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IDENTIFICATION

PRODUCT CODE: AC-E712E-MC
PRODUCT NAME: CXDPAE0 DEC/X11 DP11 MODULE
DATE: SEPTEMBER 1978
MAINTAINER: DEC/X11 SUPPORT GROUP

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1. ABSTRACT

DPA IS AN IOMOD THAT EXERCISES UP TO EIGHT 8-BIT SYNCHRONOUS LINE INTERFACES (DP11) BY TRANSMITTING A STANDARD BINARY COUNT PATTERN USING THE MAINTENANCE MODE FEATURE. THE RECEIVED DATA IS COMPARED WITH THE TRANSMITTED DATA AND ANY ERRORS ARE REPORTED VIA THE CONSOLE TTY. ALL AVAILABLE INTERFACES (UP TO 8) ARE ACTIVATED AND RUNNING SIMULTANEOUSLY.

2. REQUIREMENTS

HARDWARE: DP11 SYNCHRONOUS INTERFACE
STORAGE:: DPA REQUIRES:
1. DECIMAL WORDS: 728
2. OCTAL WORDS: 1330
3. OCTAL BYTES: 2660

3. PASS DEFINITION

ONE PASS OF THE DPA MODULE CONSISTS OF TRANSMITTING AND RECEIVING 128008 8-BIT CHARACTERS (TOTAL)

4. EXECUTION TIME

DPA RUNNING ALONE ON A PDP11/05 PROCESSOR TAKES APPROXIMATELY --- MINUTES TO COMPLETE ONE PASS.

5. CONFIGURATION PARAMETERS

DEFAULT PARAMETERS:
DEVADR: 174770, VECTOR:440, BR1:5, BR2:5, DEVCNT:1
REQUIRED PARAMETERS: NONE

6. DEVICE/OPTION SETUP

NONE: NO DEVICE IS REQUIRED IN MAINTENANCE MODE

7. MODULE OPERATION

TEST SEQUENCE:

- A. TEST UP TO 8 POSSIBLE DEVICES FOR SELECTION
- B. STORE THE DEVICE NO. OF DEVICES TO BE TESTED AND SET UP THE VECTORS FOR THESE DEVICES
- C. TURN ON RECEIVER INTERRUPT ENABLE, TRANSMITTER INTERRUPT ENABLE, AND MAINTENANCE MODE FOR ALL ACTIVE DEVICES.
- D. INITIAL TRANSMITTER INTERRUPT SERVICE:
 - 1.) TEST FOR FALSE INTERRUPT (READY (0)); REPORT ERRORS
 - 2.) OUTPUT NEXT CHARACTER TO EACH ACTIVE DEVICE
 - 3.) RETURN TO MONITOR TO WAIT FOR RECEIVER INTERRUPT.
- E. RECEIVER INTERRUPT SERVICE:
 - 1.) TEST FOR FALSE INTERRUPT (DONE (0)); REPORT ERRORS
 - 2.) COMPARE INPUT/OUTPUT DATA; REPORT ERRORS
 - 3.) RETURN TO MONITOR TO WAIT FOR TRANSMITTER INTERRUPT
- F. REPEAT D AND E UNTIL 12800.(TOTAL) CHARACTERS HAVE BEEN PROCESSED
- G. AT END OF PASS TURN OFF ALL ACTIVE DEVICES AND RESTART AT B

8. OPERATION OPTIONS

- A. LOCATION DVID1 (DPA 14) MAY BE CHANGED TO SELECT ANY COM-
BINATION OF DEVICES BIT0=DEV0, BIT1=DEV1 BIT7=DEV7
IF DVID1 IS INITIALLY 0 DPA WILL BE DROPPED FROM TEST.

9. NON STANDARD PRINTOUTS

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

```
138 ;LIST SEQ,BIN
139 ; SET UP VECTOR (RETURN ADDRESS(PC)) PC = INTR SERV. AREA.
140
141 IOMOD <DPAE > 174770,440 5, 2000,30
142 MODUL 140000,DPAE 174770,440 5, 2000,30
143 TITLE DPAE DEC/X11 SYSTEM EXERCISER MODULE
144 ; DDXCMM VERSION 6 23-MAY-78
145 ;LIST BIN
146 *****
147 BEGIN:
148 MODNAM: .ASCII /DPAE / ;MODULE NAME
149 XFLAG: .BYTE OPEN ;USED TO KEEP TRACK OF WBUFF USAGE
150 ADDR: 174770+0 ;1ST DEVICE ADDR
151 VECTOR: 440+0 ;1ST DEVICE VECTOR
152 BR1: .BYTE PRTY5+0 ;1ST BR LEVEL
153 BR2: .BYTE PRTY+0 ;2ND BR LEVEL
154 DIV1: +1 ;DEVICE INDICATOR 1
155 SR1: OPEN ;SWITCH REGISTER 1
156 SR2: OPEN ;SWITCH REGISTER 2
157 SR3: OPEN ;SWITCH REGISTER 3
158 SR4: OPEN ;SWITCH REGISTER 4
159 *****
160 STAT: 140000 ;STATUS WORD
161 INIT: START ;MODULE START ADDR
162 SPOINT: MODSP ;MODULE STACK POINTER
163 PASCNT: 0 ;PASS COUNTER
164 ICNT: 2000 ;# OF ITERATIONS PER PASS=2000
165 ICOUNT: 0 ;LOC TO COUNT ITERATIONS
166 SPCFNT: 0 ;LOC TO SAVE TOTAL SOFT ERRORS
167 HRDCNT: 0 ;LOC TO SAVE TOTAL HARD ERRORS
168 SOPPAS: 0 ;LOC TO SAVE SOFT ERRORS PER PASS
169 HRPPAS: 0 ;LOC TO SAVE HARD ERRORS PER PASS
170 HOSYS: 0 ;# OF SYS ERRORS ACCUMULATED
171 HANUM: 0 ;HOLDS RANDOM # WHEN RAND MACRO IS CALLED
172 CONFIG:
173 RES1: 0 ;RESERVED FOR MONITOR USE
174 RES2: 0 ;RESERVED FOR MONITOR USE
175 SVR0: OPEN ;LOC TO SAVE R0
176 SVR1: OPEN ;LOC TO SAVE R1
177 SVR2: OPEN ;LOC TO SAVE R2
178 SVR3: OPEN ;LOC TO SAVE R3
179 SVR4: OPEN ;LOC TO SAVE R4
180 SVR5: OPEN ;LOC TO SAVE R5
181 SVR6: OPEN ;LOC TO SAVE R6
182 CSRA: OPEN ;ADDR OF CURRENT CSR
183 SBADR: ;ADDR OF GOOD DATA, OR
184 ACSR: OPEN ;CONTENTS OF CSR
185 WASADR: ;ADDR OF BAD DATA, OR
186 ASSTAT: 0 ;STATUS REG CONTENTS
187 ERRTP: ;TYPE OF ERROR
188 ASB: OPEN ;EXPECTED DATA
189 AWAS: OPEN ;ACTUAL DATA
190 RSTRT: RSTRT ;RESTART ADDRESS AFTER END OF PASS
191 WDT0: ;WORDS TO MEMORY PER ITERATION
192 WDFR: OPEN ;WORDS FROM MEMORY PER ITERATION
```

