO SAVE HARD ERRORS PER PASS
405 000052 000000 SYSCNT: 0 ;# OF SYS ERRORS ACCUMULATED
406 000054 000000 RANUM: 0 ;HOLDS RANDOM # WHEN RAND MACRO IS CALLED
407 000056 000000 CONFIG: ;RESERVED FOR MONITOR USE
408 000058 000000 RES1: 0 ;RESERVED FOR MONITOR USE
409 000060 000000 RES2: 0 ;RESERVED FOR MONITOR USE
410 000062 000000 SVK0: OPEN ;LOC TO SAVE R0.
411 000064 000000 SVR1: OPEN ;LOC TO SAVE R1.
412 000066 000000 SVF2: OPEN ;LOC TO SAVE R2.
413 000070 000000 SVP3: OPEN ;LOC TO SAVE R3.
414 000072 000000 SVR4: OPEN ;LOC TO SAVE R4.
415 000074 000000 SVF5: OPEN ;LOC TO SAVE R5.
416 000076 000000 SVR6: OPEN ;LOC TO SAVE R6.
417 000100 000000 CSRA: OPEN ;ADDR OF CURRENT CSM.
418 000102 000000 SBADR: ;ADDR OF GOOD DATA, OR
419 000104 000000 ACSR: OPEN ;CONTENTS OF CSR.
420 000106 000000 WASADR: ;ADDR OF BAD DATA, OR
421 000108 000000 ASTAT: OPEN ;STATUS REG CONTENTS.
422 000110 000000 ERR1YP: ;TYPE OF ERROR
423 000112 000000 ASE: OPEN ;EXPECTED DATA.
424 000114 000000 AWAS: OPEN ;ACTUAL DATA.
425 000116 002044 RSTRT: RSTRT ;RESTART ADDRESS AFTER END OF PASS
426 000118 000000 WDT0: OPEN ;WORDS TO MEMORY PER ITERATION
427 000120 000000 WDFR: OPEN ;WORDS FROM MEMORY PER ITERATION
428 000122 000000 INTR: OPEN ;# OF INTERRUPTS PER ITERATION
429 000124 000072 IDNUM: 72 ;MODULE IDENTIFICATION NUMBER=72
430 ,REPT SPSIZ ;MODULE STACK STARTS HERE.

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431 ,NLIST
432 ,WORD 0
433 ,LIST
434 ,ENDR
435 000224 MODSP:
436 ;*****

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437 ;USER REQUIRED INFORMATION
438 000224* 000001 ADDR2: 1 ;USER ENTERED ADDRESS OF 1ST CSR OF FIRST WORD
439 ;OF FIRST DR11M (IF ANY) ENTERED FOR TEST,
440 000226* 000001 VECT2: 1 ;USER ENTERED VECTOR ADDRESS OF FIRST WORD OF
441 ;FIRST DR11M (IF ANY) ENTERED FOR TEST,
442
443 ;MODULE REQUIRED REGISTERS - SET UP BY THIS MODULE.
444
445 000230* 000000 DRLADR: OPEN ;ADDRESS OF CURRENT DR11L UNDER TEST
446 000232* 000000 DR1ADR: OPEN
447 000234* 000000 DR2ADR: OPEN
448 000236* 000000 DRMDBR: OPEN ;ADDRESS OF CURRENT DR11M UNDER TEST
449 000240* 000000 DVIDL: OPEN ;POINTS TO DR11LS TO BE EXERCISED
450 000242* 000000 DVIDM: OPEN ;POINTS TO DR11MS TO BE EXERCISED,
451 000244* 000000 SRL: OPEN ;POINTS TO DR11LS WITH H8913 INSTALLED,
452 000246* 000000 SRM: OPEN ;POINTS TO DR11MS WITH H8913 INSTALLED,
453 000250* 000000 SRB: OPEN ;POINTS TO DR11L AND DR11M CABLED PAIR,
454 000252* 000000 DRVCT: OPEN ;GETS LOADED FROM VECTOR OR VECT2 OF DEVICE UNDER TEST,
455 000254* 000000 VCTCAL: OPEN ;SAME AS DRVCT ONLY CALCULATED FROM DEVICE CSR,
456 000256* 000000 PRIOR: OPEN ;PRIORITY OF DEVICE AS CALCULATED FROM DEVICE CSR,
457 000260* 000000 POINT: OPEN ;POINTER TO CURRENT DEVICE UNDER TEST,
458 000262* 000000 ITCNT: OPEN ;CONTAINS LOOP COUNT
459 000264* 140700 ITSET: 140700 ;CONTAINS NUMBER TO SET ITCNT TO
460 ;IN ORDER TO GET 1 MIN. OF RUN TIME,
461 ;RESTRT MAY VARY THIS NUMBER IF RUNNING
462 ;MULTIPLE DEVICES IN ORDER TO SHORTEN RUN TIME,
463 000266* 000000 IFLAG: OPEN ;FLAG USED TO INDICATE IF AN
464 ;INTERRUPTED OCCURED 0=NO,1=YES,
465 000270* 000000 WARN: OPEN ;FLAG USED TO TYPE A WARNING MESSAGE IF = 0,
466 000272* 000000 PATPNT: OPEN ;POINTS TO CURRENT PATTERN,
467
468 ;
469 ;THIS SECTION WILL TAKE ALL THE INFORMATION AS
470 ;ENTERED BY THE USER AND MAKE CORRESPONDING
471 ;SOFTWARE FLAGS.
