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IDENTIFICATION

PRODUCT CODE: AC-E902C-MC
PRODUCT NAME: CXDRDCO DR11K MODULE
PRODUCT DATE: SEPTEMBER 1978
MAINTAINER: DEC/X11 SUPPORT GROUP

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1. ABSTRACT

DRD IS AN IOMOD THAT EXERCISES ONE DR11-K. THE MODULE USES THE MAINTENANCE MODE TO CHECK DATA TRANSFERS TO AND FROM THE DR11-K. IT TRANSMITS AND RECEIVES ALL COMBINATIONS OF 16 BIT WORDS AND ALSO TESTS THE ABILITY OF THE DR11K TO GENERATE BOTH TRANSMIT AND RECEIVE INTERRUPTS.

2. REQUIREMENTS

HARDWARE: 1. ONE DR11-K IN THE STANDARD FACTORY MODE
A. INPUT INTERRUPT SWITCHES OFF
B. LATCHING INPUT DATA BITS
C. W21A, W22A AND W23A JUMPERS INSTALLED
2. MAINTENANCE CABLE (BC08-R-1)

STORAGE:: DRD REQUIRES:
1. DECIMAL WORDS: 218
2. OCTAL WORDS: 0332
3. OCTAL BYTES: 664

3. PASS DEFINITION

ONE PASS OF THE DRD MODULE CONSISTS OF TRANSMITTING AND RECEIVING 65,536 WORDS AND GENERATING ONE TRANSMIT AND ONE RECEIVER INTERRUPT.

4. EXECUTION TIME

ONE PASS OF DRD RUNNING ALONE ON A PDP-11/10 PROCESSOR TAKES APPROXIMATELY 20 SECONDS.

5. CONFIGURATION REQUIREMENTS

DEFAULT PARAMETERS:

DEVADR: 167770, VECTOR: *, BR1: 4, DEVCNT: 1

REQUIRED PARAMETERS:

** AT CONFIGURATION TIME, MODIFY "VECTOR" FOR DEVICE VECTOR ADDRESS. FAILURE TO MODIFY LOCATION "VECTOR" WILL RESULT IN A "SYSTEM ERROR".

6. DEVICE/OPTION SET-UP

CONNECT THE MAINTENANCE CABLE TO THE OUTPUT BACK TO INPUT (REF. TO 9.).

7. MODULE OPERATION

TEST SEQUENCE:

- A. SET UP VECTORS AND ADDRESS POINTER
- B. LOAD OUTPUT TEST DATA INTO OUTPUT BUFFER
- C. COMPARE OUTPUT BUFFER WITH TEST DATA-REPORT ANY DATA ERROR
- D. COMPARE INPUT BUFFER WITH TEST DATA-REPORT ANY DATA ERROR
- E. IF NOT 65,536 TRANSFERS, INCREMENT TEST DATA-REPEAT B-D
- F. IF 65,536 TRANSFERS GENERATED AND TEST INPUT/OUTPUT INTERRUPTS
- G. IF NO INTERRUPT-REPORT ERROR THEN REPORT END PASS
- H. IF INTERRUPT-REPORT END PASS RESTART AT A

8. OPERATION OPTIONS

LOCATION "VECTOR" MUST BE CHANGED TO THE DEVICE VECTOR ADDRESS.
SRI BIT0 = 1 INHIBIT INPUT DATA TEST.
(NOTE: USEFUL WHEN NO MAINTENANCE CABLE AVAILABLE)
DVID1 IS NOT USED.

9. NON-STANDARD PRINTOUTS

NONE: ALL PRINTOUTS HAVE THE STANDARD FORMATS DESCRIBED IN THE DEC/X11 DOCUMENT

10. MODULE TEST ENVIROMENT

THE DRD MODULE IS KNOWN TO OPERATE UNDER THIS ENVIROMENT.

