

HP-41C Video Control Routines by Richard Nelson  
 PPC Calculator Journal Volume 9 N8 P22 Dec 1982  
 Uses HP82160A HPIL and HP82163A Video Interface

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01 LBL "0"           ;Video Control Routines Main Module
02 "\00\00\44\2C\02\88\00" ;0000442C028800 hex
03 RCL M             ;Bring ALPHA to X as NNN
04 STO d             ;Set flags 17, 21, 26, 28, 29, 38, 40, 44
05 XEQ "1"           ;Video Control Routines Module 1
06 XEQ 14             ;Display screen routine (Line 15)
07 XEQ "2"           ;Video Control Routines Module 2
08 XEQ 14             ;Display screen routine (Line 15)
09 XEQ "3"           ;Video Control Routines Module 3
10 XEQ 14             ;Display screen routine (Line 15)
11 XEQ "4"           ;Video Control Routines Module 4
12 XEQ 14             ;Display screen routine (Line 15)
13 XEQ "5"           ;Video Control Routines Module 5
14 GTO "0"           ;Repeat modules 1-5
15 LBL 14             ;Display screen routine
16 SF 17             ;Output ALPHA w/o terminating CR/LF
17 PSE               ;Pause to display screen
18 PSE
19 PSE
20 PSE
21 RTN               ;End of Video Control Main Module
22 LBL "K"           ;Move cursor left
23 "\1BD"           ;Escape D = cursor left
24 GTO 07             ;Output Routine (Line 56)
25 LBL "L"           ;Move cursor up
26 "\1BA"           ;Escape A = cursor up
27 GTO 07             ;Output Routine (Line 56)
28 LBL "M"           ;Move cursor home
29 "\1BH"           ;Escape H = cursor home
30 GTO 07             ;Output Routine (Line 56)
31 LBL "N"           ;Move cursor down
32 "\1BB"           ;Escape B = cursor down
33 GTO 07             ;Output Routine (Line 56)
34 LBL "O"           ;Move cursor right
35 "\1BC"           ;Escape C = cursor right
36 GTO 07             ;Output Routine (Line 56)
37 LBL "P"           ;Cursor toggle
38 FS? 05            ;Flag 5 set?
39 "\1B<"           ;Escape < = Turn cursor OFF
40 FS?C 05           ;Flag 5 set? Clear it.
41 GTO 07             ;Output Routine (Line 56)
42 SF 05             ;Flag 5 clear; set it
43 "\1B>"           ;Escape > = Turn cursor ON
44 GTO 07             ;Output Routine (Line 56)
45 LBL "Q"           ;Roll up
46 "\1BS"           ;Escape S = roll up
47 GTO 07             ;Output Routine (Line 56)
48 LBL "R"           ;Clear display from cursor
49 "\1BJ"           ;Escape J = clear display from cursor
50 GTO 07             ;Output Routine (Line 56)
51 LBL "S"           ;Roll down
52 "\1BT"           ;Escape T = roll down
53 GTO 07             ;Output Routine (Line 56)
54 LBL "T"           ;Clear Device
55 "\1BE"           ;Escape E = clear device
56 LBL 07            ;Output Routine
57 SF 17             ;Output ALPHA w/o terminating CR/LF
58 XROM 28,35        ;OUTA
59 TONE 70           ;Make some noise
60 RTN               ;End of output routine
61 LBL "U"           ;Cursor to address
62 "\1B%"           ;Escape % = cursor to (Column, Row)
63 STO 00            ;Store row in register 00
64 X<>Y              ;Swap row and column number
65 ABS               ;Absolute value of column number
66 ENTER             ;Copy column number to Y