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193 INTR: OPEN ;# OF INTERRUPTS PER ITERATION
194 IDNUM: 30 ;MODULE IDENTIFICATION NUMBER=30
195 ;REPT SPSIZ ;MODULE STACK STARTS HERE.
196 ;NLIST
197 ;WORD 0
198 ;LIST
199 ;ENDR
200 MODSP:
201 *****
202 START: MOV #16,WDT0 ;16 WORDS TO MEM
203 MOV #16,WDFR ;16 WORDS FROM
204 MOV #16,INTR ;16 INTERRUPTS
205 *****
206 RESTPT: TST DVID1 ;CHECK ANY DPN'S ON LINE
207 BNE 1$ ;YES
208 ENDS,BEGIN
209 1$: CLR TRCNT ;INITIALIZE TRANSMIT COUNT
210 CLR RCCNT ;INITIALIZE RECEIVE COUNT
211 CLR DPON ;NO. DP'S THAT ARE DONE
212 CLR DPDP ;NO. DP'S SELECTED
213 MOV DVID1,DVIDA ;SET UP BINARY COUNT OF DEVICE(S) SELECTED
214 MOV VECTOR,R1 ;R1 = VECTOR ADDRESS
215 MOV #LINKER,R2 ;R2 = LINK: JSR TABLE WITH OFFSET
216 MOV #1,PNTN ;SET UP PNTN TO TEST DEVICE ON LINE
217 BIT PNTN,DVID1 ;TEST IS THIS DP1 ON LINE
218 BEQ 3$ ;NO GO CHANGE DP ADDR & TRY AGAIN
219 INC NO.DP ;COUNT NO. DP'S SELECTED
220 MOV R2,(R1)+ ;SET UP VECTOR RETURN ADDRESS(RCV)
221 MOV #1,(R1)+ ;SET UP VECTOR PRIORITY (RCV)
222 TSTB (R1)+ ;INCR. POINTER
223 ADD #6,R2 ;UPDATE NEW LINK ADDRESS
224 MOV R2,(R1)+ ;SET UP VECTOR RETURN ADDRESS (XMT)
225 MOV #1,(R1)+ ;SET UP VECTOR PRIORITY (XMT)
226 TSTB (R1)+ ;INCR. POINTER
227 ADD #6,R2 ;UPDATE NEW LINK ADDRESS
228 ASLB PNTN ;SET UP FOR NEW DEVICE COMPARE
229 BCS START1 ;HAVE WE TESTED FOR ALL ON LINE
230 ; DEVICES
231 BR 2$ ;NOT DONE GO DO MORE
232 ADD #10,R1 ;UPDATE TO NEW VECTOR ADDRESS
233 ADD #14,R2 ;UPDATE TO NEW LINK ADDRESS
234 BR 4$ ;GO TEST FOR NEXT DEVICE ON LINE
235
236 ; THIS CODE WILL CLEAR ALL OF THE WRITE BUFFER AREA
237
238
239 START1: MOV #111,CNT80 ;COUNT REQUIRED TO GO THRU
240 ;ALL 88 DATA STORAGE BUFFER
241 MOV #DPLIN,R3 ;STARTING ADDRESS OF
242 ; DATA BUFFER LOCATIONS.
243 1$: CLR (R3)+ ;CLEAR DATA BUFF REG
244 DEC CNT80 ;ARE THERE MORE TO CLEAR?
245 BNE 1$ ;NO GO BACK & DO THE REST
246
247 ; THIS CODE WILL SELECT WHICH LINES (<1:8>) HAVE
248 ; BEEN SELECTED FOR TEST & TRANSMIT SYNC TO START
```

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249 ; TESTING ALL LINES.
250
251 000434 012767 000010 002200 INT: MOV #10,COUNT ;SET COUNT VALUE TO NUMBER OF POSSIBLE DEVICES
252 000442 016701 177340 MOV ADDR,R1 ;R1=177340
253 000446 012702 002150 MOV #DVAD1,R2 ;R2=DVAD1 ADDR.
254 000452 012703 002130 MOV #DPLM,R3 ;LINE BUFFER POINTER
255 000456 012704 002130 MOV #DPLM,R4 ;START OF LINE BUF
256 000462 010122 002250 1S: MOV R1,(R2)+ ;DVADX=DEVICE ADDR. CODE
257 000464 010423 MOV R4,(R3)+ ;BUFF POINTER HAS START OF LINE
258 ADD #-10,R1 ;BUFF STORAGE
259 ADD #20,R4 ;UPDATE
260 000472 062704 000020 ADD COUNT ;CMT DOWN
261 000476 005367 002140 DEC COUNT ;UPDATE
262 000502 001367 BNE 1S ;NOT DONE GO BACK FOR MORE
263
264 000504 005067 002130 START2: CLR NODVTS ;CLEAR NO. OF LINE TESTED
265 REG. ;REG.
266 000510 016701 177272 MOV ADDR,R1 ;SET DEVICE ADDRESS
267 000514 016702 177266 MOV ADDR,R2 ;XMT CSR ADDRESS IN R2
268 000520 062702 000004 ADD #4,R2 ;R2=XMT CSR REGISTER 174XX4
269 000524 012700 002171 MOV #LNSYN1+1,R0 ;SET UP R0 TO POINT TO LNSYN LCC.
270 000528 012701 002171 MOV #LNSYN,R3
271 000534 012767 000001 002066 MOV #1,PTR ;SET PTR REG POINTER TO
272 000542 036767 002062 177244 DS: BIT PTR,DVID1 ;1ST DEVICE ON LINE
273 BZ 1S ;TEST IS THIS DEVICE ON LINE
274 000546 001481 MOV #4,(R0) ;NO GO UPDATE ADDRESS
275 000552 112710 000004 MOV #10020,(R3) ;PLACE SYNC COUNT INTO HIGH
276 000556 012713 010020 MOV #10020,(R3) ;BYTE LNSYN X
277 000562 062700 000002 CS: ADD #2,R0 ;COUNT =16 HIGH BYTE FOR XMT
278 000566 005723 TST (R3)+ ;LOW BYTE FOR RCV
279 000570 000257 CCC ;UPDATE LNSYN X POINTER