PDP-11/10 WITH 16K
TC11 2 DRIVES
TA11 2 DRIVES
DRI1K 1 UNIT

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000000 JDR11-K DEC/X11 EXERCISER MODULE
000000 IOMOD <DRDC> 167770,144,6000,65
000000 MODULE 14000,DRDC,167770,144,6000,65
; TITLE DRDC DEC/X11 SYSTEM EXERCISER MODULE
DDXCON VERSION 6 23-MAY-78
;*****.LIST BIN*****
000000 BEGIN:
000000 051104 041504 040 HDNAM: ASCII /DRDC / ;MODULE NAME
000005 000 XFLAG: BYTE OPEN ;USED TO KEEP TRACK OF WBUF USACE
000006 167770 ADDR: 167770+0 ;1ST DEVICE ADDR.
000010 000001 VECTOR: 1=0 ;1ST DEVICE VECTOR.
000012 200 BR1: -BYTE PRTY4+0 ;1ST BR LEVEL.
000013 000 BR2: -BYTE PRTY+0 ;2ND BR LEVEL.
000014 000001 DVID1: +1 ;DEVICE INDICATOR 1.
000015 000000 SR1: OPEN ;SWITCH REGISTER 1
000020 000000 SR2: OPEN ;SWITCH REGISTER 2
000022 000000 SR3: OPEN ;SWITCH REGISTER 3
000024 000000 SR4: OPEN ;SWITCH REGISTER 4
;*****
000026 140000 STAT: 140000 ;STATUS WORD+ ADDR.
000030 000232 INIT: START ;MODULE START ADDR.
000032 000224 SPOINT: MODSP ;MODULE STACK POINTER.
000034 000000 PASCNT: 0 ;PASS COUNTER.
000036 013560 ICOUNT: 6000. ;# OF ITERATIONS PER P SS=6000.
000040 000000 ICOUNTI: 0 ;LOC TO COUNT ITERATIO: S
000042 000000 SOFCNT: 0 ;LOC TO SAVE TOTAL SOF ERRORS
000044 000000 HRDCNT: 0 ;LOC TO SAVE TOTAL HAR. ERRORS
000046 000000 SOFPAS: 0 ;LOC TO SAVE SOFT ERRORS PER PAS
000050 000000 HRDPAS: 0 ;LOC TO SAVE HARD ERRORS PER PAS
000052 000000 SYSCNT: 0 ;# OF SYS ERRORS ACCUMULATED
000054 000000 RANUM: 0 ;HOLDS RANDOM # WHEN RANT MACRO IS CALLED
000056 000000 CONFIG:
000060 000000 RES1: 0 ;RESERVED FOR MONITOR USE
000062 000000 RES2: 0 ;RESERVED FOR MONITOR USE
000064 000000 SVR0: OPEN ;LOC TO SAVE R0.
000066 000000 SVR1: OPEN ;LOC TO SAVE R1.
000068 000000 SVR2: OPEN ;LOC TO SAVE R2.
000070 000000 SVR3: OPEN ;LOC TO SAVE R3.
000072 000000 SVR4: OPEN ;LOC TO SAVE R4.
000074 000000 SVR5: OPEN ;LOC TO SAVE R5.
000076 000000 SVR6: OPEN ;LOC TO SAVE R6.
00100 000000 CSRA: OPEN ;ADDR OF CURRENT CSR
00102 000000 SBADR: OPEN ;ADDR OF GOOD DATA, OR
00104 000000 ACSH: OPEN ;CONTENTS OF CSR
00106 000000 WASADR: OPEN ;ADDR OF BAD DATA, OR
00110 000000 ASTAT: OPEN ;STATUS REG CONTENTS.
00112 000000 ERRTP: OPEN ;TYPE OF ERROR
00114 000000 ASB: OPEN ;EXPECTED DATA.
00116 000000 AWAS: OPEN ;ACTUAL DATA.
00120 000000 RSTRT: RESTR ;RESTART ADDRESS AFTER END OF PASS
00122 000065 WDT0: OPEN ;WORDS TO MEMORY PER ITERATION
WDR: OPEN ;WORDS FROM MEMORY PFR ITERATION
INTR: OPEN ;# OF INTERRUPTS PER ITERATION
IDNUM: 65 ;MODULE IDENTIFICATION NUMBER=65
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000040 .REPT SPSIZ ;MODULE STACK STARTS HERE.
;*****.LIST BIN*****
000224 MODSP:
;*****
