

IDENTIFICATION

PRODUCT CODE: MAINDEC-15-DAUCB-A-D
PRODUCT NAME: DEC/V11 EXERCISER TTY OUTPUT MODULE (TTY11)
FOR PDP-15 SYSTEM EXERCISER
DATE: MARCH 10, 1973
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR(S): R. CHRISTOPHER



COPYRIGHT © 1973
DIGITAL EQUIPMENT CORPORATION

PDP-15
TTY
69

DESCRIPTION

THIS MODULE ACCEPTS (AND OUTPUTS ON THE PDP-15 CONSOLE TTY) MESSAGES FROM THE PDP-11'S DEC/X11 EXERCISER.

2. PROGRAM ACTION

THE MODULE MONITORS LOCATION TTYBUF FOR A NON ZERO CONDITION, WHICH WILL OCCUR WHEN THE DEC/X11 EXERCISER LOADS THAT LOCATION WITH A CHARACTER WHICH IT WISHES TO OUTPUT. THE MODULE WILL OUTPUT THAT CHARACTER AND CLEAR LOCATION TTYBUF TO INDICATE TO DEC/X11 THAT ANOTHER MAY BE LOADED.

3. IMPORTANT NOTES

THE PAPER TAPE BINARY (TTY11) MODULE MUST BE ADDED TO THE PDP-15 SYSTEM EXERCISER SYSTEM DEVICE USING THE ADD (^A) COMMAND.

THIS MODULE MUST BE LOADED INTO PDP-15/PDP-11 COMMON MEMORY.

PRIOR TO STARTING THE DEC/X11 EXERCISER, THIS MODULE MUST BE RUNNING AND HAVE OUTPUT THE MESSAGE "TTY11 000001", WHICH INDICATES THAT DEC/X11 MAY THEN (AND ONLY THEN) BE STARTED.

EACH TIME THIS MODULE IS LOADED FROM THE PDP-15 EXERCISER SYSTEM DEVICE, THE OPERATOR MUST START OR RESTART THE DEC/X11 EXERCISER (WHEN APPROPRIATE). THIS ACTION IS NECESSARY TO SYNC THE TWO EXERCISERS.

IF THE OPERATOR WISHES TO ISSUE A CTRL C (^C) TO BOTH EXERCISERS HE MUST DO SO IN THE FOLLOWING ORDER IF HE WISHES TO CONTINUE BOTH EXERCISERS AFTER INTERRUPTING THE RUN. FIRST ISSUE A CTRL C TO DEC/X11, AND WAIT FOR THE PDP-11 TO OUTPUT IT'S RUN SUMMARY AND HALT, THEN AND ONLY THEN ISSUE A CTRL C TO THE PDP-15 EX.. WHEN CONTINUING THE EXERCISERS AFTER DOING A CTRL C, THE PDP-15 EX. MUST BE ISSUED THE EXECUTE (X) COMMAND AND THIS MODULE MUST BE RUNNING BEFORE PRESSING CONTINUE ON THE PDP-11. BOTH EXERCISERS WILL AGAIN BE IN SYNC.

PDP-15 DECTAPE TIMING ERRORS MAY RESULT AFTER A DEC/X11 MESSAGE IS OUTPUT. THEY SHOULD BE IGNORED WHEN IMMEDIATELY FOLLOWING THE DEC/X11 MESSAGE.

PDP-15 SYSTEM EXERCISER OPTION SWITCHES 1-3 MUST BE EQUAL TO ZERO UNTIL AFTER THE TTY11 000001 MESSAGE IS TYPED.

THE READ/WRITE BUFFER AREA FOR DECX11 MODULES STARTS AT WBUF AND IS 1100 DECIMAL WORDS LONG.