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67 32
68 MOD ;Column MOD 32
69 X#0? ;Is column number nonzero?
70 GTO 08 ;Jump to Adjust Column Number
71 0 ;Set X to 0
72 32 ;Set Y to 0, X to 32
73 GTO 10 ;Append Column Number
74 LBL 08 ;Adjust Column Number
75 64
76 + ;Add 64 to column number
77 91
78 X<=Y? ;Is 91 <= (column + 64)?
79 GTO 09 ;Out of Range (A-Z)
80 CLX ;Clear X from 91 to 0
81 X<>Y ;Exchange with (column + 64)
82 GTO 10 ;Append Column Number
83 LBL 09 ;Out of Range (A-Z)
84 RDN ;Move 91 to T
85 32 ;(Column + 64)
86 - ;(Column + 64) - 32 = (;<=>?)
87 0 ;0 in X
88 X<>Y ;0 in Y, (59-63) in X
89 LBL 10 ;Append Column Number
90 0 ;0 in X
91 X<>Y ;0 in Y, (32, 59-63 or 65-90) in X
92 XROM 29,06 ;BLDSPEC - create character (space ;<=>? A-Z)
93 ARCL X ;Append character created into ALPHA
94 RCL 00 ;Get Row Number
95 ABS ;Absolute value of row number
96 ENTER ;Copy row number to Y
97 16
98 MOD ;Row MOD 16
99 X#0? ;Is row number nonzero?
100 GTO 11 ;Jump to Adjust Row Number
101 0 ;Set X to 0
102 32 ;Set Y to 0, X to 32
103 XROM 29,06 ;BLDSPEC - create character (space)
104 ARCL X ;Append character (space) into ALPHA
105 GTO 07 ;Output Routine (Line 56)
106 LBL 11 ;Adjust Row Number
107 64
108 + ;Add 64 to row number
109 0
110 X<>Y ;Exchange 0 with (row + 64)
111 XROM 29,06 ;BLDSPEC - create character (A-O)
112 ARCL X ;Append character (A-O) into ALPHA
113 GTO 07 ;Output Routine (Line 56)
114 LBL "V" ;Send ESC-(Control Character in X)
115 "\1B" ;Escape character
116 0
117 X<>Y ;Exchange X with value entered
118 XROM 29,06 ;BLDSPEC - create character from X
119 ARCL X ;Append character created into ALPHA
120 XROM 28,35 ;OUTA - Send escape sequence to video
121 RTN ;End of "V" routine
122 LBL "W" ;Toggle arrow/block cursor
123 FS? 06 ;Check flag 6 for cursor type
124 "\1BR" ;Escape R = block cursor
125 FS?C 06 ;If Flag is set, clear it and
126 GTO 07 ;Output block cursor
127 SF 06 ;Flag is clear; set it
128 "\1BQ" ;Escape Q = arrow cursor
129 GTO 07 ;Output arrow cursor
130 LBL "1" ;Opening graphics display
131 SF 17 ;Output ALPHA w/o terminating CR/LF
132 "\1BE\1B<\1B%JO" ;1B451B3C1B254A4F hex (Col 10, Row 15)
133 XROM 28,35 ;OUTA
134 PSE ;Pause to view output
135 "\A0\A0\A0 \A0 " ;A0A0A0202020202020A0202020 hex
136 ">" \A0\A0\A0" ;Append 2020A0A0A0 hex

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137 XROM 28,35 ;OUTA
138 "\1B%BO\1BS" ;1B25424F1B53 hex
139 XROM 28,35 ;OUTA
140 "\A0 \A0 " ;A02020202020202020202020A02020 hex
141 ">" \A0" ;Append 202020A0 hex
142 XROM 28,35 ;OUTA
143 "\1B%NO\1BS" ;1B254E4F1B53 hex
144 XROM 28,35 ;OUTA
145 "\A0 \A0" ;A02020202020202020202020A0 hex
146 ">" \A0" ;Append 202020A0 hex
147 XROM 28,35 ;OUTA
148 "\1B%FO\1BS" ;1B25464F1B53 hex
149 XROM 28,35 ;OUTA
150 "\A0 \A0\A0\A0 \A0" ;A020A0A0A0202020202020202020A0 hex
151 XROM 28,35 ;OUTA
152 "\1B%HO\1BS" ;1B25484F1B53 hex
153 XROM 28,35 ;OUTA
154 "\A0 \A0 " ;A02020202020A02020202020202020 hex
155 ">" \A0" ;Append 202020A0 hex
156 XROM 28,35 ;OUTA
157 "\1B%BO\1BS" ;1B25424F1B53 hex
158 XROM 28,35 ;OUTA
159 "\A0 \A0 " ;A0202020A02020202020202020202020 hex
160 ">" \A0" ;Append 202020A0 hex
161 XROM 28,35 ;OUTA
162 "\1B%BO\1BS" ;1B25424F1B53 hex
163 XROM 28,35 ;OUTA
164 "\A0 \A0 \A0\A0 \A0\A0\A0" ;A02020202020A020A0A02020A0A0A0 hex
165 XROM 28,35 ;OUTA
166 "\1B%BG\1BS\1BS" ;1B2542471B531B53 hex
167 XROM 28,35 ;OUTA
168 "\A0 \A0 \A0\A0\A0\A0\A0 \A0" ;A0202020A020A0A0A0A0A0A020A0 hex
169 XROM 28,35 ;OUTA
170 "\1B%FL\1BS" ;1B25464C1B53 hex
171 XROM 28,35 ;OUTA
172 "\A0 \A0\A0\A0\A0\A0 \A0\A0\A0\A0\A0" ;A020A0A0A0A0A0A020A0A0A0A0A020A0 hex
173 ">"\A0\A0\A0\A0 \A0\A0\A0" ;Append A0A0A0A02020A0A0A0 hex
174 XROM 28,35 ;OUTA
175 "\1B%FG\A0 \A0" ;1B254647A020A0 hex
176 XROM 28,35 ;OUTA
177 "\1B%ZG\A0 \A0" ;1B255A47A0202020A0 hex
178 XROM 28,35 ;OUTA
179 "\1B%HJ\1BS" ;1B25484A1B53 hex
180 XROM 28,35 ;OUTA
181 "\A0 \A0" ;A02020202020A0 hex
182 XROM 28,35 ;OUTA
183 "\1B%ZJ\A0 \A0" ;1B255A4AA0202020A0 hex
184 XROM 28,35 ;OUTA
185 "\1B%TI\A0 \A0 \A0" ;1B255449A02020202020A0202020A0
186 XROM 28,35 ;OUTA
187 "\1B%BI\A0 \A0" ;1B254249A0202020A0 hex
188 XROM 28,35 ;OUTA
189 "\1B%ZH\A0 \A0" ;1B255A48A0202020A0 hex
190 XROM 28,35 ;OUTA
191 "\1B%TG\A0" ;1B255447A0 hex
192 XROM 28,35 ;OUTA
193 "\1B%BI\A0 \A0" ;1B254249A0202020A0 hex
194 XROM 28,35 ;OUTA
195 "\1B%BG\A0 \A0" ;1B254247A0202020A0 hex
196 XROM 28,35 ;OUTA
197 "\1B%BH\A0\A0\A0\A0\A0" ;1B254248A0A0A0A0A0 hex
198 XROM 28,35 ;OUTA
199 "\1B%NH\A0\1B%HG\A0\1BS" ;1B254E48A01B254847A01B53 hex
200 XROM 28,35 ;OUTA
201 PSE ;Pause to view output
202 PSE ;Pause to view output
203 "\1BE\1B<\1B%CD" ;1B451B3C1B254344 hex
204 XROM 28,35 ;OUTA
205 "WELCOME TO THE "
206 ">"WORLD OF"