472
473 ;
474
475 000274* 016701 177514 START: MOV DVID1,R1 ;DEV COUNT TO R1
476 000300* 006201 1S: ASR R1 ;SHIFT IN A BIT
477 000302* 103402 RCS 28 ;IF A BIT IN THIS POS=SHIFT
478 000304* 001413 BEQ 36 ;IF NO DEVS LEFT = BRANCH
479 000306* 000774 HP 18
480 000310* 062767 000003 177602 28: ADD #3,INTR ;3 MORE INTERRUPTS
481 000316* 062767 000003 177570 ADD #3,WDT0 ;3 MORE WORDS TO MEM
482 000324* 062767 000003 177564 ADD #3,WDFR ;3 MORE WORDS FROM MEM
483 000332* 000762 BR 16 ;GO CHECK SOME MORE
484 000334* 005767 177446 36: TST ADDR ;ANY DR11L ADDR. ENTERED?
485 000340* 100405 RMI ST2 ;YES =WE CAN PROCEED,
486
487 000342* 005767 177656 TST ADDR2 ;NO L'S BUT IS ANY DR11M ADDR. ENTERED?
488 000346* 100402 BMI ST2 ;YES=PROCEED,
489
490 000350* 000167 001712 JMP DPOP ;NO=NO DR11L OR DR11M=LEIS DROP THIS MODULE,
491
492 000354* ST2:

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493 000354* 005767 177426 TST ADDR ;ANY DR11L ADDRESS ENTERED?
494 000360* 100011 BPL 1S ;NO - SKIP NEXT CODE UNTIL 1S,
495
496 000362* 016767 177426 177654 MOV DVID1,SRL ;YES SET UP DR11L FLAGS,
497 000370* 046767 177422 177646 BIC SP1,SRL ;MAKE DR11L W/H8913 FLAG,
498 000376* 016767 177412 177634 MOV DVID1,DVIDL ;KEEP TRACK OF DR11LS SELECTED,
499
500 000404* 005767 177614 1S: TST ADDR2 ;ANY DR11M ADDRESSES ENTERED?
501 000410* 100011 BPL 2S ;NO - SKIP NEXT CODE UNTIL 2S,
502
503 000412* 016767 177376 177626 MOV DVID1,SRM ;YES SET UP DR11M FLAGS,
504 000420* 046767 177372 177620 BIC SP1,SRM ;MAKE DR11M W/H8913 FLAG,
505 000426* 016767 177362 177606 MOV DVID1,DVIDM ;KEEP TRACK OF DR11MS SELECTED,
506
507 000434* 016767 177354 177606 26: MOV DVID1,SRB ;NOW MAKE A FLAG TO
508 000442* 046767 177576 177600 BIC SRL,SRB ;SHOW HOW MANY DR11LS ARE
509 000450* 046767 177572 177572 BIC SRM,SRB ;CONNECTED TO DR11MS
510
511 ;
512 ;THIS SECTION OF CODE WILL ADDRESS ALL DR11LS
513 ;SELECTED FOR TEST, IF ANY DR11LS FAIL TO RETURN
514 ;SLAVE=SYNC TO THE CPU, A "SYS ERR" WILL OCCUR
515 ;
516 000456* 012767 000001 177574 CKADR: MOV #1,POINT ;SET UP POINTER,
517 000464* 016767 177316 177536 MOV ADDR,DRLADR ;POINT TO FIRST DR11L ADDRESS,
518 000472* 036767 177562 177540 1S: BIT POINT,DVIDL ;ANY DR11L SELECTED?
519 000500* 001402 BEQ 2S ;NO - GOTO 2S,
520
521 000502* 005777 177522 TST DRLADR ;YES - ADDRESS THE DR11L,
522
523 000506* 062767 000004 177514 2S: ADD #4,DRLADR ;UPDATE TO LOOK AT NEXT DR11L ADDR,
524 000514* 006367 177540 ASL POINT ;POINT TO NEXT DEVICE,
525 000520* 103364 BCC 1S ;LOOP IF NOT LOOKED AT ALL POSSIBLE DR11LS,
526
527 ;
528 ;THIS SECTION WILL ADDRESS ALL DR11MS SELECTED
529 ;FOR TEST, IF ANY DR11MS FAIL TO RETURN
530 ;SLAVE=SYNC TO THE CPU, A "SYS ERR" WILL OCCUR,
531 ;
532
533 000522* 012767 000001 177530 MOV #1,POINT ;SET UP POINTER,
534 000530* 016767 177470 177476 MOV ADDR2,DRMADR ;POINT TO FIRST DR11M ADDR,
535
536 000536* 036767 177516 177476 3S: BIT POINT,DVIDM ;ANY DR11M SELECTED?
537 000544* 001402 BEQ 4S ;NO - GOTO 4S,
538
539 000546* 005777 177462 TST DRMADR ;YES - ADDRESS THE DR11M,
540
541 000552* 062767 000004 177454 4S: ADD #4,DRMADR ;UPDATE TO LOOK AT NEXT DR11M ADDR,
542 000560* 006367 177474 ASL POINT ;POINT TO NEXT DEVICE,
543 000564* 103364 BCC 3S ;LOOP IF NOT LOOKED AT ALL POSSIBLE DR11MS,
544
545 ;
546 ;THIS SECTION OF CODE WILL COMPARE THE VECTOR ADDRESS
547 ;ENTERED BY THE OPERATOR AGAINST THE VECTOR ADDRESS
548 ;CALCULATED BY THE PROGRAM FOR THE DR11L BY READING

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549 ;ITS CSR
550 ;
551 ;
552 000566* 012767 000001 177464 CKV1A: MOV #1,POINT ;SET UP POINTNR,
553 000574* 016767 177206 177426 MOV ADDR,DR1LADR ;SET UP FIRST DR11L ADDRESS,
554 000602* 016767 177202 177442 MOV VECT0R,DRVCT ;SET UP FIRST DR11L VECTOR ADDR, AS
555 ; ENTERED BY USER,
556 000610* 005067 177454 CLR WARN ;INDICATE THAT NO WARNING MESSAGE,
557 ; HAS BEEN TYPED,
558 ;
559 000614* 036767 177440 177416 16: BIT POINT,DVIDL ;ANY DR11L SELECTED?