4. ERRORS

ERROR CODE	DESCRIPTION
TTY11 000001	DOES NOT INDICATE AN ERROR! INDICATES THAT THE TTY11 MODULE IS NOW RUNNING AND THAT THE DEC/X11 EXERCISER MAY NOW BE STARTED.
TTY11 000002	DOES NOT NECESSARILY INDICATE AN ERROR! TYPE-OUT MAY BE DUE TO NUMBER OF EXERCISER MODULES BEING RUN. INDICATES THAT THE PDP-15 IS WAITING FOR THE PDP-11 TO SET THE TCBP ACCEPTED FLAG.
TTY11 000003	INDICATES THAT THE PDP-11 FAILED TO SEND AN END OF MESSAGE TERMINATOR TO THE PDP-15.


```

43      /THE DEFINITIONS OF ERROR MESSAGES FOR THIS MODULE FOLLOW:
44      /
45      /TTY11  WORD-1          WORD-2          WORD-3          WORD-4
46      /-----  -----          -----          -----
47      /
48      / "      000001
49      /-----  -----
50      /          CODE #1 INDICATES THAT THE PDP-15 MODULE IS NOW RUNNING,
51      /          AND THAT THE DEC/X11 EXERCISER MAY NOW BE STARTED.
52      /
53      / "      000002
54      /-----  -----
55      /          CODE #2 INDICATES THAT THE PDP-15 IS WAITING FOR THE PDP-11
56      /          TO SET THE DR15 TCBP ACCEPTED FLAG.
57      /
58      / "      000003
59      /-----  -----
60      /          ERROR #3 INDICATES THAT THE PDP-11 FAILED TO SEND A TTY
61      /          MESSAGE TERMINATOR TO THE PDP-15.
62      /
63      700401 A      TSF=700401
64      700402 A      TCF=700402
65      700406 A      TLS=700406
66      /
67      00031 R 706001 A      SIOA      706001          /SKIP ON I/O DATA ACCEPTED, SKIPS ON I/O DATA
68      /ACCEPTED FLAG WHICH IS SET WHEN 11 READS TCBP.
69      00032 R 706002 A      CIOD      706002          /CLEAR I/O DATA ACCEPTED FLAG
70      00033 R 706004 A      LIOR      706004          /LOAD I/O REG, LOADS AC INTO I/O REG (NEW TCBP)
71      /FLAG, LOADS AC INTO I/O REG (BECOMES NEW TCBP)
72      .EJECT

```

74	02034	R	020000	A	TTYIN	0		
75	02035	R	200034	R	LAC	TTYIN		
76	02036	R	240161	R	DAC	SERV		
77	02037	R	140220	R	DZM	SYSERR		
78	02040	R	140021	R	DZM	ERWC		
79	02041	R	430032	R	XCT	C10D		
82	02042	R	200126	R	LAC	IFLG		
81	02043	R	750200	A	SZA:CLA		/FIRST TIME THROUGH SINCE LOAD?	
82	02044	R	020103	R	JMP	UC,3	/NO	
83	02045	R	750000	A	CLA			
84	02046	R	400033	R	XCT	L10R	/FOR SYNC	
85	02047	R	777776	A	LAW	=2		
86	02050	R	040020	R	DAC	SYSERR		
87	02051	R	777777	A	LAW	=1		
88	02052	R	040021	R	DAC	ERWC		
89	02053	R	202534	R	LAC	(1		
90	02054	R	040022	R	DAC	ERCODE		
91	02055	R	100170	R	JMS	BRKEX		
92	02056	R	100304	R	JMS	TCBPAC		
93	02057	R	202535	R	LAC	(TABLE		
94	02060	R	040122	R	DAC	BFPNT1		
95	02061	R	777736	A	LAW	=42		
96	02062	R	040110	R	DAC	CNTA		
97	02063	R	202536	R	LAC	(=1100		
98	02064	R	040113	R	DAC	CNT3		
99	02065	R	202537	R	LAC	(WBUF		
100	02066	R	040123	R	DAC	BFPNT2		
101	02067	R	750000	A	UC,2	CLA	/CLR BITS 0 & 1	
102	02070	R	100337	R	JMS	BBUF	/BUILD WBUF	
103	02071	R	202540	R	LAC	(600000	/SET BITS 0 & 1	
104	02072	R	100337	R	JMS	BBUF		
105	02073	R	202541	R	LAC	(200000	/SET BIT 1	
106	02074	R	100337	R	JMS	BBUF		
107	02075	R	202542	R	LAC	(400000	/SET BIT 0	
108	02076	R	100337	R	JMS	BBUF		
109	02077	R	600067	R	JMP	UC,2	/NO	
110	02100	R	202537	R	UC,2A	LAC	(WBUF	
111	02101	R	400033	R	XCT	L10R	/SEND ADDRESS OF WBUF	
112	02102	R	100304	R	JMS	TCBPAC		
113	02103	R	140126	R	UC,3	DZM	IFLG	
114	02104	R	440126	R	ISZ	IFLG		
115	02105	R	100207	R	JMS	TTY11		
116	02106	R	100170	R	JMS	BRKEX		
117	02107	R	600105	R	JMP	=2		
118					EJECT			

```

119                                     /TEMPORARY STORAGE
120 00110 R 000000 A CNTA 0
121 00111 R 000000 A CNT1 0
122 00112 R 000000 A CNT2 0
123 00113 R 000000 A CNT3 0
124 00114 R 000000 A CNT4 0
125 00115 R 000000 A CNT5 0
126 00116 R 000000 A API 0
127 00117 R 000000 A ACSAV 0
128 00120 R 000000 A POINT 0
129 00121 R 000000 A PNT 0
130 00122 R 000000 A BFPNT1 0
131 00123 R 000000 A BFPNT2 0
132 00124 R 000000 A WDCNT 0
133 00125 R 000000 A ITYP 0
134 00126 R 000000 A IFLG 0
135                                     /TEMPORARY STORAGE FOR ERROR STATUS
136 00127 R A SAVBUF ,BLOCK 11
137                                     /RETRIEVE ERROR STATUS FOR MONITOR
138 00140 R 000000 A RESTAT 0
139 00141 R 777767 A LAW -11
140 00142 R 040111 R DAC CNT1 /INIT COUNT
141 00143 R 202543 R LAC (SYSERR
142 00144 R 040120 R DAC POINT /INIT POINTER
143 00145 R 202544 R LAC (SAVBUF
144 00146 R 040121 R DAC PNT /INIT POINTER
145 00147 R 220121 R LAC* PNT
146 00150 R 100155 R JMS STATUS /STORE A WORD
147 00151 R 440121 R ISZ PNT
148 00152 R 440111 R ISZ CNT1 /DONE?
149 00153 R 600147 R JMP ,=4 /NO
150 00154 R 620140 R JMP* RESTAT
151                                     /STORE STATUS
152 00155 R 000000 A STATUS 0
153 00156 R 060120 R DAC* POINT
154 00157 R 440120 R ISZ POINT
155 00160 R 620155 R JMP* STATUS
156                                     ,EJECT