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207 XROM 28,35 ;OUTA
208 "\1B%IF\C8\D0\AD\B4\B1\A0\D6\C9\C4\C5\CF" ;1B254946C8D0ADB4B1A0D6C9C4C5CF hex
209 XROM 28,35 ;OUTA
210 "\1B% Hand the HP" ;1B25 hex, space, Hand the HP
211 ">" 82163 " ;Append space 82163 space
212 XROM 28,35 ;OUTA
213 "Video Interface"
214 XROM 28,35 ;OUTA
215 RTN ;End of Opening Graphics Display
216 LBL "2" ;HP 82163A Features List
217 SF 17 ;Output ALPHA w/o terminating CR/LF
218 "\1BE\1B<\1B%FO" ;1B451B3C1B25464F hex
219 XROM 28,35 ;OUTA
220 "82163A FEATURES"
221 XROM 28,35 ;OUTA
222 "\1B% O\1BS\1BS" ;1B25204F1B531B53 hex
223 XROM 28,35 ;OUTA
224 "Video or TV\28Ch3" ;Includes left parenthesis
225 ">"\29 Outputs" ;Includes right parenthesis
226 XROM 28,35 ;OUTA
227 "\1BS\1B% O" ;1B531B25204F hex
228 XROM 28,35 ;OUTA
229 "HP-IL Controlle"
230 ">"d\1BS\1B% O" ;Append 641B531B25204F hex
231 XROM 28,35 ;OUTA
232 "Full Cursor Con"
233 ">"trol\1B% O" ;Append 74726F6C1B25204F hex
234 XROM 28,35 ;OUTA
235 "\1BSInverse Chara" ;1B53 hex Inverse Chara
236 ">"cters\1BS" ;Append cters 1B53 hex
237 XROM 28,35 ;OUTA
238 "\1B% OTrace Mode\1B" ;1B25204F hex Trace Mode 1B hex
239 ">"s\1B% O" ;Append 531B25204F hex
240 XROM 28,35 ;OUTA
241 "190 Displayable"
242 XROM 28,35 ;OUTA
243 " Characters\1B% O" ;Space Characters 1B25204F hex
244 ">"\1BS" ;Append 1B53 hex
245 XROM 28,35 ;OUTA
246 "16 (31) Lines "
247 ">"of 32 "
248 XROM 28,35 ;OUTA
249 "Characters\1B% O" ;Characters 1B25204F hex
250 ">"\1BS" ;Append 1B53 hex
251 XROM 28,35 ;OUTA
252 "Cursor This o"
253 ">"r\1BS\1BS\1BS\1BS" ;Append r 1B531B531B531B53 hex
254 XROM 28,35 ;OUTA
255 .002 ;Set up to loop 3 times
256 LBL 03 ;Top of display loop #1
257 "\1B<\1B%LK\1BR\1B>" ;1B3C1B254C4B1B521B3E hex
258 XROM 28,35 ;OUTA
259 PSE ;Pause to view output
260 "\1B<\1B%QK\1BQ\1B>" ;1B3C1B25514B1B511B3E hex
261 XROM 28,35 ;OUTA
262 PSE ;Pause to view output
263 ISG X ;Increment loop counter
264 GTO 03 ;Return to top of display loop #1
265 RTN ;End of HP 82163A Features List
266 LBL "3" ;Display Full Character Set
267 SF 17 ;Output ALPHA w/o terminating CR/LF
268 "\1BE\1B<\1B%\03\02" ;1B451B3C1B250302 hex
269 XROM 28,35 ;OUTA
270 "190 "
271 XROM 28,35 ;OUTA
272 "DISPLAYABLE CHA"
273 ">"RACTERS"
274 XROM 28,35 ;OUTA
275 "\1B%AD" ;1B254144 hex
276 XROM 28,35 ;OUTA