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203 000224 000000 DRSTAT: OPEN ;DR11-K STATUS REGISTER ADDRESS
204 000226 000000 DRIN: OPEN ;DR11-K INPUT DATA REGISTER
205 000230 000000 DROUT: OPEN ;DR11-K OUTPUT DATA REGISTER
206
207
208
209
210 000232 012767 000002 177660 ;INITIALIZATION FOR GENERAL DEVICE INTERFACE
211 000240 012767 000001 177646 START: MOV #2,INTR ;2 INTERRUPTS/ITERATION
212 000246 012767 000001 177642 MOV #1,WDT0 ;1 WORD TO MEM/ITERATION
213 MOV #1,WDFR ;1 WORD FROM MEM/ITERATION
214
215 000254 016705 177526 RESTRY: MOV ADDR,R5 ;GET DEVICE ADDRESS
216 000260 010567 177614 MOV R5,CSRA ;SAVE CSR ADDRESS IN CSFA
217 000264 010567 177734 MOV R5,DRSTAT ;LOAD STATUS ADDRESS
218 000270 005725 TST (R5)+ ;
219 000272 010567 177730 MOV R5,DRIN ;LOAD INPUT DATA ADDRESS:
220 000276 005725 TST (R5)+ ;
221 000280 010567 177724 MOV R5,DROUT ;LOAD OUTPUT DATA ADDRESS
222 000304 016700 177500 MOV VECTOR,R0 ;LOAD DEVICE VECTOR
223 000310 012720 000604 DRACTO,(0)+ ;SET OUTPUT VECTOR TO SERVICE R/TIME
224 000314 016720 177472 MOV BR1,(0)+ ;SET OUTPUT PRIORITY
225 000320 012720 000566 DRACTI,(0)+ ;SET INPUT VECTOR TO SERVICE R/TIME
226 000324 016720 177462 MOV BR1,(0)+ ;SET INPUT PRIORITY
227 000330 005015 CLR R5 ;CLEAR CONTROL REGISTER
228 000332 005001 CLR R1 ;LOAD TEST DATA
229
230 ;CHECK DATA TRANSFER ON DR11-K
231
232 000334 010177 177670 DRACT1: MOV R1,@DROUT ;MOVE DATA TO OUTPUT BUFFER
233 000340 020177 177664 CMP R1,@DROUT ;CHECK DATA
234 000344 001416 BEQ R1 ;BRANCH IF DATA GOOD
235 000346 012767 177701 MOV #177701,SBADR ;GOOD DATA ADDRESS IS R1 BUS ADDRESS
236 000354 016767 177650 MOV DROUT,WASADR ;LOAD OUTPUT REG. ADDRESS
237 000362 010467 177520 MOV R1,ASB ;MOVE "SHOULD BE"
238 000366 017767 177514 MOV @DROUT,ANAS ;MOVE "WAS"
239 ;*****
240 DATERS,BEGIN ;DATA ERROR!!!
241 ;*****
242 BR ZS ;OUTPUT DATA ERROR
243
244 000402 032767 000001 177406 1S: BIT #BIT0,SR1 ;TEST IF CABLE CONNECTED
245 BNE ZS ;BR IF NOT
246 000410 001020 177610 CMP R1,@DRIN ;CHECK RECEIVED DATA
247 000412 020177 177454 BEQ ZS ;BRANCH IF DATA GOOD
248 000420 012767 177701 177454 MOV #177701,SBADR ;GOOD DATA ADDRESS = R1 BUS ADDRESS
249 000426 016767 177574 177450 MOV DRIN,WASADR ;LOAD INPUT REG. ADDRESS
250 000434 010167 177446 MOV R1,ASB ;MOVE "SHOULD BE"
251 000440 017767 177562 177442 MOV @DRIN,ANAS ;MOVE "WAS"
252 ;*****
253 DATERS,BEGIN ;DATA ERROR!!!
254 ;*****
255 CLR @DROUT ;INPUT DATA ERROR
256 000452 005077 177552 177542 2S: MOV #-1,@DRIN ;CLEAR OUTPUT REGISTER
257 000456 012777 177777 ;CLEAR INPUT REGISTER
258 000464 005201 ;UPDATE TRANSMIT DATA
259 000466 104413 000000 ;SIGNAL END OF ITERATION.
260 ;MONITOR SHALL TEST END OF PASS