```

```

1      /SERV E ROUTINE
158    00161 R 200000 A      SERV      2
159    00162 R 200020 R      LAC        SYSERR
160    00163 R 542545 R      SAD        (=5
161    00164 R 741000 A      SKP
162    00165 R 620224 R      JMP*     EXIT      /INT RESPONSE?
163    00166 R 750021 A      CLC
164    00167 R 620161 R      JMP*     SERV      /YES
165                                     /NO
166    00170 R 000000 A      /BREAK EXIT TO THE MONITOR
167    00171 R 200020 R      BRKEX    0
168    00172 R 542545 R      LAC        SYSERR
169    00173 R 600202 R      SAD        (=5
170    00174 R 740200 A      JMP        BRK,1
171    00175 R 600200 R      SZA
172    00176 R 777773 A      JMP        ,+3      /PREVIOUS ERROR?
173    00177 R 741000 A      LAW        =5      /YES
174    00200 R 777776 A      SKP
175    00201 R 040020 R      LAW        =2      /INDICATE NORMAL BREAK
176    00202 R 100204 R      DAC        SYSERR
177    00203 R 620170 R      BRK,1    JMS        EXIT
178                                     JMP*     BRKEX
179    00204 R 000000 A      /EXIT TO THE MONITOR
180    00205 R 750000 A      EXIT     2
181    00206 R 620161 R      CLA
182                                     JMP*     SERV
                                           ,EJECT