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277 "!"#$%&'()*+,-" ;21-2D hex
278 >"/012345678" ;Append 2E-38 hex
279 XROM 28,35 ;OUTA
280 "9:;<=>?@ABCDE" ;39-45 hex
281 >"FGHIJKLMNOP" ;Append 46-50 hex
282 XROM 28,35 ;OUTA
283 "QRSTUVWXYZ[\]" ;51-5D hex
284 >"^_`abcdefg" ;Append 5E-68 hex
285 XROM 28,35 ;OUTA
286 "ijklmnopqrstu" ;69-75 hex
287 >"vwxyz{|}~" ;Append 76-7E hex
288 XROM 28,35 ;OUTA
289 "\1B% I" ;1B252049 hex
290 XROM 28,35 ;OUTA
291 " ;ç£/¥f$¤'""«<" ;A0-AC hex
292 >">fifl°-†‡•µ¶•" ;Append AD-B7 hex
293 XROM 28,35 ;OUTA
294 ",,"»..%¼¼Ä^~~~" ;B8-C6 hex
295 >"...É°|~" ;Append C7-CF hex
296 XROM 28,35 ;OUTA
297 "-NÖÖÖÖÖxØUUÜÝþ" ;D0-DE hex
298 >"ßàÄä^ääæ" ;Append DF-E7 hex
299 XROM 28,35 ;OUTA
300 "LØE°i i i i ðæóóô1ö" ;E8-F6 hex
301 >"÷1øøfSüýþ" ;Append F7-FE hex
302 XROM 28,35 ;OUTA
303 RTN ;End of Display Character Set
304 LBL "4" ;Scrolling Demonstration
305 SF 17 ;Output ALPHA w/o terminating CR/LF
306 "\1B%\1B<" ;1B451B3C hex
307 XROM 28,35 ;OUTA
308 " START "
309 XROM 28,35 ;OUTA
310 "XXXXXXXXXXXXXXXXXX" ;15 characters X
311 >"XXXXXXXXXX" ;9 characters X
312 1.021 ;Set up to loop 21 times
313 LBL 04 ;Top of display loop #2
314 XROM 28,35 ;OUTA
315 ISG X ;Increment loop counter
316 GTO 04 ;Return to top of display loop #2
317 "\1B%JC Scroll up " ;1B254A43 hex space Scroll up
318 XROM 28,35 ;OUTA
319 .03 ;Set up to loop 31 times
320 LBL 05 ;Top of display loop #3
321 "\1BS" ;1B53 hex
322 XROM 28,35 ;OUTA
323 ISG X ;Increment loop counter
324 GTO 05 ;Return to top of display loop #3
325 "\1B%IC Scroll " ;1B254943 hex space Scroll space
326 >"down " ;Append down
327 XROM 28,35 ;OUTA
328 .03 ;Set up to loop 31 times
329 LBL 06 ;Top of display loop #4
330 "\1BT" ;1B54 hex
331 XROM 28,35 ;OUTA
332 ISG X ;Increment loop counter
333 GTO 06 ;Return to top of display loop #4
334 RTN ;End of Scrolling Demonstration
335 LBL "5" ;Display the time
336 SF 17 ;Output ALPHA w/o terminating CR/LF
337 "\1B<\1BH\1BJ\1B%\08\04" ;1B3C1B481B4A1B250804 hex
338 XROM 28,35 ;OUTA
339 "THE TIME IS:"
340 XROM 28,35 ;OUTA
341 "\1B%\08\08" ;1B250808
342 XROM 28,35 ;OUTA
343 CLA ;Clear ALPHA
344 XROM 26,09 ;CLKTD
345 FIX 6 ;Set 6 decimal places
346 XROM 26,12 ;DATE

