1   .REM!

IDENTIFICATION

PRODUCT CODE: AC-E791B-MC

PRODUCT NAME: CXKWCB0 KW11-W MODULE

PRODUCT DATE: SEPTEMBER 1978

MAINTAINER: DEC/X11 SUPPORT GROUP

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1. ABSTRACT:

'KWC' IS AN IOMOD THAT EXERCISES THE KW11-W WATCHDOG
TIMER OPTION. THE KW11W IS AN INTERRUPT DRIVEN HARDWARE
MONITOR WHICH MUST BE REPULSED UPON AN INITIAL TIME-OUT
INTERUPT (T2),BEFORE THE TIMER REACHES ITS (T3) AND FATAL
TIME OUT.
 IF THE TIMER IS PULSED CONSECUTIVELY WITHIN A PREDETERMINED
TIME FRAME (T1 TIME) A SHORT LOOP INTERRUPT WILL OCCUR.

2.REQUIREMENTS:

HARDWARE:

1 M7823 KW11W LOGIC MODULE
1 M105 DEVICE ADDRESS MODULE
1 M7821 DEVICE INTERRUPT MODULE

STORAGE:: KWC REQUIRES:
              1. DECIMAL WORDS: 167
              2. OCTAL WORDS: 0247
              3. OCTAL BYTES: 516

3. PASS DEFINITION:

ONE PASS IS 600 TIME OUTS OF THE WATCH DOG DELAY (T2).

4. EXECUTION TIME:

EXECUTION TIME IS DEPENDENT UPON THE TIME DURATION
OF THE WATCHDOG DELAY (T2), WHICH IS HARDWARE SELECTABLE ONLY.

5. CONFIGURATION REQUIREMENTS:

DEFAULT PARAMETERS:
DEVADR: 172400   VECTORS:1.
BR1:7   DEVCNT:1

SETUP REQUIREMENTS: USER MUST SPECIFY THE VECTOR
ADDRESS OF THE KW11-W AT CONFIGURATION TIME.

6. DEVICE/OPTION SETUP:

***** THE TEST CONNECTOR (7009463) MUST BE INSTALLED ON M7823 MODULE. *****

7. MODULE OPERATIONS:

THE KW11W IS PRIMED BY FIRING THE WATCH DOG DELAY
(T2) AND ENABLING ITS INTERRUPT. TIME OUT OF (T2) GENERATES
AN INTERRUPT WHICH GETS SERVICED BY PULSING THE WATCH DOG
(T2) DELAY. ANY ILLEGAL STATUS IS REPORTED BY THE "ERROR"
HANDLER ROUTINE.

