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IDENTIFICATION

PRODUCT CODE: AC-F060C-MC

PRODUCT NAME: CXBMDC0 LSI-11 BDV11 MOD

PRODUCT DATE: FEB 1979

MAINTAINER: DEC/X11 SUPPORT GROUP

1. ABSTRACT:

RMD IS A RKMOD THAT VERIFIES CHECKSUMS FOR EACH ROM/EPRPOM ON THE RDV11 BOOTSTRAP MODULE.

2. REQUIREMENTS:

HARDWARE: LSI-11 PROCESSOR
STORAGE:: RMD REQUIRES:
1. DECIMAL WORDS: 239
2. OCTAL WORDS: 0357
3. OCTAL BYTES: 737

3. PASS DEFINITION:

A SINGLE PASS CONSISTS OF THE CHECKSUM VERIFICATION OF ALL ROMS 30 (8) TIMES.

4. EXECUTION TIME:

THE RMD RUNNING ALONE ON THE LSI-11 REQUIRES APPROXIMATELY SECS. TO RUN.

5. CONFIGURATION REQUIREMENTS:

DEFAULT PARAMETERS:
ROM ADDRESS: 173000

6. DEVICE/OPTION SETUP:

NONE

7. MODULE OPERATION:

A. SET UP THE PAGE CONTROL REGISTER
B. TEST FOR EXISTENT MEMORY
C. COMPUTE A CHECKSUM FOR AN EXISTENT PAGE OF ROM
D. ADD CHECKSUM TO THE VALUE STORED IN THE ROM
E. IF THE RESULT IS 0, REPEAT STEPS B-D FOR EACH PAGE

8. OPERATION OPTIONS:

NONE

9. NON-STANDARD PRINTOUTS:

NONE

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000000' BKMOD   <BMDB >177520,6666,30,143
000000'         MODULE  40020,BMDB ,177520,6666,30,143
                .TITLE  BMDB DEC/X11 SYSTEM EXERCISER MODULE
                ;       DDXCOM  VERSION  6       23-MAY-78
                                .LIST   BIN
                                ;*****************************************************************************
000000'                         BEGIN:
000000' 046502  041104      040 MODNAM: .ASCII  /BMDB / ;MODULE NAME.
000005'     000                 XFLAG:  .BYTE   OPEN                ;USED TO KEEP TRACK OF WBUFF USAGE
000006' 177520                  ADDR:   177520+0                    ;1ST DEVICE ADDR.
000010' 000000                  VECTOR: +0                          ;1ST DEVICE VECTOR.
000012'     200                 BR1:    .BYTE   PRTY+0              ;1ST BR LEVEL.
000013'     200                 BR2:    .BYTE   PRTY+0              ;2ND BR LEVEL.
000014' 000001                  DVID1:  +1                          ;DEVICE INDICATOR 1.
000016' 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' 040020                  STAT:   40020                       ;STATUS WORD.
000030' 000234'                 INIT:   START                       ;MODULE START ADDR.
000032' 000224'                 SPOINT: MODSP                       ;MODULE STACK POINTER.
000034' 000000                  PASCNT: 0                           ;PASS COUNTER.
000036' 000030                  ICONT:  30                          ;# OF ITERATIONS PER PASS=30
000040' 000000                  ICOUNT: 0                           ;LOC TO COUNT ITERATIONS
000042' 000000                  SOFCNT: 0                           ;LOC TO SAVE TOTAL SOFT ERRORS
000044' 000000                  HRDCNT: 0                           ;LOC TO SAVE TOTAL HARD ERRORS
000046' 000000                  SOFPAS: 0                           ;LOC TO SAVE SOFT ERRORS PER PASS
000050' 000000                  HRDPAS: 0                           ;LOC TO SAVE HARD ERRORS PER PASS
000052' 000000                  SYSCNT: 0                           ;# OF SYS ERRORS ACCUMULATED
000054' 000000                  RANNUM: 0                           ;HOLDS RANDOM # WHEN RAND MACRO IS CALLED
000056'                         CONFIG:                             ;RESERVED FOR MONITOR USE
000056' 000000                  RES1:   0                           ;RESERVED FOR MONITOR USE
000060' 000000                  RES2:   0                           ;RESERVED FOR MONITOR USE
000062' 000000                  SVR0:   OPEN                        ;LOC TO SAVE R0.
000064' 000000                  SVR1:   OPEN                        ;LOC TO SAVE R1.
000066' 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.
000100' 000000                  CSRA:   OPEN                        ;ADDR OF CURRENT CSR.
000102'                         SRADR:                              ;ADDR OF GOOD DATA, OR
000102' 000000                  ACSR:   OPEN                        ;CONTENTS OF CSR.
000104'                         WASADR:                             ;ADDR OF BAD DATA, OR
000104' 000000                  ASTAT:  OPEN                        ;STATUS REG CONTENTS.
000106'                         ERRTYP:                             ;TYPE OF ERROR
000106' 000000                  ASR:    OPEN                        ;EXPECTED DATA.
000110' 000000                  AMAS:   OPEN                        ;ACTUAL DATA.
000112' 000234'                 RSTRT:  RESTRT                      ;RESTART ADDRESS AFTER END OF PASS
000114' 000000                  WDTO:   OPEN                        ;WORDS TO MEMORY PER ITERATION
000116' 000000                  WDFR:   OPEN                        ;WORDS FROM MEMORY PER ITERATION
000120' 000000                  INTR:   OPEN                        ;# OF INTERRUPTS PER ITERATION
000122' 000143                  IDNUM:  143                         ;MODULE IDENTIFICATION NUMBER=143
        000040                          .REPT   SPSIZ               ;MODULE STACK STARTS HERE.
                                        .NLIST
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                                        .WORD   0
                                        .LIST
                                        .ENDR
000224'                         MODSP:
                                ;*****************************************************************************
    177520                      PCR=177520
000224' 000000                  SUML:   0
000226' 000000                  SUMH:   0
000230' 000000                  TMPL:   0
000232' 000000                  TMPH:   0