560 000622* 001474 BFQ 48 ;NO GOTO 48,
561 000624* 016767 177400 177246 MOV DR1LADR,CSRA ;SET DR11L ADDR, FOR EXPOR TYPEOUT (IF ANY),
562 ;
563 000632* 026727 177414 000100 CMP DRVCT,*100 ;IS VECTOR ADDR, > 100?
564 000640* 002020 BGE 76 ;IS YES GOTO 26,
565 ;
566 000642* 012767 000015 177236 MOV #15,ERRTYP ;WRONG VEC ADDR,
567 ;*****
568 000650* 104405 000000* 000000 HRDERS,BEGIN,NULL ;DR11L VECTOR LESS THAN 100
569 ;*****
570 ;
571 ;NOTE IF ANY VECTOR WERE ALLOWED
572 ;TO BE LESS THAN 100, IT COULD
573 ;INTERFERE WITH SOFTWARE TRAP CALLS, ETC,
574 000656* 005067 177356 CLR DVIDL ;DROP ALL SOFTWARE
575 000662* 005067 177356 CIP SRL ;FLAGS THAT POINT TO ANY DR11LS,
576 000666* 005067 177356 CLR SPR ;
577 000672* 104403 000000* 003154* MSGNS,BEGIN,MS4P ;ASCII MESSAGE CALL WITH COMMON HEADER
578 000700* 000456 BR 55 ;EXIT THIS TEST
579 000702* 016767 177322 177170 28: MOV DFLADR,CSRA ;SET DR11L ADDR, FOR TYPEOUT (IF ANY),
580 000710* 004767 002010 JSR PC,GETVP ;GO GET VECTOR + PRIORITY FROM DR11L CSR
581 ;
582 000714* 026767 177332 177332 CMP DRVCT,VCTCAL ;DOES THE USER ENTERED VECTOR ADDRESS AGREE
583 ;WITH THE ADDRESS READ FROM THE CSR?
584 000722* 001420 BEQ 36 ;BR IF YES TO 36,
585 ;
586 ;*****
587 000724* 104405 000000* 000000 HRDERS,BEGIN,NULL ;ENTERED VEC ADDR NOT SAME AS ONE IN CSR,
588 ;*****
589 ;
590 000732* 046767 177322 177300 BIC POINT,DVIDL ;DROP ALL SOFTWARE
591 000740* 046767 177314 177276 BIC POINT,SRL ;FLAGS THAT POINT TO
592 000746* 046767 177306 177274 BIC POINT,SPR ;ANY DR11LS
593 000754* 104403 000000* 003154* MSGNS,BEGIN,MS4P ;ASCII MESSAGE CALL WITH COMMON HEADER
594 000762* 000414 BR 46 ;GOTO 46
595 ;
596 000764* 005767 177300 35: TST WARN ;HAS ANY WARNING MESSAGE BEEN TYPED OUT?
597 000770* 001011 BNE 46 ;YES - GOTO 46
598 ;
599 000772* 026727 177260 000005 CMP PRIOR,*5 ;NO, IS THE PRIORITY OF THIS DEVICE > 5?
600 001000* 003405 BLE 46 ;NO GOTO 46
601 ;YES,
602 001002* 104403 000000* 003144* MSGNS,BEGIN,MS2P ;ASCII MESSAGE CALL WITH COMMON HEADER
603 ;TEXT: WARNING! DR11L/M PRIORITY IS
604 ;GREATER THEN 5, THIS MAY INTERFERE WITH

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605 ;ERROR EXECUTION OF OTHER DEC/X11 MODULES,
606 001010* 005267 177254 INC WARN ;RECORD HAVING TYPED OUT THE WARNING MESSAGE,
607 ;
608 001014* 026767 000004 177206 45: ADD #4,DR1LADR ;UPDATE TO POINT TO NEXT DR11L ADDR,
609 001022* 026767 000004 177222 ADD #4,DRVCT ;LOOK AT NEXT VECTOR,
610 001030* 006367 177224 ASL POINT ;POINT TO NEXT DR11L,
611 001034* 103267 BCC 16 ;IF WE HAVEN'T LOOK AT ALL, LOOP,
612 ;
613 001036* 55: ;
614 ;
615 ;THIS SECTION OF CODE WILL COMPARE THE VECTOR ADDRESS
616 ;ENTERED BY THE OPERATOR AGAINST THE VECTOR ADDRESS
617 ;CALCULATED BY THE PROGRAM FOR THE DR11L BY READING ITS CSR
618 ;
619 ;
620 001036* 012767 000001 177214 MOV #1,POINT ;SET UP POINTNR,
621 001044* 016767 177154 177162 MOV ADDR,DRMADR ;SET UP FOR FIRST DR11M ADDRESS,
622 001052* 016767 177150 177172 MOV VECT2,DRVCT ;SET UP FIRST DR11M VECTOR ADDR, AS
623 ; ENTERED BY USER,
624 ;
625 001060* 036767 177174 177154 68: BIT POINT,DVIDM ;ANY DR11M SELECTED?
626 001066* 001477 BFQ 88 ;NO - GOTO 88,
627 ;
628 001070* 016767 177140 177002 MOV DRMADR,CSRA ;SET DR11M ADDR, FOR TYPEOUT (IF ANY),
629 001076* 026727 177150 000100 CMP DRVCT,*100 ;IS VECTOR ADDR, > 100?