280 000574 106367 ASLB ;UPDATE LNCNT X POINTER
281 000578 103361 BCC ;CLEAR CARRY BIT (CLR FOR TEST)
282 000584 012767 000001 002022 PNR ;HAR 8 DPT'S BEEN INITIALIZED
283 000588 036767 002016 177200 KCKOFF: BIT PTR,DVID1 ;NO GO BACK SET UP NEXT DP
284 000592 001481 BEQ UPDAT ;NEW POINTER
285 000596 103361 BCC ;IS THIS LINE ON
286 000600 012767 000001 002022 BIT PTR,DVID1 ;CMT UPDATE ADDRESS
287 000604 001481 BEQ UPDAT ;INITIALIZE XMT STATUS
288 000608 036767 002016 177200 KCKOFF: BIT PTR,DVID1 ;SET INTR ENABLE,MAINT. MODE,
289 000612 052711 000105 BIS #105,(R1) ;& STRIP SYNC
290 000616 052711 000105 BIS #105,(R1) ;LOAD SYNC BUFFER WITH SYNC CHAR.
291 000622 116761 002004 000003 MOV #312,(R2) ;INITIALIZE XMT STATUS
292 000626 052712 000312 BIS #312,(R2) ;& DONE
293 ;IDLE SYNC
294 ;XMT SYNC ON INTR
295 ;XMT SYNC ON INTR
296 ;XMT SYNC ON INTR
297 ;XMT SYNC ON INTR
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303 ;XMT SYNC ON INTR
304 ;XMT SYNC ON INTR
305 000634 105062 000003 UPDAT: CLRB 3(R2) ;CLEAR SYNC EXT
306 000638 062701 177770 ADD #-10,R1 ;UPDATE RCV CSR DEVICE ADDRESS
307 000642 062702 177770 ADD #-10,R2 ;UPDATE XMT CSR DEVICE ADDRESS
308 000646 062702 177770 ADD #-10,R2 ;UPDATE XMT CSR DEVICE ADDRESS
309 000650 106367 ASLB ;CLEAR CONDITION CODES
310 000654 103361 BCC ;MOVE POINTER FOR NEXT TEST
311 000658 103353 BCC ;GO ENABLE NEXT LINE
312 000662 103353 BCC ;SET UP COUNT FOR NO OF MAIL LOOPS
313 000666 012701 000006 WNDOW: MOV #6,R1 ;CLEAR WAIT LOOP COUNTER
314 000670 005000 CLR R0 ;CLEAR WAIT LOOP COUNTER
315 1S:
316 2S:
317 3S:
318 4S:
319 5S:
320 6S:
321 7S:
322 8S:
323 9S:
324 10S:
325 11S:
326 12S:
327 13S:
328 14S:
329 15S:
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994 680S:
995 681S:
996 682S:
997 683S:
998 684S:
999 685S:
1000 686S
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305 000666 104407 000000 BREAKS,BEGIN ;TEMPORARY RETURN TO MONITOR...
306 000672 104407 000000 BREAKS,BEGIN ;WHEN CONTINUE AT NEXT INSTRUCTION.
307 000676 022767 000016 001744 CMP #16,RCNT ;??
308 000704 003004 BGT 3S ;YES BRANCH TO WAIT FOR NEXT INTR. SEQUENCE
309 000708 024767 000016 001736 CMP #16,RCCNT ;??
310 000714 005300 BCC 3S ;NO, START WAIT LOOP
311 000716 005300 DEC R0 ;NO, START WAIT LOOP
312 000720 001362 BNE 2S ;NO, START WAIT LOOP
313 000724 005300 DEC R0 ;NO, START WAIT LOOP
314 000728 001362 BNE 2S ;NO, START WAIT LOOP
315 000732 000167 000606 JMP INTR ;REPORT DEVICE FAILED TO INTERRUPT
316 000732 104400 000000 EXITS,BEGIN ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
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361 ; REQUEST FOR SERVICE
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363 001112* 010246 DPRCV: MOV R2, -(SP) ;SAVE REG. 2 ON STACK
364 001114* 010346 MOV R3, -(SP) ;SAVE REG. 3 ON STACK
365 001116* 010446 MOV R4, -(SP) ;SAVE REG. 4 ON STACK
366 001120* 011503 MOV (R5), R3 ;GET OFFSET
367 001122* 015703 002150* MOV DADR1(R3), R4 ;R3 = R4 DEV
368 001126* 105714 TSTB R4 ;IS DONE SET
369 001130* 100405 BNE DPRCV1 ;DONE SET ;SERV DONE REQUEST
370 001132* 112763 000200 002450* MOVB #200, ERSTT(R3) ;
371 001140* 000167 000752 JMP RRUD ;
372
373 001144* 032764 040000 000004 DPRCV1: BIT #40000, 4(R4) ;IS OVERRUN BIT SET
374 001152* 001421 BEQ READ ;NO OVERRUN GO READ DATA
375 001154* 105363 002170* DECB LNSYN1(R3) ;UPDATE XMT DATA
376 001160* 105363 002211* INCB LNCNT1+1(R3) ;" " ACTIVE COUNT
377 001164* 042764 160000 000004 BIC #160000, 4(R4) ;CLEAR OVERRUN ERROR BITS
378 001172* 052763 000010 000004 BIS #10, 4(R3) ;SET RESYNC FLAG
379 001180* 042763 004000 BIC #4000, (R3) ;CLEAR RECEIVE ACTIVE