000234'                         START:
000234'                         RESTRT:
000234' 012767  000400  177520  ST:     MOV     #400,PCR                ;LOAD STARTING PAGE INTO PCR
000242' 012767  177520  177630          MOV     #177520,CSRA            ;STORE CONTROL REGISTER ADDRESS
000250' 005067  177752          ST1:    CLR     SUMH
000254' 005067  177744                  CLR     SUML
000260' 016767  177520  177614          MOV     PCR,ACSR                ;STORE CONTENTS OF CONTROL REGISTER
000266' 022737  177777  173774          CMP     #-1,@#173774            ;MEMORY EXIST?
000274' 001015                          BNE     1$                      ;BR IF YES
000276' 032767  000360  177520          BIT     #360,PCR                ;DIAGNOSTIC ROM?
000304' 001355                          BNE     5$                      ;BR IF NO
000306' 012767  000006  177572          MOV     #6,ERRTYP
                                        ;*****************************************************************
(1)     000314' 104405  000000' 000000  ERRDFS,BEGIN,NULL       ;NON-EXISTENT DIAGNOSTIC ROM
                                        ;*****************************************************************
000322' 104403  000000' 000556'         MSGNS,BEGIN,MSG1        ;ASCII MESSAGE CALL WITH COMMON HEADER