8. OPERATING OPTIONS:

NONE

9. NON-STANDARD PRINTOUTS:

NONE

```
000000:               IOMOD <KWCB >,172400,1,7,,600,134
000000:               MODULE  140000,KWCB,,172400,1,7,,600,134
                      .TITLE  KWCB DEC/X11 SYSTEM EXERCISER MODULE
               ;      DDXCOM  VERSION  6      23-MAY-78
                      ;************************************************************
                      .LIST   BIN
000000:               BEGIN:
000000: 053513 041103    040 MODNAM: .ASCII  /KWCB /  ;MODULE NAME.
000005:    000           XFLAG:  .BYTE   OPEN             ;USED TO KEEP TRACK OF WBUFF USAGE
000006: 172400           ADDR:   172400+0                 ;1ST DEVICE ADDR.
000010: 000001           VECTOR: 1+0                      ;1ST DEVICE VECTOR.
000012:    340           BR1:    .BYTE   PRTY7+0          ;1ST BR LEVEL.
000013:    000           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: 140000           STAT:   140000                   ;STATUS WORD.
000030: 000234:          INIT:   START                    ;MODULE START ADDR.
000032: 000224:          SPOINT: MODSP                    ;MODULE STACK POINTER.
000034: 000000           PASCNT: 0                        ;PASS COUNTER.
000036: 000600           ICONT:  600                      ;# OF ITERATIONS PER PASS=600
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:                  SBADR:                           ;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           ASB:    OPEN                     ;EXPECTED DATA.
000110: 000000           AWAS:   OPEN                     ;ACTUAL DATA.
000112: 000242:          RSTPT:  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: 000134           IDNUM:  134                      ;MODULE IDENTIFICATION NUMBER=134
```

```
000040               .REPT   SPSIZ           ;MODULE STACK STARTS HERE.
                     .NLIST
                     .WORD   0
                     .LIST
                     .ENDR
000224:           MODSP:
                  ;************************************************************
```

```
187                                         ;DEVICE REGISTERS LISTED LINEARLY
188   000224'  000000                       CSR:    OPEN                    ;CONTROL + STATUS WATCH-DOG
189   000226'  000000                       CINT:   OPEN                    ;INTERRUPT FLAG CLEAR INST.
190   000230'  000000                       ECSR:   OPEN                    ;EXTERNAL CONTROL + STATUS
191   000232'  000000                       SWBU:   OPEN                    ;SWITCH BUS
192
193                                          ;
194                                          ;
195                                          ;
196
197   000234'  012767  000001   177656       START:  MOV    #1,INTR          ;ONE INTERRUPT/ITERATION
198   000242'  016705  177540               RESTRT: MOV    ADDR,R5          ;SET UP ADDRESSES FOR THIS MODULE
199   000246'  010567  177752                       MOV    R5,CSR
200   000252'  005725                                TST    (R5)+            ;+2 TO ADDR.
201   000254'  010567  177746                        MOV    R5,CINT
202   000260'  005725                                TST    (R5)+            ;+2 TO ADDR.
203   000262'  010567  177742                        MOV    R5,ECSR
204   000266'  005725                                TST    (R5)+            ;+2 TO ADDR.
205   000270'  010567  177736                        MOV    R5,SWBU
206   000274'  016767  177724   177576               MOV    CSR,CSRA         ;SET THIS CSR ADDR. FOR CURRENT ONE
207   000302'  016767  177550   000204               MOV    ICONT,COUNT      ;SET FOR END PASS = 600 TRIPS
208   000310'  005777  177712                         TST    @CINT            ;CLEAR ANY FLAG'S.DONE BY ACCESSING THIS WORD
209   000314'  016700  177470                        MOV    VECTOR,R0        ;SET VECTORS FOR INT. SERVICE
210   000320'  012720  000370'                        MOV    #KWW,(R0)+
211   000324'  016720  177462                        MOV    BR1,(R0)+
212   000330'  012720  000370'                        MOV    #KWW,(R0)+
213   000334'  016710  177452                        MOV    BR1,(R0)
214   000340'  052777  000400   177656               BIS    #400,@CSR        ;CLEAR RECEIVE FLAG
215   000346'  005777  177654                         TST    @CINT            ;CLEAR T1 & T2 BY ACCESSING THIS WORD
216   000352'  012777  000100   177644               MOV    #100,@CSR        ;ENABLE INT.
217   000360'  005277  177640                         INC    @CSR             ;ENABLE KW11W
218   000364'  104400  000000'                        EXIT$,BEGIN             ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
219
220
221                                          ;
222                                          ;SERVICE INTERRUPTS BY FIRST TESTING FOR A T2 (ONLY)
223                                          ;FLAG AND PULSE TIMER TO KEEP RUNNING
224
225   000370'                                KWW:
226                                          ;------------------------------------------------------------------
227   000370'  000004  000000'  000376'      PIRQ$,BEGIN,KWWA                ; QUEUE UP TO CONTINUE AT KWWA AND RTI
228                                          ;------------------------------------------------------------------
229
230   000376'  005777  177622               KWWA:   TST    @CSR             ;TEST FOR T2 FLAG ONLY
231   000402'  100422                                BMI    STATU            ;REPORT SHORT LOOP FLAG SET
232   000404'  032777  040000   177612               BIT    #40000,@CSR      ;TEST FOR RECEIVE FLAG
233   000412'  001016                                BNE    STATU            ;REPORT THAT RECEIVE FLAG SET
234   000414'  105777  177604                        TSTB   @CSR             ;TEST FOR A T2 FLAG