630 001100* 002020 BGE 76 ;IF YES GOTO 76,
631 ;NO,
632 ;
633 001106* 012767 000015 176772 MOV #15,ERRTYP ;WRONG VEC ADDR
634 ;*****
635 001114* 104405 000000* 000000 HRDERS,BEGIN,NULL ;DR11M VECTOR LESS THAN 100
636 ;*****
637 ;NOTE: IF ANY VECTOR WERE ALLOWED TO BE LESS
638 ; THAN 100, IT COULD INTERFERE WITH
639 ; SOFTWARE TRAP CALL, ETC,
640 ;
641 001122* 005067 177114 CLR DVIDM ;CLEAR ALL SOFTWARE FLAGS THAT
642 001126* 005067 177114 CLR SRM ;POINT TO ANY DR11MS,
643 001132* 005067 177112 CLR SPR ;
644 001136* 104403 000000* 003154* MSGNS,BEGIN,MS4P ;ASCII MESSAGE CALL WITH COMMON HEADER
645 001144* 000461 BR ;GOTO IDPRINT,
646 ;
647 001146* 016767 177062 176724 78: MOV DRMADR,CSRA ;SET DR11M ADDR, FOR TYPEOUT (IF ANY),
648 001154* 004767 001544 JSR PC,GETVP ;GO GET THE VECTOR + PRIORITY FROM DR11M CSR,
649 ;
650 001160* 026767 177066 177066 CMP DRVCT,VCTCAL ;DOES THE USER ENTERED VECTOR ADDRESS AGREE
651 ;WITH THE ADDRESS READ FROM THE CSR?
652 001166* 001423 BEQ 716 ;BR IF YES TO 716,
653 ;
654 001170* 012767 000015 176710 MOV #15,ERRTYP ;WRONG VEC ADDR,
655 ;*****
656 001176* 104405 000000* 000000 HRDERS,BEGIN,NULL ;USER ENTERED VECTOR ADDRESS NOT SAME AS ON READ IN CSR
657 ;*****
658 ;
659 001204* 046767 177030 177030 BIC POINT,DVIDM ;DROP ALL SOFTWARE
660 001212* 046767 177042 177026 BIC POINT,SRM ;FLAGS THAT POINT TO

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773 001712* 001402          REG 918          ;NO-THRY REPORT AN ERROR.
774 001714* 104400 000000*  EXITS,BEGIN          ;EXIT TO MONITOR, MODULE WAIT FOR INTERRUPT.
775                                     ;CONTINUE AT THE POINT AFTER
776                                     ;THE INTERRUPT SERVICE ROUTINE.
777
778 001720* 017767 176310 176154 918:  MOV  @RRMADR,ACSR  ;SAVE CONTENTS OF CSR FOR TYPEOUT.
779 001726* 042777 000500 176300  BIC  #R1T06,R1T06,@DRMADR  ;HERE
780 001734* 012767 000023 176144  MOV  #23,RPRTYP  ;NO INTERRUPT OCCURRED
781                                     ;*****
782 001742* 104405 000000* 000000  HDDEHS,BEGIN,NULL  ;;DR11M FAILED TO INTERRUPT
783                                     ;*****
784
785 001750* 046767 176304 176264  BIC  POINT,DVIDM  ;DROP THIS DR11M FROM ALL SOFTWARES
786 001756* 046767 176276 176262  BIC  POINT,SRM    ;FLAGS.
787 001764* 046767 176270 176256  BIC  POINT,SRB
788 001772* 104403 000000* 003154* MSGNS,REGIN,MS4P  ;ASCII MESSAGE CALL WITH COMMON HEADER
789 002000* 000410  ER 118  ;GOTO 118.
790
791 002002* 042777 000500 176224 108:  BIC  #R1T06,R1T06,@DRMADR  ;DEVICE INTR. CLEAR INTP ENABLE.
792 002010* 005267 176252  INC  IFLAG  ;INDICATE DR11M INTERRUPTED.
793                                     ;-----
794 002014* 000004 000000* 002022*  PTRQS,BEGIN,118  ; QUEUE UP TO CONTINUE AT 118 AND RTI
795                                     ;-----
796
797 002022* 062767 000004 176204 118:  ADD  #4,DRMADR  ;ADD TO ADDRESS BASE TO
798 002030* 062767 000004 176174  ADD  #4,DPLDPR  ;LOOK AT NEXT ADDRESS RANGE.
799 002036* 006367 176216  ASL  POINT  ;SET POINTER TO NEXT.
800 002042* 103265  BCC  78  ;IF NOT DONE ALL, LOOP.
801
802                                     ;
803                                     ;INTERUPT + DATA CHECKING SECTION
804                                     ;REENTRY POINT AFTER "END PASS".
805
806 002044* 016767 176214 176210  PESTPT: MOV  ITSET,ITCNT  ;PRESET ITERATION COUNT.
807
808                                     ;
809                                     ;THIS SECTION OF CODE WILL FIX ITCNT SO THAT IF RUNNING
810                                     ;MULTIPLE DEVICES, IT SHOULD ONLY TAKE THIS MODULE 1 MIN. PER PASS.
811                                     ;
812
813 002052* 005001  CLR  R1  ;COUNT DEVICES IN R1.
814 002054* 012767 000001 176176  MOV  #1,POINT  ;FIX POINTNR.
815 002062* 036767 176172 176154 18:  RIT  POINT,SRJ  ;ANY DR11L'S AT THIS POINT?
816 002070* 001014  BNE  38  ;YES THEN COUNT IT.