000330' 012700  173000          1$:     MOV     #173000,R0                      ;STARTING LOCATION IN ROM
000334' 020027  173776          2$:     CMP     R0,#173776              ;LAST LOCATION IN ROM?
000340' 001413                          BEQ     3$                      ;BR IF YES
000342' 112067  177662                  MOVB    (R0)+,TMPL              ;GET LOW BYTE OF DATA
000346' 112067  177660                  MOVB    (R0)+,TMPH              ;GET HIGH BYTE OF DATA
000352' 066767  177652  177644          ADD     TMPL,SUML               ;SUM LOW BYTES
000360' 066767  177646  177640          ADD     TMPH,SUMH               ;SUM HIGH BYTES
000366' 000762                          BR      2$                      ;CONTINUE UNTIL END OF PAGE
000370' 112067  177634          3$:     MOVB    (R0)+,TMPL              ;GET CHECKBYTE
000374' 066767  177630  177622          ADD     TMPL,SUML               ;ADD TO SUM
000402' 105767  177616                  TSTB    SUML                    ;IS RESULT 0 ?
000406' 001402                          BEQ     4$                      ;BR IF YES
000410' 004767  000066                  JSR     PC,DCERR                ;REPORT TYPE OF ERROR
000414' 112067  177612          4$:     MOVB    (R0)+,TMPH              ;GET CHECKBYTE
000420' 066767  177606  177600          ADD     TMPH,SUMH               ;ADD TO SUM
000426' 105767  177574                  TSTB    SUMH                    ;IS RESULT 0 ?
000432' 001402                          BEQ     5$                      ;BR IF YES
000434' 004767  000042                  JSR     PC,DCERR                ;REPORT TYPE OF ERROR
000440' 062767  001002  177520  5$:     ADD     #1002,PCR               ;INCREMENT PCR
000446' 122767  000060  177520          CMPB    #60,PCR                 ;EXCEEDED LOW RANGE?
000454' 001003                          BNE     6$                      ;BR IF NOT YET
000456' 012767  100600  177520          MOV     #100600,PCR             ;ADJUST PCR
000464' 022767  001000  177520  6$:     CMP     #1000,PCR               ;FINISHED TEST OF ALL PAGES?
000472' 001266                          BNE     ST1                     ;BR IF NOT YET
000474' 104413  000000'                 ENDITS,BEGIN            ;SIGNAL END OF ITERATION.
(1)                                     ;MONITOR SHALL TEST END OF PASS
000500' 000655                          BR      ST                      ;BR IF NO
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  526  000502' 022767  007416  177520  DCERR:  CMP     #7416,PCR               ;DIAGNOSTIC ROM?
  527  000510' 002411                  BLT     7$                      ;BR IF NO
  528  000512' 005067  177370                  CLR     ERRTYP
  529                                  ;*****************************************************************
 (1)   000516' 104405  000000' 000000          HRDER$,BEGIN,NULL       ;DIAGNOSTIC ROM CHECKSUM HRDER  ,
 (1)                                  ;*****************************************************************
  530  000524' 104403  000000' 000562'         MSGN$,BEGIN,MSG2        ;ASCII MESSAGE CALL WITH COMMON HEADER
  531  000532' 000207                  RTS     PC                      ;RETURN
  532  000534' 005067  177346          7$:     CLR     ERRTYP
  533                                  ;*****************************************************************
 (1)   000540' 104405  000000' 000000          HRDER$,BEGIN,NULL       ;CHECKSUM ERROR--NON-DIAGNOSTIC ROM
 (1)                                  ;*****************************************************************
  534  000546' 104403  000000' 000566'         MSGN$,BEGIN,MSG3        ;ASCII MESSAGE CALL WITH COMMON HEADER
  535  000554' 000207                  RTS     PC                      ;RETURN
  536
  537  000556' 000572'                  MSG1:   NONXT
  538  000560' 177777                  177777
  539  000562' 000633'                  MSG2:   DIAG
  540  000564' 177777                  177777
  541  000566' 000673'                  MSG3:   NDIAG
  542  000570' 177777                  177777
  543
