

PDP11

LGOPBACK PROGRAM
MD-11-DZVTK-A

EP-DZVTK-A-DL-A

COPYRIGHT 1976

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

COPYRIGHT (C) 1976
DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASS.

THIS SOFTWARE IS FURNISHED UNDER A LICENSE FOR USE ONLY ON A SINGLE COMPUTER SYSTEM AND MAY BE COPIED ONLY WITH THE INCLUSION OF THE ABOVE COPYRIGHT NOTICE. THIS SOFTWARE, OR ANY OTHER COPIES THEREOF, MAY NOT BE PROVIDED OR OTHERWISE MADE AVAILABLE TO ANY OTHER PERSON EXCEPT FOR USE ON SUCH SYSTEM, AND TO ONE WHO AGREES TO THESE LICENSE TERMS. TITLE TO AND OWNERSHIP OF THE SOFTWARE SHALL AT ALL TIMES REMAIN IN DIGITAL EQUIPMENT CORPORATION.

THE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT CORPORATION.

DEC ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL EQUIPMENT CORPORATION.

1. OBJECT:

THE OBJECT OF THIS PROGRAM IS TO RESIDE IN THE REMOTE TERMINAL AND MONITOR THE SERIAL LINES COMING FROM THE DHSE. 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 DHSE 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 INTERRUPT ENABLE BIT FOR EACH SERIAL LINE DEVICE. THEN IT CLEARS A LOCATION IN THE STACK AND DOES A "RTI" THUS SETTING TO ZERO THE INTERRUPT LEVEL OF THE PSW.

NOW IT SETS IN A "WAIT" INSTRUCTION FOR AN INTERRUPT CAUSED BY ONE OF THE RECIEVER LINES GETTING DATA. IT THEN ADJUSTS THE INTERNAL DEVICE CODE FOR THE DEVICE JUST INTERRUPTING, 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 INTERRUPT.

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 DHSE 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 DHSE.

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 KLBA
;LINE TEST DIAGNOSTIC IS BEING RUN IN THE 8/A.
;THIS PROGRAM MUST BE RUNNING BEFORE THE KLBA TEST IS STARTED.

.ENABL ABS,AMA

RO = %0
SP = %6
PSW = 177776
.=4
+2
0

;HALT ON A TRAP

.=200
JMP START

.=1200

START: MOV #1200,SP
MOV #3\$,4
MOV DLCODE,RO
CLR R1
2\$: MOV #100,(RO)
3\$: ADD #10,RO
INC R1
CMP R1,#4
BNE 2\$
MOV #6,4
CLR -(SP)
MOV #1\$,-(SP)
RTI
1\$: WAIT
BR 1\$

;SET UP THE TIME OUT VECTOR

;SET THE INTERRUPT ENABLE
;GO TO NEXT DL11

;CLEAR THE PSW

;WAIT FOR THE INTERRUPT

	000000		
	000006		
	177776		
	000004		
000004	000006		
000006	000000		
	000200		
000200	000137	001200	
	001200		
001200	012706	001200	
001204	012737	001224	000004
001212	013700	001342	
001216	005001		
001220	012710	000100	
001224	062700	000010	
001230	005201		
001232	020127	000004	
001236	001370		
001240	012737	000006	000004
001246	005046		
001250	012746	001256	
001254	000002		
001256	000001		
001260	000776		

E01

```

45
46 001262 013700 001342      SERVO:  MOV DLCODE,RO      ;GET ADDR. OF INTERRUPTING DL11
47 001266 000416              BR LOOPBK
48 001270 013700 001342      SERV1:  MOV DLCODE,RO
49 001274 062700 000010      ADD #10,RO      ;ADD 10 TO OFFSET ADDR. TO
50 001300 000411              BR LOOPBK      ;INTERRUPTING DEVICE
51 001302 013700 001342      SERV2:  MOV DLCODE,RO
52 001306 062700 000020      ADD #20,RO      ;ADD 20 TO OFFSET ADDR.
53 001312 000404              BR LOOPBK
54 001314 013700 001342      SERV3:  MOV DLCODE,RO
55 001320 062700 000030      ADD #30,RO      ;ADD 30 TO OFFSET ADDR.
56 001324 105760 000004      LOOPBK: TSTB 4(RO)      ;WAIT FOR XMIT FLAG
57 001330 100375              BPL LOOPBK
58 001332 016060 000002 000006  MOV 2(RO),6(RO)      ;SEND THE DATA BACK
59 001340 000002
60 001342 175610      DLCODE: 175610      ;TO CHANGE DEVICE CODES CHANGE THIS LOCATION
61
62      ;BUT ALL DEVICES MUST BE SET TO 17XX10, 17XX20, 17XX30, 17XX40.
63
64      000300      .=300
65
66 000300 001262      SERVO      ;INTERUPT ADDRESS FOR DL11 17XX10
67 000302 000340      340      ;PRI LEVEL 7
68 000304 000306      .+2      ;NO INTERUPT ON TRANSMIT LINE
69 000306 000000      0      ;ACCEPTED
70 000310 001270      SERV1      ;INTERUPT ADDRESS FOR DL11 17XX20
71 000312 000340      340
72 000314 000316      .+2
73 000316 000000      0
74
75 000320 001302      SERV2      ;INTERUPT ADDRESS FOR DL11 17XX30
76 000322 000340      340
77 000324 000326      .+2
78 000326 000000      0
79 000330 001314      SERV3      ;INTERUPT ADDRESS FOR DL11 17XX40
80 000332 000340      340
81 000334 000336      .+2
82 000336 000000      0
83
84      001200      .END START

```

F01

MAINDEC-11-DZVTk-A MACY11 27(732) 03-JUN-76 14:56 PAGE 3
 DZVTkA.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

DLCODE	001342	31	46	48	51	54	60#						
LOOPBK	001324	47	50	53	56#	57							
PSW	= 177776	19#											
RO	=%000000	17#	31*	33*	34*	46*	48*	49*	51*	52*	54*	55*	56
RI	=%000001	32*	35*	36									58*
SERVO	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			

GO1

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 pages

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED DATE 4-26-78 BY 13111/9 Monitor JPC-0 877 (100) 600004

[illegible]