817 002072* 036767 176162 176146  BIT  POINT, SRM  ;ANY DR11M'S AT THIS POINT?
818 002100* 001010  BNE  38  ;YES THEN COUNT IT.
819 002102* 036767 176152 176140  RIT  POINT,SRB  ;ANY PAIR AT THIS POINT?
820 002110* 001004  BNE  38  ;YES THEN COUNT IT
821
822 002112* 006367 176142 28:  ASL  POINT  ;FIX POINT TO LOOK AT NEXT SET.
823 002116* 001361  BNE  18  ;IF NOT LOCKED AT ALL POINTS,LOOP,ELSE EXIT.
824 002120* 000402  BR 46  ;EXIT IF ALL POINTS TESTED.
825
826 002122* 005201 38:  INC  R1  ;COUNT THIS DEVICE
827 002124* 000772  BR 76
828

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829 002126* 162701 000002 48:  SUB  #2,P1  ;ITCNT ALREADY SET FOR FIRST 2 DEVICES.
830
831 002132* 162701 000002 56:  SUB  #2,P1  ;ANY MORE DEVICES?
832 002136* 100404  BMI  68  ;NO THEN EXIT RIGHT COUNT IN ITCNT.
833 002140* 062767 006000 176114  ADD  #6000,ITCNT  ;YES UPDATE ITCNT FOR LESS ITERATIONS.
834 002146* 000771  BR 58  ;LOOK FOR MORE.
835
836 002150* 005767 175662 68:  TST  ICNT  ;FIRST TIME THROUGH?
837 002154* 001003  BNE  78  ;NO BRANCH
838 002156* 016767 176100 175652  MOV  ITCNT,ICNT  ;YES - SET UP ICNT
839 002164* 112767 003042* 176100 76:  MOV  #FAILST,PATPNT  ;SET UP PATTERNA POINTER.
840
841 002172* 016767 175610 176030  LOOP:  MOV  ADDR,DRLADR  ;SET BASE ADDR. OF DR11L CSR.
842 002200* 016767 175602 176024  MOV  ADDR,DRLDBR  ;SET BASE ADDR OF DR11L DBR.
843 002206* 062767 000002 176016  ADD  #2,DRLDBR  ;EQUAL CSR+2.
844 002214* 016767 176004 176012  MOV  ADDR,DRMADR  ;SET BASE ADDR. OF DR11M CSR.
845 002222* 016767 175776 176006  MOV  ADDR,DRMDBR  ;SET BASE ADDR. OF DR11M DBR
846 002230* 062767 000002 176000  ADD  #2,DRMDBR  ;EQUAL CSR+2.
847 002236* 012767 000001 176014  MOV  #1,POINT  ;POINT TO FIRST DR11L AND/OR DR11M.
848
849 002244* 005767 175774  TST  SPL  ;ANY DR11LS LEFT TO TEST?
850 002250* 001013  BNE  MWORK  ;YES CONTINUE TESTING.
851 002252* 005767 175770  TST  SRM  ;NO - BUT ARE THE ANY DR11MS LEFT?
852 002256* 001010  BNE  MWORK  ;YES - GO WORK ON THEM.
853
854 002260* 005767 175764  TST  SPR  ;ANY CABLED TOGETHER?
855 002264* 001005  BNE  MWORK  ;YES-GO WORK ON THEM.
856
857
858 002266* DFOP:
859 002266* 104403 000100* 003150*  MSGNS,REGIN,MS3P  ;ASCII MESSAGE CALL WITH COMMON HEADER
860                                     ;TEXT: "DREA - NO MORE WORDS TO
861                                     ;EXERCISE".
862 002274* 104410 000000*  ENDS,RECI:
863                                     ;
864                                     ;DEC/X11 END CALL TO DROP THIS SOFTWARE
865                                     ;MODULE FROM CURRENT RUN.
866 002300* 036767 175754 175740  MWORK:  BIT  POINT,SRM  ;ANY SINGULAR DR11MS FOR TEST?
867 002300* 001404  BEQ  18  ;NO - GOTO 18.
868
869 002310* 052777 000400 175716  BIS  #R1T06,@DRMADR  ;YES, SET HIT06 IN CSR TO GENERATE AN INTR.
870 002316* 000406  BR 28  ;GOTO 28.
871
872 002320* 036767 175734 175722 18:  BIT  POINT,SRB  ;ANY DR11L CABLE TO DR11M AT THIS POINT?
873 002326* 001430  BEQ  LWORK  ;NO - GOTO "LWORK".
874
875 002330* 005777 175676  TST  @DPLDPR  ;YES - READ DR11LS DBR THIS WILL CAUSE
876                                     ;DR11M TO INTR, WHEN ITS INTR. ENABLE IS SET
877 002334* 016767 175674 175536 28:  MOV  DRMADR,CSRA  ;PUT CURRENT ADDR. IN CSRA FOR GETVP.
878
879 002342* 004767 000356  JSR  PC,GETVP  ;GET DR11M'S VECTOR ADDR.
880
881 002346* 012777 002366* 175700  MOV  #MSERV,@VCTCAL  ;SET UP VECTOR ADDR. INTR TO MSEKV.
882
883 002354* 052777 000100 175652  BIS  #R1T06,@DRMADR  ;SET INTERRUPT ENABLE.
884 002362* 104400 000000*  EXITS,REGIN  ;EXIT TO MONITOR, MODULE WAIT FOR INTERRUPT.

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885                                     ;SHOULD INTERRUPT TO MSERV.