380 001184* 112763 000100 002450* MOVB #100, ERSTT(R3) ;
381 001212* 000167 000700 JMP RRUD ;
382
383 001216* 032714 040000 READ: BIT #4000, (R4) ;IS DEVICE ACTIVE
384 001222* 001441 BEQ RCVRTM ;GET OUT DEVICE NOT READY
385 001224* 005002 CLR R2 ;CLEAR BYTE PTRER
386 001226* 005002 002230* ADD #RFLG1(R3), R2 ;GET BYTE OFFSET
387 001232* 068302 002130* ADD DADR(R3), R2 ;ADDR=DATA BUFF ADDR
388 001236* 116412 000002 MOVB 2(R4), (R2) ;DATA => DATA BUFF
389 001242* 122712 000026 CMPB #26, (R2) ;SRP IF SYNC BIT
390 001246* 001421 BEQ RCVRTM ;
391 001250* 005267 001376 INC RCVRTM ;
392 001254* 105263 002230* INCB VRFLG1(R3) ;
393 001260* 105363 002210* DECB LNCNT1(R3) ;
394 ;CHECK HAVE WF TRANSFERRED ALL
395 ;DATA WORDS
396 001264* 001020 BNE RCVRTM ;THIS LINE NOT DONE RECEIVING
397 ;ALL DATA TRANSFERS
398 001266* 005014 CLR (R4) ;CLEAR RCV. CSR REG.
399 001270* 005014 CLR (R4) ;CLEAR XMT. CSR REG.
400 001274* 005267 001354 DPN DPDPN ;HAVE W/DONE ALL DP'S SELECTED
401 001300* 026767 001352 001346 CMP NO.DP, DPDPN ;COMPARE TO CHCKL DP'S SELECTED
402 001306* 001007 BNE RCVRTM ;BRANCH AND CONTINUE TEST OF OTHER DP'S
403 001312* 012603 MOV (SP)+, R4 ;UPDATE STACK POINTER
404 001316* 012605 MOV (SP)+, R3 ;
405 001314* 012602 MOV (SP)+, R2 ;
406 001316* 012605 MOV (SP)+, R5 ;
407
408 001320* 000004 000000* 001420* PIRQS, BEGIN, CHCK1 ; QUEUE UP TO CONTINUE AT CHCK1 AND FT1
409 ;-----
410
411 001326* 000167 000564 RCVRTM: JMP RRUD ;
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417 001332* 005003 CHECK: CLR R3 ;SET UP OFFSET FOR DEVICE ADDRESS
418 001334* 012700 002450* MOV #ERSTT, R0 ;GET STARTING ADDRESS OF ERROR STATUS PUFFIN
419 001340* 012701 000014* MOV #R1, R1 ;GET NUMBER OF DEVICE SELECTED
420 001344* 012702 000010 MOV #R, R ;GET MAX. DEVICE COUNT
421 001350* 105720 1S: TSTB (R0)+ ;TEST STATUS WORD ERROR INDICATED
422 001352* 001402 BEQ #R, RCERR ;BRANCH IF THIS REV. STATUS HAS NO ERRPJP
423 001356* 004767 000276 2S: TSTB (R0)+ ;TEST STATUS WORD ERROR INDICATED
424 001360* 105720 BEQ #R, XTERR ;BRANCH IF THIS XMT. STATUS HAS NO ERROR
425 001362* 001402 JSR PC, XTERR ;
426 001364* 004767 000352 3S: TST (R3)+ ;UPDATE OFFSET POINTER
427 001370* 005173 TST R2 ;UPDATE DEVICE ADDRESS OFFSET POINTER
428 001372* 005273 DEC R2 ;DECREMENT COUNT
429 001374* 005302 BNE #R, IDA ;BRANCH IF NOT DONE
430 001376* 001364 001232 TST #R, IDA ;HAVE ALL LINES COMPLETE THEIR XFER'S????????????????????
431 001380* 005267 BEQ #R, 4S ;BRANCH TO CHECK DATA ROUTINE
432 001400* 001402 000000* EXITS, BEGIN ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
433 001406* 104400 CLR R1 ;
434 001412* 005001 CLR R2 ;
435 001414* 005002 CLR R0 ;
436 001416* 005000 ;CLEAR R0: NO WILL BE
437 ;USED AS OFFSET
438 001420* 012767 000020 001214 CHCK1: MOV #20, COUNT ;FOR COUNTING NO OF
439 ;CHAR. READ
440 001426* 005002 CLR R2 ;CLR BUFF POINTER
441 001430* 012701 002210* MOV #LNCNT1, R1 ;
442 001434* 015711 1S: TSTB (R1) ;
443 001436* 001402 RFQ CHCK2 ;
444 001440* 022192 CMP (R1)+, (R2)+ ;
445 001442* 000774 BR ;
446 001444* 010200 CHCK2: MOV R2, R0 ;R0 WILL HOLD LINE NO./?
447 001446* 016267 MOV DPLN(R2), R2 ;R2=START ADDR. THIS LINE BUFF
448 001450* 112767 001170 MOVBR (R2), CHECKR ;GET FIRST CHAR.
449 001456* 126722 001164 CUNTNU: CMPB CHECKR, (R2)+ ;CHECK DATA & INCR. POINTER
450 001462* 001410 BEQ #R, CHECKR ;THIS WORD GOOD GO CHECK MORE
451 001464* 122767 000026 001154 CMPB #26, CHECKR ;WAS IT STRIP CHAR.
452 001470* 005114 BNE ERRT ;NO GO REPORT ERROR
453 001474* 005267 INC CHECKR ;YES UPDATE CHECKR
454 001500* 005302 DEC R2 ;UPDATE DPLN BUFFER POINTER