  544  000572' 042045  040511  047107  NONXT:  .ASCIZ  "%DIAGNOSTIC ROM IS NON-EXISTENT%"
       000600' 051517  044524  020103
       000606' 047522  020115  051511
       000614' 047040  047117  042455
       000622' 044530  052123  047105
       000630' 022524      000
  545  000633'     045  044504  043501  DIAG:   .ASCIZ  "%DIAGNOSTIC ROM CHECKSUM ERROR%"
       000640' 047516  052123  041511
       000646' 051040  046517  041440
       000654' 042510  045503  052523
       000662' 020115  051105  047522
       000670' 022522      000
  546  000673'     045  047516  026516  NDIAG:  .ASCIZ  "%NON-DIAGNOSTIC ROM CHECKSUM ERROR%"
       000700' 044504  043501  047516
       000706' 052123  041511  051040
       000714' 046517  041440  042510
       000722' 045503  052523  020115
       000730' 051105  047522  022522
       000736'     000
  547
  548          000001                  .END
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ACSR     000102R          BR2      000013R          MODNAM   000000R          PRTV6  = 000300          START    000234R
ADDR     000006R          BTOD$  = 104421           MODSP    000224R          PRTV7  = 000340          STAT     000226R
ADDR22= 001000            CDATA$= 104412           MSGN$  = 104403           PS     = 177776          ST1      000250R
ASB      000106R          CONFIG   000056R          MSGS$  = 104402           PSW    = 177776          SUMH     000226R
ASTAT    000104R          CSRA     000100R          MSG$   = 104401           PUSH   = 005746          SUML     000224R
AWAS     000110R          DATCK$= 104411            MSG1     000556R          PUSH2  = 024646          SVR0     000062R
BEGIN    000500R          DATER$= 104404            MSG2     000562R          RAND$  = 104417          SVR1     000064R
BIT0   = 000001           DCERR    000502R          MSG3     000566R          RANNUM   000054R          SVR2     000066R
BIT1   = 000002           DIAG     000633R          NDIAG    000673R          RESTRT   000234R          SVR3     000070R
BIT10  = 002000           DVID1    000014R          NONXT    000572R          RES1     000056R          SVR4     000072R
BIT11  = 004000           ENDI$= 104413             NULL   = 000000           RES2     000060R          SVR5     000074R
BIT12  = 010000           END$   = 104410           OPEN   = 000000           RSTPT    000112R          SVR6     000076R
BIT13  = 020000           ERRTYP   000106R          OTOA$  = 104420           R6     =%000006          SYSCNT   000052R
BIT14  = 040000           EXIT$  = 104400           PASCNT   000034R          R7     =%000007          TMPH     000232R
BIT15  = 100000           GETPA$= 104415            PCR    = 177520           SRADR    000102R          TMPL     000230R
BIT2   = 000004           GWBUF$= 104414            PIRQ$  = 000004           SOFCNT   000042R          TRPDFD=  000022
BIT3   = 000010           HRDCNT   000044R          POPSP  = 005726           SOFER$= 104406            VECTOR   000010R
BIT4   = 000020           HRDER$= 104405            POPSP2 = 022626           SOFPAS   000046R          WASADR   000104R
BIT5   = 000040           HRDPAS   000050R          PRTY   = 000000           SPOINT   000032R          WDFR     000116R
BIT6   = 000100           ICONT    000036R          PRTV0  = 000000           SPSIZ  = 000040           WDTO     000114R
BIT7   = 000200           ICOUNT   000040R          PRTV1  = 000040           SR1      000016R          XFLAG    000005R
BIT8   = 000400           IDNUM    000122R          PRTV2  = 000100           SR2      000020R          .      = 000737R
BIT9   = 001000           INIT     000030R          PRTV3  = 000140           SR3      000022R
BREAK$= 104407            INTR     000120R          PRTV4  = 000200           SR4      000024R
BR1      000012R          MAP22$= 104416            PRTV5  = 000240           ST       000234R

. ABS.  000000      000
        000737      001

 ERRORS DETECTED:  0
 DEFAULT GLOBALS GENERATED:  0

 ,XBMDC0.SEQ=DDXCOM.P11,XBMDC0.P11
 RUN-TIME:  .9  1 .1 SECONDS
 RUN-TIME RATIO: 70/2=28.4
 CORE USED:  7K  (13 PAGES)
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