886
887                                     ;DR11M INTERRUPTS TO HERE
888
889 002366* 042777 000500 175640 MSERV: BIC #BIT06|BIT08,0DRMADR ;CLEAR DEVICES INTR, ENABLE
890
891 002374* 000004 000000 002402* -----
892 PIRGS,BEGIN,LDEL ; QUEUE UP TO CONTINUE AT LDEL AND RTI
893 -----
894 002402* 017777 175664 175626 MDEL: MOV #PATPNT,0DRMDBR ;LOAD PATTERN INTO DBR OF DR11M.
895
896 002410* 036767 175644 175626 LWORK: BIT POINT,SR1 ;SINGULAR DR11L FOR TEST (W/H8913)?
897 002416* 001004 BNE 16 ;YES = GOTO 18.
898
899 002420* 036767 175634 175622 BIT POINT,SRB ;ANY DR11L/M PAIR AT THIS POINT?
900 002426* 001501 BFG LLOOPE ;NO = GOTO LOOP END.
901
902 002430* 016767 175574 175442 18: MOV DPLADR,CSRA ;PUT DR11L ADDR IN CSRA FOR GETVP.
903
904 002436* 004767 000262 JSR PC,GETVP ;GO GET DR11L'S VECTOR ADDRESS.
905
906 002442* 012777 002462* 175604 28: MOV #LSERV,0VCTCAL ;SET UP DR11L VECTOR TO INTR. TO LSERV.
907 002450* 052777 000500 175552 BIS #BIT06|BIT08,0DRLADR ;SET INTERRUPT ENABLE (06) AND BIT08.
908 ;08 NO EFFECT IF CABLED PAIR; HOWEVER WILL
909 ;CAUSE DR11L W/H8913 TO INTR.
910 002456* 104400 000000* EXIT8,BEGIN ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
911
912                                     ;DR11L INTR8. TO HERE
913
914 002462* 042777 000500 175540 LSERV: BIC #BIT06|BIT08,0DRLADR ;CLEAR INTR, ENABLE.
915
916 002470* 000004 000000 002476* -----
917 PIRGS,BEGIN,LDEL ; QUEUE UP TO CONTINUE AT LDEL AND RTI
918 -----
919 002476* 036767 175556 175544 LDFL: BIT POINT,SRB ;SERVICING DR11L/M PAIR?
920 002504* 001434 BEQ 28 ;NO = GOTO 28.
921 ;YES.
922 002506* 017767 175520 175374 MOV 0DRLDBR,AWAS ;READ DATA IN DR11L'S DBR.
923 002514* 016767 175512 175362 MOV DPLDBR,WASADR ;SET FOR ERROR TYPEOUT IF ANY.
924 002522* 016767 175544 175352 18: MOV PATPNT,SBADR ;FOR ERROR TYPEOUT = ADDR OF TEST DATA.
925 002530* 017767 175536 175350 MOV #PATPNT,ASR ;FOR ERROR TEST DATA.
926 002536* 026767 175344 175344 CMP ASR,AWAS ;DATA SENT = DATA RECEIVED?
927 002544* 001432 BFG LLOOPE ;YES = THEN LOOP END.
928 ;NO.
929
930
931 002546* 104404 000000* ;*****
932 DATE8,BEGIN ;DATA ERROR!!!
933 ;*****
934 ;NOTE: IF TESTING SINGULAR DR11M W/H8913,
935 ;DATA WAS WRITE/READ FROM DR11M'S DBR.
936 ;IF DR11L/M PAIR, DATA WAS WRITTEN
937 ;INTO DR11M'S DBR AND READ FROM DR11L'S DBR
938 ;CLEAR ANY FLAGS ASSOC. WITH DR11L
939 ;FOR DR11L/M PAIR
940 002552* 046767 175502 175470 BIC POINT,SRB
002560* 046767 175474 175460 RIC POINT,SRM
002566* 104403 000000 003154* MSGN8,BEGIN,MS4P ;ASCII MESSAGE CALL WITH COMMON HEADER
002574* 000416 BR LLOOPE ;GOTO LOOP END.

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941
942 002576* 036767 175456 175442 28: BIT POINT,SRM ;SINGULAR DR11M W/H8913?
943 002604* 001412 BEQ LLOOPE ;NO = JUST SINGULAR DR11L - GOTO LOOP END.
944
945 002606* 017767 175424 175274 MOV 0DRMDBR,AWAS ;YES READ DATA FROM DR11M'S DBR.
946 002614* 016767 175416 175262 MOV DPMDBR,WASADR ;SET FOR ERROR TYPEOUT (IF ANY).
947 002622* 016767 175406 175250 MOV 0DRMADR,CSRA ;RECORD ADDR. OF DR11M.
948
949 002630* 000734 BR 18 ;GO DO DATA CHECK.
950
951
952 ;
953 ;LOGIC LOOP END FOR SINGULAR OR PAIRED DEVICES.
954 ;
955 002632* 062767 000004 175370 LOGPE: ADD #4,DRLADR ;UPDATE ALL ADDRESS BASES
956 002640* 062767 000004 175364 ADD #4,DRLDBR ;TO LOOK AT NEXT
957 002646* 062767 000004 175360 ADD #4,DRMADR ;SINGULAR DR11L OR DR11M
958 002654* 062767 000004 175354 ADD #4,DRMDBR ;OR DR11L/M PAIR.
959 002662* 006367 175372 ASL POINT ;POINT TO NEXT GROUP.
960 002666* 103204 RCC MWORK ;IF NOT DONE ALL=LOOP.
961
962 002670* 062767 000002 175374 18: ADD #2,PATPNT ;UPDATE TO LOOK AT NEXT PATTERN.
963 002676* 026727 175370 003142* CMP PATPNT,#PATEND ;DOONE ALL PATTERNS?
964 002704* 001003 BNE 28 ;NO = GOTO 28.