455 001502* 000765 BR ;GO BACK & CHECK REAL DATA
456 001504* 005267 INC CHECKR ;SET UP FOR NEXT BYTE TEST
457 001510* 005367 001136 1S: DEC COUNT ;ONE MORE BYTE HAS BEEN TESTED
458 001514* 001360 BNE CUNTNU ;NOT DONE YET GO CHECK MORE
459 001516* 005267 INC NODVTS ;THIS LINE DONE ADD 1 TO
460 ;NO. OF DEVICES TESTED
461 001522* 012711 100777 MOV #100777, (R1) ;
462 001526* 022767 000010 001104 CMP #10, NODVTS ;HAVE ALL LINES BEEN TESTED
463 001534* 001560 BEQ PASS ;GO TO END PASS CODING
464 001536* 000730 BR CHCK1 ;
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469 001540* 012767 000023 176340 INTER: MOV #23, ERRTYP ;DEV FAILED TO INTERRUPT
470 ;*****
471 001546* 104405 000000* 000000 ;NDERS, BEGIN, NULL ;DEVICE FAILED TO INTERRUPT
472 ;*****

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473 001554 104403 000000 001574 MSGNS,BEGIN,1$ ;ASCII MESSAGE CALL WITH COMMON HEADER
474 001562 042767 040000 176236 BIC #40000,STAT ;ABORTING SELECTION OF THIS MODULE
475 001570 104400 000000 000000 EXITS,BEGIN ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
476 001574 001600 1$: TEXT ;MESSAGE POINTER
477 001576 177777 ; TERMINATOR
478 001800 020040 042504 044526 TEXT: .ASCIZ " DEVICE FAILED TO INTERRUPT DROPPING MODULE "
479 001606 042503 043040 044501
480 001614 042514 020104 047524
481 001622 044440 052116 051105
482 001630 052522 052120 043040
483 001636 047522 050120 047111
484 001644 020107 047515 052504
485 001652 042514 000040
486
487
488 001656 105740 RCERR: TSTB -(R0) ;UPDATE OFFSET POINTER
489 001660 122700 CNPB #100,R0 ;TEST FOR DATER OVER RUN ERROR
490 001664 001006 BNE #1 ;BRANCH IF NOT OVER ?? RUN
491 001666 012767 000021 176212 MOV #21,ERRTYP ;DATA OVERRUN
492 ***** ;*****
493 001674 104406 000000 000000 SOPERS,BEGIN,NULL ;DATE OVER RUN
494 ***** ;*****
495 001702 122700 000200 1$: CNPB #200,R0 ;TEST FOR FALSE INTERRUPT
496 001706 001010 BNE #2 ;BRANCH IF NOT FALSE INTERRUPT ERROR
497 001710 010107 176164 MOV R1,CSRA ;GET DEVICE ADDRESS
498 001714 012767 000011 176164 MOV #1,ERRTYP ;ILLEGAL INTERRUPT
499 ***** ;*****
500 001722 104405 000000 000000 HDRERS,BEGIN,NULL ;FALSE RECEIVE INTERRUPT
501 ***** ;*****
502 001730 105720 2$: TSTB (R0)+ ;UPDATE OFFSET POINTER
503 001732 112763 000377 002210 MOVVB #377,LNCNT1(R3) ;ABORT THIS DEVICE
504 001740 000207 RTS #PC ;RETURN TO CALL ROUTINE
505
506
507 001742 105740 XTERR: TSTB -(R0) ;UPDATE OFFSET POINTER
508 001744 122700 CNPB #200,R0 ;TEST FOR ERROR
509 001748 001010 BNE #1 ;BRANCH IF THIS IS NOT ERROR
510 001752 010107 176122 MOV R1,CSRA ;GET DEVICE
511 001756 012767 000011 176122 MOV #1,ERRTYP ;ILLEGAL INTERRUPT
512 ***** ;*****
513 001764 104405 000000 000000 HDRERS,BEGIN,NULL ;FALSE TRANSMIT INTERRUPT
514 ***** ;*****
515 001772 105720 1$: TSTB (R0)+ ;UPDATE OFFSET
516 001774 112763 000377 002211 MOVVB #377,LNCNT1+1(R3) ;ABORT FURTHER TEST OF THIS DEVICE
517 002002 000207 RTS #PC ;RETURN TO CALL ROUTINE
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522 002004 016067 002150 176066 ERRRT: MOV DVADI(R0),CSRA ;CSRA=LINE ADDR.
523 002012 005302 DEC R2 ;UPDATE POINTER TO DATA BUFF
524 002014 112767 176070 MOVVB (R2),AWAS ;BAD DATA BYTE
525 002016 001010 INC R2 ;UPDATE POINTER TO DATA BUFF
526 002022 116767 000620 176056 MOVVB CHECKR,ASB ;GOOD DATA BYTE
527 002030 005267 000612 INC CHECKR ;UPDATE FOR NEXT TEST
528 002034 005367 DEC COUNT ;ONE MORE BYTE HAS BEEN TESTED

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529 ***** ;*****
530 002040 104404 000000 DATERS,BEGIN ;DATA ERROR !!!
531 ***** ;*****
532
533 002044 005767 000572 RESTOR: TST COUNT ;ARE WE DONE CHECKING DATA ON