```



```

183 /ROUTINE TO DETECT AND OUTPUT POP=11 TTY MESSAGES.
184 TTY11 0
185 LAC ITYP
186 DZM ITYP
187 SNA /FIRST TIME THROUGH ROUTINE?
188 DZM TTYBUF /YES, IND TO 11 OK TO SEND MESSAGES
189 ISZ ITYP
190 LAC TTYBUF
191 SNA /MESSAGE PENDING?
192 JMP* TTY11 /NO
193 TTY1,1 LAC* (2646 /LOC TEXT IN MONITOR
194 SZA /MONITOR TYPING?
195 JMP TTY1,2 /YES
196 LAC (=77002
197 DAC WDCNT
198 TSF /TTY FLG?
199 JMP ,+3 /NO
200 TTY1,2 JMS BRKEX
201 JMP TTY1,1 /YES, MONITOR IS TYPING,
202 ISZ WDCNT /WAIT AWHILE,...
203 JMP ,=4 /.....
204 TTY11A LAC TTYBUF
205 DZM TTYBUF /IND TO 11 CODE ACCEPTED,
206 SAD (377 /END OF MESS?
207 JMP TTY11C /YES
208 TLS
209 TSF
210 JMP ,=1
211 TCF
212 CLA
213 DZM CNT3
214 LAW -3
215 DAC CNT4
216 TTY11B LAC TTYBUF
217 SZA /CHARACTER PRESENT?
218 JMP TTY11A /YES
219 ISZ CNT3
220 JMP TTY11B
221 ISZ CNT4
222 JMP TTY11B
223 LAC (SAVBUF
224 DAC POINT
225 LAW -2
226 JMS STATUS
227 LAW -1
228 JMS STATUS
229 LAC (3
230 JMS STATUS
231 LAC SYSERR
232 SZA
233 JMS BRKEX
234 JMS RESTAT
235 JMS BRKEX
236 JMP* TTY11
237 00274 R 777000 A TTY11C LAW -1000
00227 R 200020 A
00210 R 200125 R
00211 R 140125 R
00212 R 741200 A
00213 R 140417 R
00214 R 440125 R
00215 R 200417 R
00216 R 741200 A
00217 R 620207 R
00220 R 222546 R
00221 R 740220 A
00222 R 600227 R
00223 R 202547 R
00224 R 040124 R
00225 R 700401 A
00226 R 600231 R
00227 R 100170 R
00230 R 600220 R
00231 R 440124 R
00232 R 600226 R
00233 R 200417 R
00234 R 140417 R
00235 R 542550 R
00236 R 600274 R
00237 R 700406 A
00240 R 700401 A
00241 R 600240 R
00242 R 700402 A
00243 R 750000 A
00244 R 140113 R
00245 R 777775 A
00246 R 040114 R
00247 R 200417 R
00250 R 740200 A
00251 R 600233 R
00252 R 440113 R
00253 R 600247 R
00254 R 440114 R
00255 R 600247 R
00256 R 202544 R
00257 R 040120 R
00260 R 777776 A
00261 R 100155 R
00262 R 777777 A
00263 R 100155 R
00264 R 202551 R
00265 R 100155 R
00266 R 200020 R
00267 R 740200 A
00270 R 100170 R
00271 R 100140 R
00272 R 100170 R
00273 R 620207 R

```

238	00275 R 040113 R	DAC	CNT3	
239	00276 R 200417 R	LAC	TTYBUF	
240	00277 R 740200 A	SZA		/CHARACTER PRESENT?
241	00300 R 600233 R	JMP	TTY11A	/YES, START NEW MESSAGE,
242	00301 R 440113 R	ISZ	CNT3	
243	00302 R 600276 R	JMP	,=4	
244	00303 R 620207 R	JMP*	TTY11	
245		,EJECT		