965
966 002706* 012767 003042* 175356 MOV #PATLST,PATPNT ;YES = RESET PATTERN POINTER.
967
968 002714*
969 002714* 104413 000000* 28: ENDT8,BEGIN ;SIGNAL END OF ITERATION.
970 ;MONITOR SHALL TEST END OF PASS
971 002720* 000167 177246 JMP LOOP ;NO=LOOP WHOLE THING.
972
973
974 ;
975 ;"GETVP"
976 SUBROUTINE TO CALCULATE A VECTOR ADDRESS AND
977 PRIORITY OF A DR11L OR DR11M BASED ON INFORMATION
978 IN THE DEVICE'S CSR.
979 PRIORITY IS CALCULATED FROM CSR BITS 4 + 5
980 STATE OF BITS BIT4 PRIORITY
981 0 0 4
982 0 1 5
983 1 0 6
984 1 1 7
985 VECTOR ADDRESS IS FOUND IN CSR BITS 09-14, THEY
986 REPRESENT REAL ADDR, BITS 03-08
987
988 ;
989 ; TO CALL THIS ROUTINE:
990 MOV "ADDRESS",CSRA
991 JSR PC,GETVP
992
993 ;
994 ; RETURNS WITH:
995 ; VECTOR ADDRESS IN VCTCAL
996 ; PRIORITY IN PRIOR
997
998
999 002724* 017767 175150 175324 GETVP: MOV #CSRA,PRIOR ;GET CSR INFORMATION
002732* 042767 177717 175316 BIC #177717,PRIOR ;PRIORITY IN CSR BITS 4 AND 5
002740* 006267 175312 ASR PRIOR ;RIGHT JUSTIFY 4+5 INTO

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997 002744* 006267 175306 ASR PFIOR ;BIT POSITIONS 1 AND 0.
998 002750* 006267 175302 ASR PFIOR
999 002754* 006267 175276 ASR PFIOR ;DONE WITH PRIORITY.
1000 002760* 052767 000004 175270 BIS ;4,PRIOR
1001
1002 002766* 017767 175106 175260 MOV ACSRA,VCTCAL ;GET CSR INFORMATION AGAIN.
1003 002774* 042767 100777 175252 BIC #100777,VCTCAL ;STRIP FOR VECTOR INFORMATION IN BITS 9-14.
1004 003002* 000367 175246 SWAB VCTCAL ;CSR BITS 9 TO 14 REPRESENT REAL
1005 003006* 006367 175242 ASL VCTCAL ;VECTOR ADDRESS BITS 03 TO 08.
1006 003012* 006367 175236 ASL VCTCAL ;SO WE HAD TO PUT THEM IN THAT POSITION.
1007
1008 003016* 017746 175056 MOV ACSRA, -(SP) ;OK, NOW WE NEW BIT02 OF THE VECTOR ADDR.
1009 003022* 042716 177773 BIC #177773,(SP) ;THIS IS REPRESENTED BY CSR BIT02 SO WE
1010 003026* 052667 175222 BIS (SP)+,VCTCAL ;MUST ADD THAT TO THE VECTOR ADDR.
1011 003032* 017767 175042 175042 MOV ACSRA,ACSP ;RECORD STATUS OF CSR.
1012 003040* 000207 PTS PC ;EXIT, WORK ALL DONE.
1013
1014 ;
1015 ;THIS IS A LIST OF ALL PATTERNS USED BY THIS MODULE.
1016 ;IT USES A "FLOAT ZERO-COMPLEMENT" PATTERN.
1017 ;
1018 003042* 177777 000000 PATLST: .WORD =1,0
1019 003046* 177776 000002 .WORD =2,2
1020 003052* 177774 000004 .WORD =4,4
1021 003056* 177770 000010 .WORD =10,10
1022 003062* 177760 000020 .WORD =20,20
1023 003066* 177740 000040 .WORD =40,40
1024 003072* 177700 000100 .WORD =100,100
1025 003076* 177600 000200 .WORD =200,200
1026 003102* 177400 000400 .WORD =400,400
1027 003106* 177000 001000 .WORD =1000,1000
1028 003112* 176000 002000 .WORD =2000,2000
1029 003116* 174000 004000 .WORD =4000,4000
1030 003122* 170000 010000 .WORD =10000,10000
1031 003126* 160000 020000 .WORD =20000,20000
1032 003132* 140000 040000 .WORD =40000,40000
1033 003136* 100000 100000 .WORD =100000,100000
1034 003142* 000000 PATEND: .WORD 0

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1035
1036 ;
1037 ;ASCIZ MESSAGE POINTERS + MESSAGES
1038 ;
1039
1040 003144* 003160* 177777 MS2P: .WORD MES2,-1
1041 003150* 003345* 177777 MS3P: .WORD MES3,-1
1042 003154* 003424* 177777 MS4P: .WORD MES4,-1
1043
1044 003160* 053445 051101 044516 MES2: .ASCII '*WARNING! DR11/L/M PRIORITY IS GREATER THAN 5.'