534 ;ON THIS LINE
535 002050 001202 BNE CONTNU ;NO GO DO THE REST OF THIS LINE
536 002052 005267 000562 INC NODVTS ;YES THIS LINE DONE ADD 1 TO
537 ;NODVTS>NO. OF LINES TESTED
538
539 002056 012711 100777 000550 MOV #100777,(R1) ;HAVE ALL LINES BEEN TESTED
540 002060 012767 000010 CNP #10,NODVTS ;GO TO END PASS CODE
541 002064 001402 BEQ PASS ;RETURN TO MONITOR
542 002072 000167 177322 JMP CHECK1
543
544
545 002076 000000 PASS: ENDTTS,BEGIN ;SIGNAL END OF ITERATION.
546 002078 104413 ;MONITOR SHALL TEST END OF PASS
547 002102 000167 176116 JMP START ;NO GO DO ONE MORE
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; SYNC WORD STORAGE LOCATIONS (LINE SYNC <1:8>)
DPLIN: .BLKW 8. ;CONTAINS OFFSET POINTER TO DATER STORAGE BUFF
DVADI: .BLKW 8. ;DEVICE ADDRESS < 174770:174700 >
LNSYNI: .BLKW 8. ;HIGH BYTE=SYNC COUNT NO.
LNCNT1: .BLKW 8. ;LOW BYTE= BINARY WORD PATTERN
VRFLG1: .BLKW 8. ;HIGH BYTE=NO. XMTED INTERRUPTS
;LOW BYTE = NO. RCVD INTERRUPTS
;BYTE OFFSET VALUE FOR READ
;RECEIVE DATA 16 BYTES PER.BUFFER
DPLINI: .BLKW 8. ;DPI1 LINE #1 RECEIVE
;DATA BUFFER

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585
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587 002270 000010
588 002310 000010
589 002330 000010
590 002350 000010
591 002370 000010
592 002410 000010
593 002430 000010
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597 002450 000010
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603 002470 004567 176416
604 002474 000000
605 002476 004567 176244
606 002502 000000
607 002504 004567 176402
608 002516 000000
609 002517 004567 176230
610 002518 000000
611 002520 004567 176366
612 002522 000000
613 002526 004567 176214
614 002532 000004
615 002534 004567 176352
616 002540 000006
617 002542 004567 176200
618 002546 000006
619 002550 004567 176336
620 002554 000010
621 002556 004567 176164
622 002562 000010
623 002564 004567 176322
624 002570 000012
625 002572 004567 176150
626 002576 000012
627 002600 004567 176306
628 002604 000014
629 002606 004567 176134
630 002612 000014
631 002614 004567 176272
632 002620 000016
633 002622 004567 176120
634 002626 000016
635
636 002630 000000
637 002632 013426
638 002634 000000
639 002636 000000
640

DPLIN2: .BLKW 8.
DPLIN3: .BLKW 8.
DPLIN4: .BLKW 8.
DPLIN5: .BLKW 8.
DPLIN6: .BLKW 8.
DPLIN7: .BLKW 8.
DPLIN8: .BLKW 8.
;LOW BYTE HAS 1ST CHAR.
;HIGH BYTE HAS 2ND CHAR. ETC.
;DP11 LINE #2 RECEIVE
;DP11 LINE #3 RECEIVE
;DP11 LINE #4 RECEIVE
;DP11 LINE #5 RECEIVE
;DP11 LINE #6 RECEIVE
;DP11 LINE #7 RECEIVE
;DP11 LINE #8 RECEIVE

ERSTT: .BLKW 8. ;STORAGE OF STATUS TYPE OF ERROR

; SERVICE CODE FOR LINKING A PARTICULAR DEVICE
; TO A COMMON XMT OR RCV SERVICE ROUTINE.

LINKER: JSR R5,DPRCV ;ANSWER LINE 1 RCV INTR
0 ;OFFSET FOR LINE 1
JSR R5,DPXMT ;ANSWER LINE 1 XMT INTR
0 ;OFFSET FOR LINE 1
JSR R5,DPRCV ;ANSWER LINE 2 RCV INTR
2 ;OFFSET FOR LINE 2
JSR R5,DPXMT ;ANSWER LINE 2 XMT INTR
2 ;OFFSET FOR LINE 2
JSR R5,DPRCV ;ANSWER LINE 3 RCV INTR
4 ;OFFSET FOR LINE 3
JSR R5,DPXMT ;ANSWER LINE 3 XMT INTR
4 ;OFFSET FOR LINE 3
JSR R5,DPRCV ;ANSWER LINE 4 RCV INTR
6 ;OFFSET FOR LINE 4
JSR R5,DPXMT ;ANSWER LINE 4 XMT INTR
6 ;OFFSET FOR LINE 4
JSR R5,DPRCV ;ANSWER LINE 5 RCV INTR
8 ;OFFSET FOR LINE 5
JSR R5,DPXMT ;ANSWER LINE 5 XMT INTR
8 ;OFFSET FOR LINE 5
JSR R5,DPRCV ;ANSWER LINE 6 RCV INTR
10 ;OFFSET FOR LINE 6
JSR R5,DPXMT ;ANSWER LINE 6 XMT INTR
10 ;OFFSET FOR LINE 6
JSR R5,DPRCV ;ANSWER LINE 7 RCV INTR
12 ;OFFSET FOR LINE 7
JSR R5,DPXMT ;ANSWER LINE 7 XMT INTR
12 ;OFFSET FOR LINE 7
JSR R5,DPRCV ;ANSWER LINE 8 RCV INTR
14 ;OFFSET FOR LINE 8
JSR R5,DPXMT ;ANSWER LINE 8 XMT INTR