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259 000472 104407 000000 BREAKS,BEGIN ;TEMPORARY RETURN TO MONITOR...
260 000476 104407 000000 BREAKS,BEGIN ;THEN CONTINUE AT NEXT INSTRUCTION.
261 000502 001314 000000 BNE DRACT1 ;CONTINUE IF NOT ZERO

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262                                     ;CHECK INTERRUPTS ON DR11-K
263
264 000504 005077 177514
265 000510 017767 000003 000106 TMRSET: CLR 0DRSTAT ;CLEAR CONTROL REGISTER
266 000516 015577 020040 177500 CLR 15,INTRO ;LOAD SOFT FLAG COUNTER
267 000524 005004 CLR 120040,0DRSTAT ;SET MAINTENANCE BIT FOR DR-11K INTERRUPT
268 000526 ;CLEAR BREAK COUNTER
269 000528 104407 000000 1$: BREAK$,BEGIN ;TEMPORARY RETURN TO MONITOR...
270 000530 104407 000000 BREAK$,BEGIN ;THEM CONTINUE AT NEXT INSTRUCTION.
271 000532 005767 000062 TST INTRO ;NO INTERRUPTS OCCURED?
272 000540 001405 BGE 15 ;BR IF DONE
273 000544 005304 DEC 14 ;DELAY
274 000546 001367 BNE 15 ;BR IF NOT TIMEOUT
275 000548 104403 000000 000626 MSG$,BEGIN,HUNG ;ASCII MESSAGE CALL WITH COMMON HEADER
276 000550 177443 CLR 0DRSTAT ;CLEAR DEVICE
277 000562 104413 000000 ENDIT$,BEGIN ;SIGNAL END OF ITERATION.
278 ;MONITOR SHALL TEST END OF PASS
279
280 ;INPUT/OUTPUT SERVICE ROUTINES
281
282 000566 017777 177434 177432 DRAC1: MOV 0DRIN,0DRIN ;READ DATA TO GENERATE DATA OK IG.
283 000574 042767 000001 000022 BIC 1 ;INDICATE INPUT INTERRUPT
284 000602 000002 RTI ;RETURN
285
286 000604 005077 177414 DRAC2: CLR 0DRSTAT ;CLEAR MAINT INT.
287 000610 005077 177414 CLR 0ROUT ;CLEAR OUTPUT
288 000614 042767 000002 000002 BIC 1 ;INDICATE OUTPUT INTERRUPT
289 000622 000002 RTI ;RETURN
290
291 000624 000003 INTRO: 3
292 000626 000632 HUNG: MES1
293 000630 177777 -1
294 000632 047045 020117 047111 MES1: .ASCIZ /%NO INTERRUPT FOR DEVICE/
295 000640 042524 051122 050125
296 000646 020124 047506 020122
297 000654 042504 044526 042503
298 000662 000000 .EVEN
299 000664 000664 .END
300
301 000001 .END
    
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ACSR 000102R 185#
ADDR 000008R 151#
ADDR22= 001000R 203#
ASB 000106R 189#
ASTAT 000104R 187#
AWAS 000110R 190#
BEGIN 000000R 143#
BIT0 == 000001 203#
BIT1 == 000002 203#
BIT10 == 002000 203#
BIT11 == 004000 203#
BIT12 == 010000 203#
BIT14 == 020000 203#
BIT15 == 040000 203#
BIT16 == 100000 203#
BIT2 == 000004 203#
BIT3 == 000010 203#
BIT4 == 000020 203#
BIT5 == 000040 203#
BIT6 == 000100 203#
BIT7 == 000200 203#
BIT8 == 000400 203#
BIT9 == 001000 203#
BREAKS = 104407 203#
BR2 000012R 154#
BR3 000013R 154#
BTODS = 104421 203#
CDATAS = 104412 203#
CONFIG 000056R 173#
CSRA 000100R 203#
DATCKS = 104411 203#
DATERS = 104404 203#
DRAC1 000566R 223#
DRAC2 000604R 221#
DRAC1 000334R 230#
DRIN 000268R 204#
DROUT 000230R 205#
DRSTAT 000224R 203#
DVID1 000014R 155#
ENDIT$ = 104413 203#
END$VP = 104410 203#
ERR1$VP 000106R 188#
EXITS = 104400 203#
GTPAS = 104415 203#
GWBOFS = 104414 203#
HRDCNT 000044R 168#
HRDRS = 104405 203#
HRPAS 000050R 170#
HUNG 000626R 174#
ICONT 000036R 165#
ICOUNT 000040R 166#
IDNUH 000122R 195#
INIT 000030R 164#
INTRO 000120R 194#
MAP22$ = 104416 203#
213
235* 248*
236* 249*
238 257 259 260 269 270 275 277
288
359 260 269 270
222 224
214*
238 251
282# 286#
261* 244 247 249 255* 282*
217* 230* 231 234 236 254* 287*
219* 284* 286* 276* 286*
257 277
292#
209*
271 283* 288* 291#
    
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