PDP11

LOOPBACK PROGRAM

MD-11-DZVTK-A

EP-DZVTK-A-DL-A

FICHE 1 OF 1

NOV 1976

digital

MADE IN USA

IDENTIFICATION

PRODUCT CODE: MD-11-DZVTK-A-D

PRODUCT NAME: VT INPUT LINE LOOP BACK PROGRAM

DATE: JULY, 1976

MAINTAINER: DIAGNOSTIC ENGINEERING

AUTHOR: DAVID L. ADAMS

1. OBJECT:

THE OBJECT OF THIS PROGRAM IS TO RESIDE IN THE REMOTE TERMINAL AND MONITOR THE SERIAL LINES COMING FROM THE DHBE. UPON DETECTING DATA THE PROGRAM WILL SEND THE SAME DATA BACK TO THE SAME SERIAL LINE UNIT INTERFACE THAT SENT IT OUT. THE PROGRAM WILL HANDLE UP TO 4 SERIAL LINE INTERFACE OPTIONS.

THIS LOOP BACK INSURES THAT ALL LINE CONNECTIONS BETWEEN THE DHBE AND THE REMOTE TERMINAL ARE FUNCTIONAL.

THE PROGRAM IS SELF STARTING WHEN LOADED BY THE ABSLDR.

2. REQUIREMENTS:

THE ONLY REQUIREMENTS ARE IN THE ADDRESS SELECTION OF THE VT SERIAL LINE DEVICES. THEY MUST BE SET TO ADDRESS MULTIPLES OF 10,IE. 175610, 175620, 175630, ETC. THEY MUST ALSO HAVE THEIR VECTOR ADDRESSES SET TO 300 THROUGH 336.

3. OPERATION:

UPON STARTING THE PROGRAM (LOC. 200 JUMPES TO 1200) IT SETS UP THE STACK POINTER THEN SETS THE INTERUPT ENABLE BIT FOR EACH SERIAL LINE DEVICE. THEN IT CLEARS A LOCATION IN THE STACK AND DOES A "RTI" THUS SETTING TO ZERO THE INTERUPT LEVEL OF THE PSW.

NOW IT SETS IN A "WAIT" INSTRUCTION FOR AN INTERUPT CAUSED BY ONE OF THE RECIEVER LINES GETTING DATA. IT THEN ADJUSTS THE INTERNAL DEVICE CODE FOR THE DEVICE JUST INTERUPTING, LOOKS FOR THE TRANSMIT READY FLAG, AND THEN MOVES THE DATA FROM THE RECIEVE BUFFER TO THE TRANSMIT BUFFER OF THAT DEVICE. FINALLY IT DOES A "RTI" BACK TO THE "WAIT" INSTRUCTION TO ACCEPT THE NEXT INTERUPT.

NOTE: THE PROGRAM IS SELF STARTING AND WILL, AFTER IT'S INITIAL SET UP START SENDING ANYTHING IT SEES ON THE RECIEVE LINE BACK DOWN THE TRANSMIT LINE. THE PROGRAM IN THE DHBE MUST BE AWARE THAT IT WILL START GETTING DATA BACK AT IT'S RECIEVER WHEN THIS LOOP BACK PROGRAM IS RUNNING.

THE MD-11-DZVTK MUST BE RUNNING BEFORE THE KLBA DIAGNOSTIC IS STARTED IN THE DHBE.