14 ;OFFSET FOR LINE 8
16 ;OFFSET FOR LINE 8
16 ;OFFSET FOR LINE 8

PNTR: OPEN ;PNTR REG TO TEST DEVICE ON LINE
TSVNC: 13426 ;SVNC CODE
CNT80: OPEN ;USED FOR COUNTER OF 64.
DVIDA: OPEN ;POINTER FLAG WHICH WILL BRANCH TO
;TEST STATUS OF ALL LINES AFTER

641
642 002640 000000
643 002642 000000
644
645 002644 000000
646 002646 000000
647 002650 000000
648 002652 000000
649 002654 000000
650 002656 000000
651 000001

NODVTS: OPEN ;COMPLETING ONE LINE DATA TRANSFER
COUNT: OPEN ;WHEN =8 ALL LINES HAVE BEEN TESTED
;COUNTS DOWN FROM 16 WHEN CHECKING
;DATA BUFFER REG.
RCV DAT: 0 ;WORD USED TO INCREMENT XMTED DATA
CHECKR: 0 ;STORES WORD BEING CHECKED
TRCNT: 0 ;XMT COUNT
RCNT: 0 ;RECEIVE COUNT
DPDN: OPEN ;DP'S DONE COUNTER
ND.DP: OPEN ;NO. DP'S SELECTED
-END

XDPAE0.P11 12-OCT-78 12:03 CROSS REFERENCE TABLE -- USER SYMBOLS

ACSR	000102R	184#																	
ADDR	000006R	150#	252	267	268														
ADDR22=	001000	20#																	
ASDR	000106R	188#	526*																
ASTAT	000104R	189#	524*																
AWAS	000108R	147#	208																
BEGIN	000000R	530#	546	305	306	317	408	433	471	473	475	493	500	513					
BIT0 =	000001	20#																	
BIT1 =	000002	20#																	
BIT10 =	002000	20#																	
BIT11 =	004000	20#																	
BIT12 =	010000	20#																	
BIT13 =	020000	20#																	
BIT14 =	040000	20#																	
BIT15 =	100000	20#																	
BIT2 =	000004	20#																	
BIT3 =	000010	20#																	
BIT4 =	000020	20#																	
BIT5 =	000040	20#																	
BIT6 =	000100	20#																	
BIT7 =	000200	20#																	
BIT8 =	000400	20#																	
BIT9 =	001000	20#																	
BREAKS =	104407	20#	305	306															
BRJ	000012R	124#	221	225															
BRJ	000012R	124#																	
BTODS =	104421	20#																	
BS	000736R	275#	319#																
CDATAS =	104437	40#																	
CHKR	001434R	40#																	
CHK1	001420R	40#	438#	464	542														
CHK2	001444R	443#	446#																
CHECKR	002646R	448#	449#	451	453*	456*	526	527*	646#										
CWFO	000000	172#	244*	638#															
CONFIG	000056R	172#																	
CONTNU	001456R	449#	455	458	536														
COUNT	002642R	251#	201*	438*	457*	528*	534	643#											
CSRA	000000	183#	254*	510*	522*														
CS	000562R	286#	321																
DATCKS =	104411	20#																	
DATERS =	104404	20#	530																
DPDN	002130R	541#	388	401	649#														
DPLIN	002130R	541#	388	401	649#														
DPLIN1	002250R	255#	583#																
DPLIN2	002270R	588#																	
DPLIN3	002310R	588#																	
DPLIN4	002330R	589#																	
DPLIN5	002350R	590#																	
DPLIN6	002370R	591#																	
DPLIN7	002410R	592#																	
DPLIN8	002430R	593#																	
DPRCV	001112R	363#	603	607	611	615	619	623	627	631									
DPRCV1	001144R	369#	373#																
DPXMT	000000	333#	338#	609	613	617	621	625	629	633									
DPXMT1	001000R	333#																	

XDPAE0.P11 12-OCT-78 12:03 CROSS REFERENCE TABLE -- USER SYMBOLS

DPXMT2	001056R	339#	353#																
DPXMT3	001042R	344#	348#																
DVAD1	002150R	253#	331	367	522	574#													
DVIDA	002634R	431#	639#	213#	217	274	286	419											
DVID1	000014R	15#	206																
DS	000542R	274#	284																
ENDITS =	104413	20#	546																
ENDS	000000	20#	208																
ERRRT	002004R	452#	522#																
ERRTP	000106R	187#	469#	491*	498*	511*													
ERSTT	002450R	302#	380*	380*	418	597#													
EXIT\$ =	104400	302#	370*	317	433														