1045 003166* 043516 020041 051104
1046 003174* 030461 027514 020115
1047 003202* 051120 047511 044522
1048 003210* 054524 044400 020123
1049 003216* 051107 040505 042524
1050 003224* 020122 044124 047101
1051 003232* 032440 056
1052 003235* 045 044124 051511 .ASCII '*THIS MAY INTERFERE WITH ERROR FREE EXECUTION OF OTHER DEC/X11 MODULES*'
1053 003242* 046440 054501 044440
1054 003250* 052116 051105 042506
1055 003256* 042522 053440 052111
1056 003264* 020110 051105 047522
1057 003272* 020122 051106 042505
1058 003300* 042440 042530 052503
1059 003306* 044524 047117 047440
1060 003314* 020106 052117 042510
1061 003322* 020122 042504 027503
1062 003330* 030530 020061 047515
1063 003336* 052504 042514 022523
1064 003344* 000
1065
1066 003345* 045 051104 040505 MES3: .ASCII '*DPEA -NO MORE WORDS (DR11/L OR *) TO EXERCISE*'
1067 003352* 026411 047516 046440
1068 003360* 051117 020105 047527
1069 003366* 042122 020123 042050
1070 003374* 030522 046061 047440
1071 003402* 020122 024515 052040
1072 003410* 020117 054105 051105
1073 003416* 044503 042523 000045
1074
1075 003424* 042045 042522 004501 MFS4: .ASCII '*DREA -ERRHURING DR11(L OR M) WORD DROPPED FROM TEST*'
1076 003432* 042455 051122 051117
1077 003440* 047111 020107 051104
1078 003446* 030461 046050 047440
1079 003454* 020122 024515 053440
1080 003462* 051117 020104 051104
1081 003470* 050117 042520 020104
1082 003476* 051106 046517 052040
1083 003504* 051505 022524 000
1084 .END

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ACSR	000102R	419*	716*	778*	1011*														
ADDR	000006R	385*	484	493	517	553	688	747	841	842									
ADDR2	000224R	438*	487	500	534	621	689	748	844	845									
ADDR22	001000	437*																	
ASB	000106R	423*	925*	926															
ASTAT	000104R	421*																	
AWAS	000110R	424*	922*	926	945*														
BEGIN	000000R	302*	56*	577	587	593	602	635	644	656	662	672	713	722					
		728	734	774	782	788	794	859	862	894	891	910	916	931					
		939	969																
BIT0	000001	437*																	
BIT06	000100	468*	708	718	731	769	779	791	883	889	907	914							
BIT08	000400	468*	702	708	718	731	763	779	791	869	889	907	914						
BIT1	000002	437*																	
BIT10	002000	437*																	
BIT11	004000	437*																	
BIT12	010000	437*																	
BIT13	020000	437*																	
BIT14	040000	437*																	
BIT15	100000	437*																	
BIT2	000004	437*																	
BIT3	000010	437*																	
BIT4	000020	437*																	
BIT5	000040	437*																	
BIT6	000100	437*																	
BIT7	000200	437*																	
BIT8	000400	437*																	
BIT9	001000	437*																	
BREAK	104407	437*																	
BR1	000012R	387*																	
BR2	000013R	388*																	
BTOD	104421	437*																	
CDATA	104412	437*																	
CKADR	000456R	516*																	
CKVTA	000566R	552*																	
CONFIG	000056R	407*																	
CSRA	000100R	417*	561*	579*	628*	647*	695*	755*	877*	902*	947*	994	1002	1008					
		1011																	
DATCK	104411	437*																	
DATER	104404	437*	931																
DRLOAD	000230R	445*	517*	521	523*	553*	561	579	608*	688*	695	702*	708*	716					
		718*	731*	737*	841*	902	907*	914*	955*										
DRLDBR	000232R	446*	747*	749*	766	798*	842*	843*	875	922	923	956*							
DRMADR	000234R	447*	534*	539	541*	621*	628	647	679*	748*	755	763*	769*	778					
		779*	791*	797*	844*	869*	877	883*	889*	947	957*								
DRMDBR	000236R	448*	689*	690*	705*	738*	845*	846*	894*	945	946	958*							
DROP	002266R	490*	858*																
DRVCT	000252R	454*	554*	563	582	609*	622*	629	650	680*									
DVIDL	000240R	449*	498*	518	559	574*	590*	693	727*										
DVIDM	000242R	450*	505*	536	625	641*	659*	752	785*										
DVID1	000014R	389*	475	496	498	503	505	507											
ENDITS	104413	437*	969																
ENDS	104410	437*	862																
ERRTYP	000106R	422*	566*	633*	654*	720*	780*												
EXIT	104400	437*	713	774	884	910													
GETPA	104415	437*																	

GETVP	002724R	580*	648	696	756	879	904	994*											
GWBUFF	104414	437*																	
HRDCNT	000044R	402*																	
HRDEP	104405	437*	568	587	635	656	722	782											
HRDPAS	000000R	404*																	
ICONT	000036R	399*	836	838*															
ICOUNT	000040R	400*																	
IDNUM	000122R	429*																	
IDRINT	001310R	645	688*																
IFLAG	000266R	463*	698*	711	732*	758*	772	792*											
INIT	000030R	396*																	
INTR	000120R	428*	480*																
ITCNT	000262R	458*	806*	833*	838														
ITSET	000264R	459*	806																
LDEL	002476R	916	919*																
LOOP	002172R	841*	971																
LOOPE	002632R	900*	927	940	943	955*													
LSERV	002462R	906*	914*																
LWORK	002410R	873	896*																
MAP22	104416	437*																	
MDEL	002402R	891	894*																
MES2	003160R	1040	1044*																
MES3	003345R	1041	1066*																
MES4	003424R	1042	1075*																
MODNAM	000000R	383*																	
MODSP	000224R	397	435*																
MSERV	002366R	891	889*																
MSGH	104403	437*	577	593	602	644	662	672	728	788	859	939							
MSGH	104402	437*																	
MSG	104401	437*																	
MS2P	003144R	802	672	1040*															
MS3P	003150R	859	1041*																
MS4F	003154R	577	593	644	662	728	788	939	1042*										
MWORK	002300R	850*	852	855	866*	960													
NULL	000000R	437*	568	587	635	656	722	782											