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347 " " ;1 space
348 XROM 26,01 ;ADATE
349 XROM 28,35 ;OUTA
350 FIX 4 ;Set 4 decimal places
351 1.01 ;Set up to loop 10 times
352 STO 00 ;Store the loop counter
353 LBL 01 ;Top of display loop #5
354 "\1B%\08\06" ;1B250806 hex
355 XROM 28,35 ;OUTA
356 CLA ;Clear ALPHA
357 XROM 26,28 ;TIME
358 XROM 26,04 ;ATIME
359 XROM 28,35 ;OUTA
360 ISG 00 ;Increment loop counter
361 GTO 01 ;Return to top of display loop #5
362 RTN ;End of Time Display routine
363 LBL "6" ;Beginner's Full Screen Module
364 SF 17 ;Output ALPHA w/o terminating CR/LF
365 "\1BE\1B<0\1B%J 1\1B%T 2" ;1B451B3C301B254A20311B25542032 hex
366 XROM 28,35 ;OUTA
367 "\1B%> " ;1B253E20 hex
368 XROM 28,35 ;OUTA
369 "3 11" ;3 11 ASCII (11 wraps to next row)
370 XEQ "%" ;Display column numbers
371 XEQ "%" ;Display column numbers
372 XEQ "%" ;Display column numbers
373 "2 X" ;Row 2
374 XEQ "=" ;Append 5 X characters & display
375 XEQ "<" ;Display 24 X characters
376 "3 X" ;Row 3
377 XEQ "=" ;Append 5 X characters & display
378 XEQ "<" ;Display 24 X characters
379 "4 X" ;Row 4
380 XEQ "=" ;Append 5 X characters & display
381 XEQ "<" ;Display 24 X characters
382 "5 X" ;Row 5
383 XEQ "=" ;Append 5 X characters & display
384 XEQ "<" ;Display 24 X characters
385 "6 X" ;Row 6
386 XEQ "=" ;Append 5 X characters & display
387 XEQ "<" ;Display 24 X characters
388 "7 X" ;Row 7
389 XEQ "=" ;Append 5 X characters & display
390 XEQ "<" ;Display 24 X characters
391 "8 X" ;Row 8
392 XEQ "=" ;Append 5 X characters & display
393 XEQ "<" ;Display 24 X characters
394 "9 X" ;Row 9
395 XEQ "=" ;Append 5 X characters & display
396 XEQ "<" ;Display 24 X characters
397 "10 " ;Row 10
398 XEQ "=" ;Append 5 X characters & display
399 XEQ "<" ;Display 24 X characters
400 "11 " ;Row 11
401 XEQ "=" ;Append 5 X characters & display
402 XEQ "<" ;Display 24 X characters
403 "12 " ;Row 12
404 XEQ "=" ;Append 5 X characters & display
405 XEQ "<" ;Display 24 X characters
406 "13 " ;Row 13
407 XEQ "=" ;Append 5 X characters & display
408 XEQ "<" ;Display 24 X characters
409 "14 " ;Row 14
410 XEQ "=" ;Append 5 X characters & display
411 XEQ "<" ;Display 24 X characters
412 "15 " ;Row 15
413 XEQ "=" ;Append 5 X characters & display
414 XEQ "<" ;Display 24 X characters
415 XEQ "S" ;Roll down
416 "\1B%OG\1B>" ;1B254F471B3E hex (R15, C7) cursor ON

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417 XROM 28,35          ;OUTA
418 RTN                 ;End of Beginner's Full Screen Module
419 LBL "%"             ;Display column numbers
420 >"2345678901"       ;Append 2345678901
421 XROM 28,35          ;OUTA
422 CLA                 ;Clear ALPHA
423 RTN                 ;End of % routine
424 LBL "="             ;Append 5 X characters & display
425 >"XXXXXX"           ;Append 5 X characters
426 XROM 28,35          ;OUTA
427 RTN                 ;End of = routine
428 LBL "<"             ;Display 24 X Characters
429 "XXXXXXXXXXXXXXXXXX" ;15 X characters
430 >"XXXXXXXXXX"        ;Append 9 X characters
431 XROM 28,35          ;OUTA
432 RTN                 ;End of < routine
433 END                 ;End of Video Control Routines

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07B0C000F20030F70000442C0288009075917E1EF131E0000E
1EF132E0000E1EF133E0000E1EF134E0000E1EF1351DF1300F
A8118989898985C000F2004BF21B44B800C000F2004CF21B41
B800C000F2004DF21B48B800C000F2004EF21B42B800C000F2
004FF21B43B800C000F20050AC05F21B3CAA05B800A805F21B
3EB800C000F20051F21B53B800C000F20052F21B4AB800C000
F20053F21B54B800C000F20054F21B4508A811A7239F4685C0
00F20055F21B253071618313124B63B90010001312BB000916
1440191146BA007771BB000A7513124110710B1071A7469B73
20618311164B63BC0010001312A7469B73B8000C1614401071
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0057AC06F21B52AA06B800A806F21B51B800C000F20031A811
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1B53A723FDA020202020202020202020A0F57F202020A0A7
23F61B25464F1B53A723FFA020A0A0A02020202020202020
A0A723F61B25484F1B53A723FFA02020202020A02020202020
202020F57F202020A0A723F61B25424F1B53A723FFA0202020
A02020202020202020F57F202020A0A723F61B25424F1B
53A723FFA02020202020A020A0A02020A0A0A0A723F81B2542
471B531B53A723FDA0202020A020A0A0A0A020A0A723F61B
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47A0202020A0A723F61B25484A1B53A723F7A02020202020A0
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A02020A0A723F91B254249A0202020A0A723F91B255A48A0
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23F91B254247A0202020A0A723F91B254248A0A0A0A0A723
FC1B254E48A01B254847A01B53A7238989F81B451B3C1B2543
44A723FF57454C434F4D4520544F2054484520F97F574F524C
44204F46A723FF1B254946C8D0ADB4B1A0D6C9C4C5CFA723FE
1B252048616E6420746865204850F87F20383231363320A723
FF566964656F20496E74657266616365A72385C000F20032A8
11F81B451B3C1B25464FA723FF383231363341204645415455
524553A723F81B25204F1B531B53A723FF566964656F206F72
20545628436833FA7F29204F757470757473A723F61B531B25
204FA723FF4850D494C20436F6E74726F6C6C65F87F641B53
1B25204FA723FF46756C6C20437572736F7220436F6EF97F74
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6C65A723FF20436861726163746572731B25204FF37F1B53A7
23FE31362028333129204C696E657320F77F6F6620333220A7
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72736F7220546869732020206FFA7F721B531B531B531B53A7
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1968 BYTES

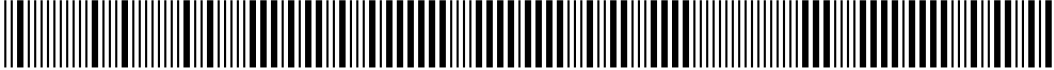
# HP-41C Video Control Routines by Richard Nelson PPC V9 N8 P22 Dec 1982

Program Registers Needed: 282

Row 1 (1 - 2)



Row 2 (3 - 7)



Row 3 (8 - 12)



Row 4 (12 - 18)



Row 5 (19 - 24)



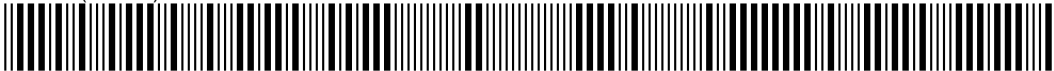
Row 6 (25 - 28)



Row 7 (28 - 32)



Row 8 (32 - 36)



Row 9 (36 - 40)



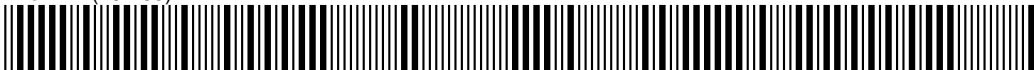
Row 10 (41 - 45)



Row 11 (45 - 49)



Row 12 (49 - 53)



Row 13 (54 - 58)



Row 14 (59 - 64)



Row 15 (65 - 73)



Row 16 (73 - 82)



# HP-41C Video Control Routines by Richard Nelson PPC V9 N8 P22 Dec 1982

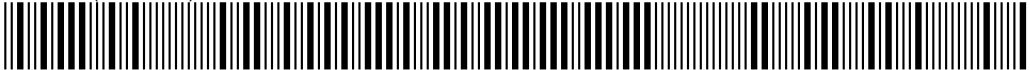
Row 17 (82 - 92)



Row 18 (93 - 101)



Row 19 (102 - 109)



Row 20 (110 - 115)



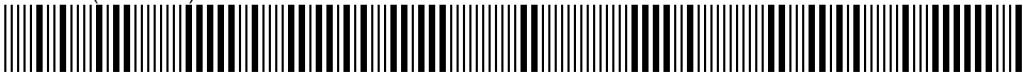
Row 21 (115 - 122)



Row 22 (122 - 127)



Row 23 (128 - 132)



Row 24 (132 - 135)



Row 25 ( 135 )



Row 26 (135 - 138)



Row 27 (138 - 140)



Row 28 (140 - 141)



Row 29 (141 - 144)



Row 30 ( 145 )



Row 31 (145 - 148)



Row 32 (148 - 150)



Row 33 (150 - 152)



# HP-41C Video Control Routines by Richard Nelson PPC V9 N8 P22 Dec 1982

Row 34 (152 - 154)



Row 35 (154 - 155)



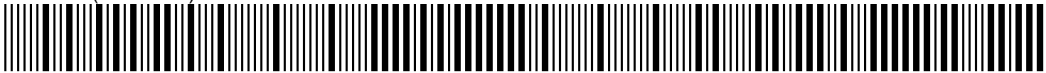
Row 36 (155 - 158)



Row 37 ( 159 )



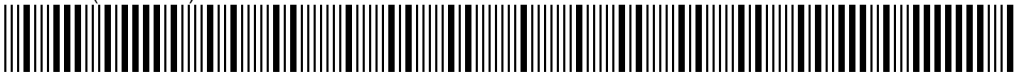
Row 38 (159 - 162)



Row 39 (162 - 164)



Row 40 (164 - 166)



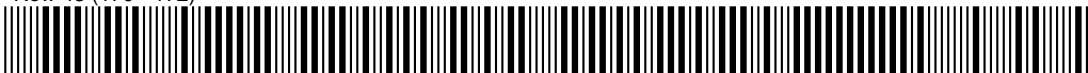
Row 41 (166 - 168)



Row 42 (168 - 169)



Row 43 (170 - 172)



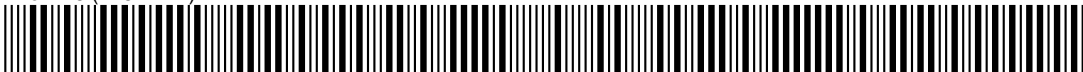
Row 44 (172 - 173)



Row 45 (173 - 175)



Row 46 (175 - 177)



Row 47 (177 - 179)



Row 48 (179 - 182)



Row 49 (182 - 184)

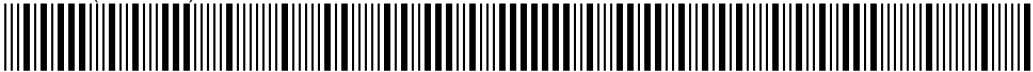


Row 50 ( 185 )

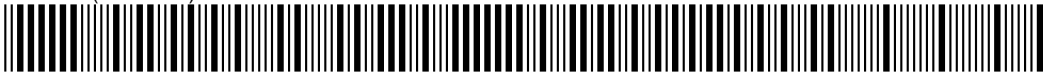


# HP-41C Video Control Routines by Richard Nelson PPC V9 N8 P22 Dec 1982

Row 51 (185 - 187)



Row 52 (187 - 189)



Row 53 (189 - 193)



Row 54 (193 - 195)



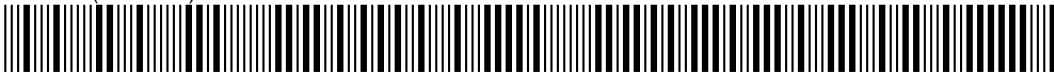
Row 55 (195 - 197)



Row 56 (197 - 199)



Row 57 (199 - 203)



Row 58 (203 - 205)



Row 59 ( 205 )



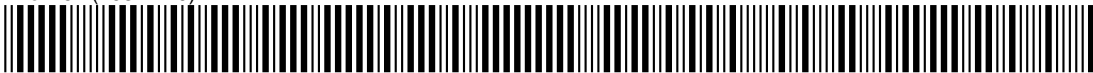
Row 60 (206 - 208)



Row 61 ( 208 )



Row 62 (208 - 210)



Row 63 (210 - 211)



Row 64 (211 - 213)



Row 65 (213 - 216)



Row 66 (216 - 218)

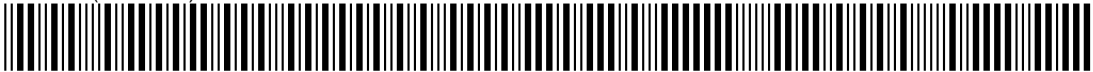


Row 67 (219 - 220)

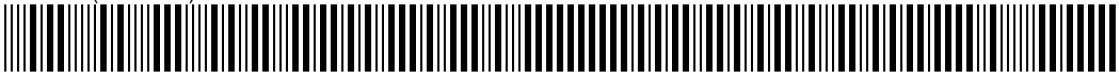


# HP-41C Video Control Routines by Richard Nelson PPC V9 N8 P22 Dec 1982

Row 68 (220 - 222)



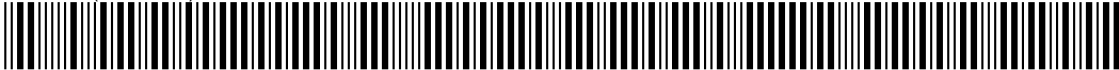
Row 69 (222 - 224)



Row 70 (224 - 225)



Row 71 (225 - 227)



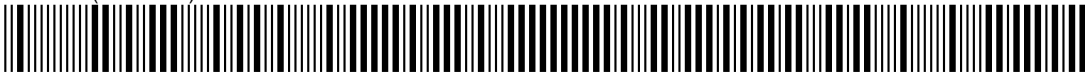
Row 72 (227 - 229)



Row 73 (229 - 230)



Row 74 (230 - 232)



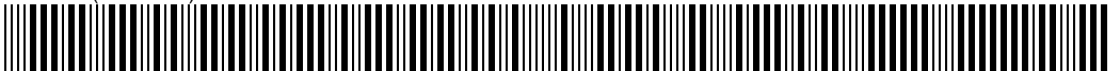
Row 75 (232 - 233)



Row 76 (233 - 235)



Row 77 (235 - 236)



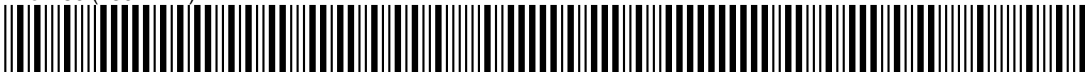
Row 78 (236 - 238)



Row 79 (238 - 239)



Row 80 (239 - 241)



Row 81 (241 - 243)



Row 82 ( 243 )



Row 83 (243 - 246)



Row 84 (246 - 247)



# HP-41C Video Control Routines by Richard Nelson PPC V9 N8 P22 Dec 1982

Row 85 (247 - 249)



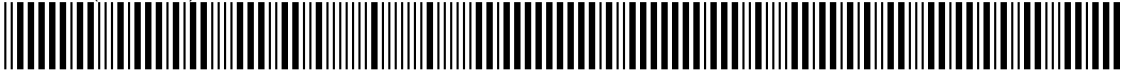
Row 86 (249 - 250)



Row 87 (251 - 252)



Row 88 (252 - 253)



Row 89 (253 - 257)



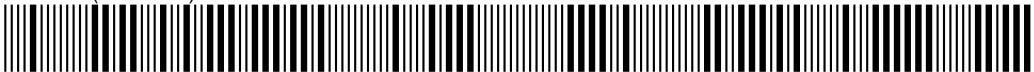
Row 90 (257 - 260)



Row 91 (260 - 263)



Row 92 (263 - 268)



Row 93 (268 - 270)



Row 94 (270 - 272)



Row 95 (272 - 273)



Row 96 (273 - 277)



Row 97 (277 - 278)



Row 98 (278 - 279)



Row 99 (279 - 280)



Row 100 (280 - 281)

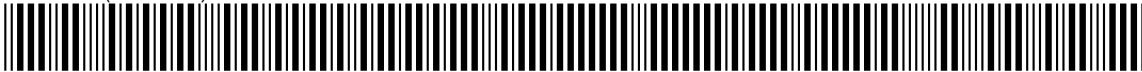


Row 101 (281 - 283)



# HP-41C Video Control Routines by Richard Nelson PPC V9 N8 P22 Dec 1982

Row 102 (283 - 284)



Row 103 (284 - 286)



Row 104 (286 - 287)



Row 105 (287 - 289)



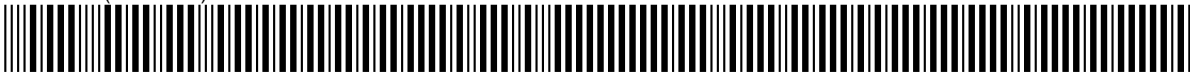
Row 106 (290 - 291)



Row 107 (291 - 292)



Row 108 (292 - 294)



Row 109 (294 - 295)



Row 110 (295 - 297)



Row 111 (297 - 298)



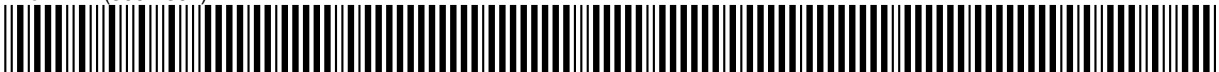
Row 112 (298 - 300)



Row 113 ( 300 )



Row 114 (300 - 302)



Row 115 (303 - 306)



Row 116 (307 - 310)



Row 117 ( 310 )



Row 118 (310 - 311)



# HP-41C Video Control Routines by Richard Nelson PPC V9 N8 P22 Dec 1982

Row 119 (312 - 317)



Row 120 ( 317 )



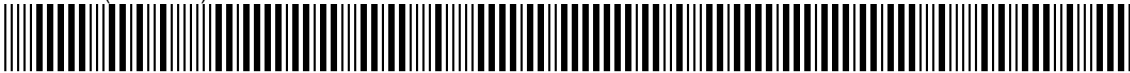
Row 121 (317 - 322)



Row 122 (323 - 325)



Row 123 (325 - 327)



Row 124 (328 - 333)



Row 125 (334 - 337)



Row 126 (337 - 339)



Row 127 (339 - 341)



Row 128 (341 - 347)



Row 129 (348 - 354)



Row 130 (354 - 359)



Row 131 (360 - 365)



Row 132 ( 365 )



Row 133 (365 - 369)



Row 134 (369 - 373)



Row 135 (373 - 376)



# HP-41C Video Control Routines by Richard Nelson PPC V9 N8 P22 Dec 1982

Row 136 (377 - 380)



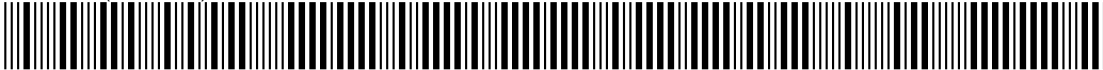
Row 137 (381 - 384)



Row 138 (385 - 388)



Row 139 (388 - 392)



Row 140 (392 - 396)



Row 141 (396 - 400)



Row 142 (400 - 404)



Row 143 (404 - 408)



Row 144 (408 - 412)



Row 145 (412 - 416)



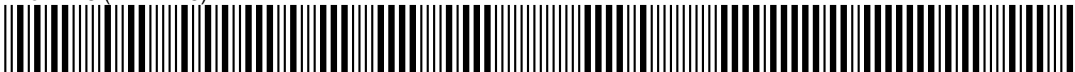
Row 146 (416 - 419)



Row 147 (419 - 420)



Row 148 (421 - 425)



Row 149 (425 - 429)



Row 150 ( 429 )



Row 151 (429 - 431)



Row 152 (431 - 433)