GETPAS =	104415	20#																	
GWBUPS =	104414	20#																	
HRDCWT	000044R	167#																	
HRDEBS =	104405	20#		471	500	513													
HRDPAS	000050R	169#																	
ICOUNT	000036R	164#																	
ICOUNT	000040R	165#																	
IDNUM	001122R	194#																	
INIT	000030R	161#																	
INT	000434R	251#																	
INFER	001540R	313#	469#																
INTR	001120R	193#	204																
KCKOFF	000606R	286#	301																
LINKER	002470R	275#	603#																
LNCNT1	002210R	272#	348#	376*	394*	441	503*	516*	577#										
LNSYH1	002170R	270#	341	342*	343	345*	354*	356*	375#	575#									
MOD22\$ =	104416	20#																	
MODNAM	000000R	148#																	
MODSP	000224R	162#	200#																
MSGS\$ =	104403	20#	473																
MSGS\$ =	104402	20#																	
MSGS\$ =	104401	20#																	
NOOVTS	002640R	265#	320*	459*	462	537*	540	642#											
NO_DP	002656R	207#	471	401	650#														
NULL\$ =	000000	20#	493	500	513														
OPEN	000000	149#	155	156	157	158	175	176	177										

PS	=	177776	202#																		
PSW	=	177776	202#																		
PUSH	=	005746	202#																		
PUSH2	=	024646	202#																		
RAND5	=	10447	202#																		
RANUM	=	000054R	171#																		
RCCNT	=	002652R	210#	309	392*	648#															
RCERR	=	001656R	423#	488#																	
RCVDR	=	002644R	645#																		
RCVTRN	=	001376R	395#		396	402	413#														
READ	=	001216R	374#																		
RESTUR	=	002044R	534#																		
RESTR	=	000246R	190#		206#																
RES1	=	000056R	173#																		
RES2	=	000060R	174#																		
RRUD	=	002116R	371#																		
RSTR	=	000112R	190#																		
SADR	=	000162R	193#																		
SDFCNT	=	000042R	166#																		
SOFERS	=	104406	202#	493																	
SOPPAS	=	000046R	168#																		
SPOINT	=	000032R	167#																		
SPSIZ	=	000040	167#	195																	
SR1	=	000016R	155#																		
SR2	=	000020R	156#																		
SR3	=	000022R	157#																		
SR4	=	000024R	158#																		
START	=	000224R	161#		202#	548															
START1	=	000412R	279#		239#																
START2	=	000412R	265#																		
STAT	=	000026R	160#		474*																
SVR0	=	000062R	175#																		
SVR1	=	000064R	176#																		
SVR2	=	000066R	177#																		
SVR3	=	000070R	178#																		
SVR4	=	000072R	179#																		
SVR5	=	000074R	180#																		
SVR6	=	000076R	181#																		
SYSCNT	=	000052R	170#																		
TEXT	=	001600R	476#	478#																	
TRCNT	=	002650R	209#	307	340*	647#															
TRPDEF	=	000022	202#																		
TSYHC	=	002632R	290#	637#																	
UPDAT	=	000640R	287#	297#																	
VECTOR	=	000010R	151#	214																	
VFLC1	=	002230R	387#	393*	579#																
WASADR	=	000104R	185#																		
WDFR	=	000116R	192#	203*																	
WDTO	=	000114R	191#	202*																	
WDDW	=	000608R	302#																		
XFLAG	=	000005R	149#																		
XNTRTN	=	001106R	350#	352	355	358#															
XRUD	=	002106R	335#	556#																	
XTERR	=	001742R	426#	597#																	
*	=	002660R	573#	574#	575#	577#	579#	583#	587#	588#	589#	590#	591#	592#	593#						
			597#																		

- ABS. 000000 000
 002660 001

ERRORS DETECTED: 0
 DEFAULT GLOBALS GENERATED: 0
 XDPAEO, XDPAEO/SQL/CRF:SYM=DDXCOM, XDPAEO
 RUN-TIME: 1 2 3 SECONDS
 RUN-TIME RATIO: 1574=3.6
 CORE USED: 7K (13 PAGES)