235   000420'  100013                                BPL    STATU            ;REPORT A STATUS ERROR NO FLAG
236   000422'  005777  177600                        TST    @CINT            ;CLR T2 FLAG
237   000426'  005367  000062                         DEC    COUNT
238   000432'  001424                                BEQ    FIN              ;REPORT AN END PASS IF DONE
239   000434'  104413  000000'                        ENDIT$,BEGIN            ;SIGNAL END OF ITERATION.
240                                                                          ;MONITOR SHALL TEST END OF PASS
241   000440'  005277  177560                        INC    @CSR             ;KEEP TIMER MOVING
242
```

```
243   000444'  104400  000000'                        EXIT$,BEGIN             ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
244                                          ;REPORT A STATUS ERROR
245   000450'  017767  177550   177424      STATU:  MOV    @CSR,ACSR
246   000456'  042777  000100   177540               BIC    #100,@CSR        ;SHUT-OFF INTERRUPT
247   000464'  012767  000011   177414               MOV    #11,ERRTYP       ;ILLEGAL INTERRUPT
248                                          ;***********************************************************
249   000472'  104405  000000'  000000               HRDER$,BEGIN,NULL       ;
250                                          ;***********************************************************
251   000500'  104410  000000'               END$,BEGIN              ;
252
253                                          ;REPORT AN ENDPASS OF 600 TIMER INTS.
254   000504'  005077  177514               FIN:    CLR    @CSR             ;CLEAR INT. EN
255   000510'  104413  000000'                       ENDIT$,BEGIN            ;SIGNAL END OF ITERATION.
256                                                                          ;MONITOR SHALL TEST END OF PASS
257   000514'  000000                       COUNT:  OPEN                     ;COUNT INTS.
258           000001                                 .END
```

```
ACSR     000102R      169#   245*
ADDR     000006R      135#   198
ADDR22=  001000       187#
ASB      000106R      173#
ASTAT    000104R      171#
AWAS     000110R      174#
BEGIN    000000R      132#   218    228    240    243    249    251    255
BIT0   = 000001       187#
BIT1   = 000002       187#
BIT10  = 002000       187#
BIT11  = 004000       187#
BIT12  = 010000       187#
BIT13  = 020000       187#
BIT14  = 040000       187#
BIT15  = 100000       187#
BIT2   = 000004       187#
BIT3   = 000010       187#
BIT4   = 000020       187#
BIT5   = 000040       187#
BIT6   = 000100       187#
BIT7   = 000200       187#
BIT8   = 000400       187#
BIT9   = 001000       187#
BREAKS$= 104407       187#
BR1      000012R      137#   211    213
BR2      000013R      138#
BTOD$  = 104421       187#
CDATA$= 104412        187#
CINT     000226R      189#   201*   208    215    237
CONFIG   000056R      157#
COUNT    000224R      188#   238*   257#
CSR      000234R      188#   199*   206    214*   216*   217*   231    233    235    242*   245    246*   254*
CSRA     000100R      167#
DATCKS$= 104411       187#
DATER$= 104404        187#
DVID1    000014R      139#
ECSR     000230R      190#   203*
ENDITS$= 104413       187#   240    255
ENDS$  = 104410       187#   251
ERRTYP   000106R      172#   247*
EXITS$ = 104400       187#   218    243
FIN      000504R      239#   254#
GETPAS$= 104415       187#
GWBUF$= 104414        187#
HRDCNT   000044R      152#
HRDER$= 104405        187#   249
HRDPAS   000050R      154#
ICONT    000036R      149#   207
ICOUNT   000040R      150#
IDNUM    000122R      179#
INIT     000030R      146#
INTR     000120R      178#   197*
KWW      000370R      210    212    226#
KWWA     000376R      228    231#
MAP22$= 104416        187#
MODNAM   000000R      133#
```

```
MODSP    000224R      147#   185#
MSGN$= 104403         187#
MSGS$$= 104402        187#
MSG$$  = 104401       187#
NULL   = 000000       187#   249
OPEN   = 000000       134#   140    141    142    143    160    161    162    163    164    165    166    167
                      169    171    173    174    176    177    178    187#   188    189    190    191    257
OTOA$ = 104420        187#
PASCNT   000034R      148#
PIRQ$  = 000004       187#   228
POPSP  = 005726       187#
POPSP2= 022626        187#
PRTY     000000       138    187#
PRTY0  = 000000       187#
PRTY1  = 000040       187#
PRTY2  = 000100       187#
PRTY3  = 000140       187#
PRTY4  = 000200       187#
PRTY5  = 000240       187#
PRTY6  = 000300       187#
PRTY7  = 000340       137    187#
PS     = 177776       187#
PSW    = 177776       187#
PUSH   = 005746       187#
PUSH2  = 024646       187#
RAND$  = 104417       187#
RANNUM   000054R      156#   198#
RESTRT   000242R      175#
RES1     000056R      159#
RES2     000060R      175#
RSTRT    000112R      168#
SBADR    000102R      151#
SOFCNT   000042R      187#
SOFER$= 104406        187#
SOFPAS   000046R      153#
SPOINT   000032R      147#
SPSIZ  = 000040       1      180
SR1      000016R      140#
SR2      000020R      141#
SR3      000022R      143#
SR4      000024R      146#   197#
START    000026R      145*
STATU    000450R      232#   234    236    245#
SVR0     000062R      160#
SVR1     000064R      161#
SVR2     000066R      162#
SVR3     000070R      163#
SVR4     000072R      164#
SVR5     000074R      165#
SVR6     000076R      166#   205*
SWBU     000232R      191#
SYSCNT   000052R      157#
TRPDFD=  000022       187#
VECTOR   000016R      136#   209
WASADR   000104R      170#
```

WDFR   000116R   177#
WDTO   000114R   176#
XFLAG   000005R   134#

. ABS.   000000   000
         000516   001

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

XKWCBO,XKWCBO/SOL/CRF:SYM=DDXCOM,XKWCRO
RUN-TIME: 1 1 .2 SECONDS
RUN-TIME RATIO: 26/2=10.5
CORE USED: 7K (13 PAGES)