246				/					
247	00304	R	000000	A	TCBPAC	Z			
248	00305	R	777775	A	LAW	=3			
249	00306	R	040115	R	DAC	CNT5			
250	00307	R	140112	R	DZM	CNT2			
251	00310	R	100170	R	TCB,1	JMS	BRKEX		
252	00311	R	400031	R	XCT	SIOA		/TCBP ACCEPTED?	
253	00312	R	600315	R	JMP	TCB,2		/NO	
254	00313	R	400032	R	XCT	CIOD		/YES	
255	00314	R	620304	R	JMP*	TCBPAC			
256	00315	R	440112	R	TCB,2	ISZ	CNT2		/TRY AGAIN?
257	00316	R	600310	R	JMP	TCB,1		/YES	
258	00317	R	440115	R	ISZ	CNT5			
259	00320	R	600310	R	JMP	TCB,1			
260	00321	R	202544	R	LAC	(SAVBUF			
261	00322	R	040120	R	DAC	POINT			
262	00323	R	777776	A	LAW	=2			
263	00324	R	100155	R	JMS	STATUS			
264	00325	R	777777	A	LAW	=1			
265	00326	R	100155	R	JMS	STATUS			
266	00327	R	202552	R	LAC	(2			
267	00330	R	100155	R	JMS	STATUS			
268	00331	R	200020	R	LAC	SYSERR			
269	00332	R	740200	A	SZA				
270	00333	R	100170	R	JMS	BRKEX			
271	00334	R	100140	R	JMS	RESTAT			
272	00335	R	100170	R	JMS	BRKEX			
273	00336	R	600305	R	JMP	TCBPAC+1			
274					/				
275	00337	R	000000	A	BBUF	0			
276	00340	R	360122	R	TAD*	BFPNT1			
277	00341	R	060123	R	DAC*	BFPNT2			
278	00342	R	440122	R	ISZ	BFPNT1			
279	00343	R	440123	R	ISZ	BFPNT2			
280	00344	R	440110	R	ISZ	CNTA		/EXHAUST TABLE?	
281	00345	R	600352	R	JMP	BBUF,1		/NO	
282	00346	R	202535	R	LAC	(TABLE		/YES	
283	00347	R	040122	R	DAC	BFPNT1			
284	00350	R	777736	A	LAW	=42			
285	00351	R	040110	R	DAC	CNTA			
286	00352	R	440113	R	BBUF,1	ISZ	CNT3		/DONE BUILDING WBUF?
287	00353	R	620337	R	JMP*	BBUF		/NO	
288	00354	R	600100	R	JMP	UC,2A		/YES	
289					.EJECT				

29				/	
291	00355	R	100000	A	TABLE 100000
292	00356	R	040000	A	40000
293	00357	R	020000	A	20000
294	00360	R	010000	A	10000
295	00361	R	004000	A	4000
296	00362	R	002000	A	2000
297	00363	R	001000	A	1000
298	00364	R	000400	A	400
299	00365	R	000200	A	200
300	00366	R	000100	A	100
301	00367	R	000040	A	40
302	00370	R	000020	A	20
303	00371	R	000010	A	10
304	00372	R	000004	A	4
305	00373	R	000002	A	2
306	00374	R	000001	A	1
307	00375	R	000000	A	0
308	00376	R	077777	A	77777
309	00377	R	137777	A	137777
310	00400	R	157777	A	157777
311	00401	R	167777	A	167777
312	00402	R	173777	A	173777
313	00403	R	175777	A	175777
314	00404	R	176777	A	176777
315	00405	R	177377	A	177377
316	00406	R	177577	A	177577
317	00407	R	177677	A	177677
318	00410	R	177737	A	177737
319	00411	R	177757	A	177757
320	00412	R	177767	A	177767
321	00413	R	177773	A	177773
322	00414	R	177775	A	177775
323	00415	R	177776	A	177776
324	00416	R	177777	A	177777
325					EJECT

326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344

00417 R 000377 A / TTYBUF 377

/ASCII CODED CHARACTERS WILL BE
/ENTERED INTO THIS LOC BY PDP-11,
/THEY WILL BE ACKNOWLEDGED AND
/STORED IN SXBT IN THE BUFFER
/STARTING AT LOC SXBTBF, TTYBUF
/WILL BE CLEARED EACH TIME A
/CHARACTER IS RECEIVED, AS AN
/INDICATION TO THE 11 TO SEND
/ANOTHER, THE END OF A MESSAGE
/IS INDICATED WHEN THE 15 RE=
/CEIVES THE CODE 377,

00420 R 000000 A / WBUF 0
02534 R ,LOC WBUF+2114

/THIS BUFFER IS 1100 DECIMAL LOC'S
/LONG AND IS USED BY THE PDP-11
/AS A READ & WRITE BUFFER FOR IT'S
/DEVICES,

000000 R / .END UODSW

02534 R 000001 A *L
02535 R 000355 R *L
02536 R 776700 A *L
02537 R 000420 R *L
02540 R 600000 A *L
02541 R 200000 A *L
02542 R 400000 A *L
02543 R 000020 R *L
02544 R 000127 R *L
02545 R 777773 A *L
02546 R 002646 A *L
02547 R 700776 A *L
02550 R 000377 A *L
02551 R 000003 A *L
02552 R 000002 A *L

SIZE=02555 NO ERROR LINES