4. LISTING

```
                                        .TITLE  MAINDEC-11-DZVTK-A
                                        ;VT INPUT LINE LOOP BACK PROGRAM
                                        ;
                                        ;COPYRIGHT (C) JULY, 1976
                                        ;DIGITAL EQUIPMENT CORPORATION
                                        ;MAYNARD, MASS. 01754
                                        ;
                                        ;PROGRAM BY DAVID L. ADAMS

                                        ;THIS TEST RUNS IN THE PDP 11 PROCESSOR OF THE VT'S WHILE THE KL8A
                                        ;LINE TEST DIAGNOSTIC  IS BEING RUN IN THE 8/A.
                                        ;THIS PROGRAM MUST BE RUNNING BEFORE THE KL8A TEST IS STARTED.

                                        .ENABL ABS,AMA

                000000                  R0 = %0
                000006                  SP = %6
                177776                  PSW = 177776
                000004                  .=4
000004          000006                  .+2             ;HALT ON A TRAP
000006          000000                  0

                000200                  .=200
000200          000137  001200          JMP START

                001200                  .=1200

001200          012706  001200  START:  MOV #1200,SP
001204          012737  001224  000004  MOV #3$,4                ;SET UP THE TIME OUT VECTOR
001212          013700  001342          MOV DLCODE,R0
001216          005001                  CLR R1
001220          012710  000100  2$:     MOV #100,(R0)           ;SET THE INTERUPT ENABLE
001224          062700  000010  3$:     ADD #10,R0              ;GO TO NEXT DL11
001230          005201                  INC R1
001232          020127  000004          CMP R1,#4
001236          001370                  BNE 2$
001240          012737  000006  000004  MOV #6,4
001246          005046                  CLR -(SP)
001250          012746  001256          MOV #1$,-(SP)           ;CLEAR THE PSW
001254          000002                  RTI
001256          000001  1$:     WAIT                            ;WAIT FOR THE INTERUPT
001260          000776                  BR 1$
```

```

001262  013700  001342          SERV0:  MOV DLCODE,R0           ;GET ADDR. OF INTERUPTING DL11
001266  000416                          BR LOOPBK
001270  013700  001342          SERV1:  MOV DLCODE,R0
001274  062700  000010                  ADD #10,R0              ;ADD 10 TO OFFSET ADDR. TO
001300  000411                          BR LOOPBK               ;INTERUPTING DEVICE
001302  013700  001342          SERV2:  MOV DLCODE,R0
001306  062700  000020                  ADD #20,R0              ;ADD 20 TO OFFSET ADDR.
001312  000404                          BR LOOPBK
001314  013700  001342          SERV3:  MOV DLCODE,R0
001320  062700  000030                  ADD #30,R0              ;ADD 30 TO OFFSET ADDR.
001324  105760  000004          LOOPBK: TSTB 4(R0)              ;WAIT FOR XMIT FLAG
001330  100375                          BPL LOOPBK
001332  016060  000002  000006          MOV 2(R0),6(R0)         ;SEND THE DATA BACK
001340  000002                          RTI
001342  175610                  DLCODE: 175610                  ;TO CHANGE DEVICE CODES CHANGE THIS LOCATION

                                        ;BUT ALL DEVICES MUST BE SET TO 17XX10, 17XX20, 17XX30, 17XX40.

        000300                          .=300

000300  001262                          SERV0                   ;INTERUPT ADDRESS FOR DL11 17XX10
000302  000340                          340                     ;PRI LEVEL 7
000304  000306                          .+2                     ;NO INTERUPT ON TRANSMIT LINE
000306  000000                          0                       ;ACCEPTED
000310  001270                          SERV1                   ;INTERUPT ADDRESS FOR DL11 17XX20
000312  000340                          340
000314  000316                          .+2
000316  000000                          0

000320  001302                          SERV2                   ;INTERUPT ADDRESS FOR DL11 17XX30
000322  000340                          340
000324  000326                          .+2
000326  000000                          0
000330  001314                          SERV3                   ;INTERUPT ADDRESS FOR DL11 17XX40
000332  000340                          340
000334  000336                          .+2
000336  000000                          0

        001200                  .END START
```

F01


```
DLCODE  001342              31      46      48      51      54      60*
LOOPBK  001324              47      50      53      56*     57
PSW    = 177776             19*
R0     =%000000             17*     31*     33*     34*     46*     48*     49*     51*     52*     54*     55*     56      58*
R1     =%000001             32*     35*     36
SERV0   001262              46*     66
SERV1   001270              48*     70
SERV2   001302              51*     75
SERV3   001314              54*     79
SP     =%000006             18*     29*     39*     40*
START   001200              25      29*     84
.      = 000340             20*     21      24*     27*     64*     68      72      77      81
```

G01

```
MAINDEC-11-DZVTK-A      MACY11 27(732)  03-JUN-76  14:56  PAGE 4
DZVTKA.P11      CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

ADD         34      49      52      55
BNE         37
BPL         57
BR          43      47      50      53
CLR         32      39
CMP         36
INC         35
JMP         25
MOV         29      30      31      33      38      40      46      48      51      54      58
RTI         41      59
TSTB        56
WAIT        42
.ENABL      15
.END        84
.TITLE       2


 ERRORS DETECTED:  0
 DEFAULT GLOBALS GENERATED:  0

 *DZVTKA,DZVTKA/CRF←DZVTKA
 RUN-TIME:  .4 .4 .1 SECONDS
 RUN-TIME RATIO: 9/1=8.5
 CORE USED:  6K  (11 PAGES)
```

H01

Spooler runtime 1 Seconds, 9 KCS, 20 disk reads, 3 disk writes, 6 pags: