



COMPUTER CONTROL DIVISION (EUROPE)

PROGRAM DOCUMENTATION

1 C 0078-001-H906 (LINE)

DRAWING NO. 41285378-001-02

PAGE 1

1 C 0078-001-H906 (LINE)

DRAWING NO. 41285378-001-02

2 C

3 C

4 C

5 C COMPUTER: H316, DDP-516

6 C

7 C

8 C PROGRAM CATEGORY: INPUT/OUTPUT

9 C

10 C

11 C PROGRAM TITLE: LINE

12 C PLOT A CONTINUOUS LINE FROM AN ARRAY OF X,Y DATA

13 C

14 C

15 C

16 C

17 C

18 C

19 C

20 C

21 C

22 C

23 C

24 C

25 C

26 C

27 C

28 C

29 C

30 C

31 C

32 C

33 C

34 C

35 C

36 C

37 C

APPROVAL

DATE

PROG- *H. A. Dimmes**23 Sep 70*SUPR- *W G Depledge**23 Sep 70*QUAL- *[Signature]**24 Sep 70*

NO. OF PAGES

6



1 C 0078-001-H906 (LINE)

DRAWING NO. 41285378-001-02

PAGE 2

38 C
39 C
40 C AUTHOR
41 C
42 C HONEYWELL - COMPUTER CONTROL DIVISION (EUROPE)
43 C
44 C
45 C PURPOSE
46 C
47 C TO PLOT AN ARRAY OF X,Y CO-ORDINATES WITH THREE OPTIONS AS FOLLOWS:
48 C
49 C (1) PLOT SELECTED POINTS WITH A SYMBOL (NO LINE).
50 C (2) LINE PLOT WITH NO SYMBOLS.
51 C (3) LINE PLOT WITH SYMBOLS AT SELECTED POINTS.
52 C
53 C
54 C RESTRICTIONS
55 C
56 C THIS ROUTINE WILL WORK ON AN H316 OR DDP-516 COMPUTER WITH A
57 C DIGITAL PLOTTER
58 C
59 C
60 C STORAGE
61 C
62 C 564 (OCTAL)
63 C 372 (DECIMAL)
64 C
65 C
66 C USE
67 C
68 C PLOT AN ARRAY OF DATA
69 C
70 C CALL LINE (X,Y,N,K,J,L)
71 C
72 C OR
73 C
74 C CALL LINE PLOT AN ARRAY OF DATA



1 C 0078-001-H906 (LINE)

DRAWING NO. 41285378-001-02

PAGE 3

75 C DAC X THE ARRAY OF UNSCALED ORDINATE VALUES
76 C DAC Y THE ARRAY OF UNSCALED ABCISSA VALUES
77 C DAC N THE NUMBER OF POINTS IN THE ARRAY
78 C DAC K THE REPEAT CYCLE OF A MIXED ARRAY
79 C I.E. THE FREQUENCY AT WHICH POINTS ARE
80 C SELECTED FOR PLOTTING WITHIN THE ARRAY;
81 C K NORMALLY BEING 1.
82 C DAC J THE OPTION NUMBER (SEE BELOW FOR OPTIONS)
83 C DAC L THE SYMBOL TO BE USED IN PLOTTING POINTS
84 C (INTEGERS 1 TO 25 IN O\$XA 41285374)
85 C OCT 0 END OF PARAMETER LIST
86 C NORMAL RETURN
87 C
88 C THE FOLLOWING VALUES OF J ARE ASSIGNED TO THE OPTIONS AVAILABLE
89 C (J MUST BE AN INTEGER):
90 C
91 C J IS ZERO FOR LINE PLOT WITH NO SYMBOLS (OPTION 2).
92 C J IS NEGATIVE FOR NO LINE PLOT (OPTION 1).
93 C J IS POSITIVE (>0) FOR LINE PLOT WITH SYMBOLS (OPTION 3).
94 C
95 C THE MAGNITUDE OF J DETERMINES THE FREQUENCY OF POINTS SELECTED:
96 C
97 C THUS J=1 OR -1 SYMBOL AT EVERY POINT.
98 C J=2 OR -2 SYMBOL AT EVERY SECOND POINT.
99 C J=3 OR -3 SYMBOL AT EVERY THIRD POINT, ETC.
100 C
101 C THE ROUTINE EXPECTS XMIN,DX,YMIN AND DY TO BE PROVIDED BY THE SCALE
102 C ROUTINE, AND STORED IN THE X AND Y ARRAYS IN LOCATIONS AS DEFINED
103 C IN THE SCALE ROUTINE.
104 C
105 C
106 C METHOD
107 C
108 C USING THE X,Y DATA SUPPLIED IN THE CALL, THE PEN MOVES FROM ITS
109 C PRESENT POSITION (PROVIDED BY THE O\$XW ROUTINE) TO THE FIRST DATA
110 C POINT. THE PROGRAM THEN BRANCHES ACCORDING TO THE OPTION ASKED FOR
111 C IN ORDER TO PLOT EACH DATA POINT, OR EVERY OTHER DATA POINT (USING



1 C 0078-001-H906 (LINE)

DRAWING NO. 41285378-001-02

PAGE 4

```
112 C THE O$XA ROUTINE), WITH OR WITHOUT A LINE JOINING THE PLOTTED
113 C POINTS (USING THE O$XP ROUTINE).
114 C
115 C
116 C CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
117 C
118 C
119 C SUBROUTINE LINE (X,Y,N,K,J,L)
120 C
121 C
122 C DIMENSION X(1),Y(1)
123 C
124 C SET UP WORKING PARAMETERS
125 C NP=N*K+1
126 C NQ=NP+K
127 C NO=NP-K
128 C XMIN=X(NP)
129 C DX=X(NQ)
130 C YMIN=Y(NP)
131 C DY=Y(NQ)
132 C I3=3
133 C
134 C PROVIDE PRESENT PEN POSITION AND SCALE FACTOR
135 C CALL O$XW (XN,YN,TIMES)
136 C I2=-1
137 C
138 C CALCULATE THE DISTANCES INVOLVED IN A MOVE FROM THE PRESENT POSITION
139 C TO THE START POINT
140 C XN=(XN*DX)+XMIN
141 C YN=(YN*DY)+YMIN
142 C DX1=ABS(X(1)-XN)
143 C DY1=ABS(Y(1)-YN)
144 C DX2=ABS(X(NO)-XN)
145 C DY2=ABS(Y(NO)-YN)
146 C
147 C SELECT BEST MOVE
148 C DX1=AMAX1 (DX1,DY1)
```



COMPUTER CONTROL DIVISION (EUROPE)

PROGRAM DOCUMENTATION

1 C 0078-001-H906 (LINE)

DRAWING NO. 41285378-001-02

PAGE 5

```
149      DX2=AMAX1 (DX2,DY2)
150 C
151      KK=K
152      NT=IABS (J)
153      NA=0
154 C
155 C WHAT OPTION IS REQUIRED?
156      IF(J) 5,6,5
157      5 NA=(N-1)/NT
158      6 NA=NA*NT+NT+1-N
159 C
160 C IF PEN IS NOT AT START POINT, SELECT SHORTEST MOVE TO THE START POINT
161      IF (DX1-DX2)10,10,20
162      10 NO=1
163      KK=-KK
164      NA=NT
165      20 NV=2
166      NW=-2
167      KL=2
168 C
169 C WHICH OPTION HAS BEEN SPECIFIED?
170      IF (J) 30,40,50
171      30 NV=3
172      NW=-1
173      KL=1
174      GO TO 50
175      40 NA=NP
176 C
177 C PLOT THE DATA ARRAY AS PER THE SPECIFIED OPTION
178      50 DO 90 I=1,N
179          XXX=(X(NO)-XMIN)/DX
180          YYY=(Y(NO)-YMIN)/DY
181 C
182 C IS A POINT ONLY REQUIRED OR A POINT PLUS A LINE?
183      IF (NA-NT) 65,60,70
184 C
185 C IF THE POINT IS AT THE ORIGIN, OFFSET SLIGHTLY
```



1 C 0078-001-H906 (LINE)

DRAWING NO. 41285378-001-02

PAGE 6

```
186      60      IF (XXX.EQ.0.0)XXX=0.00001
187          IF (YYY.EQ.0.0)YYY=0.00001
188          CALL O$XA (XXX,YYY,0.07,L,0.0,I2)
189          NA=1
190          GO TO 80
191 C
192 C IS A LINE PLOT ALSO REQUIRED?
193      65      GO TO (75,70),KL
194 C
195 C PLOT THE LINE JOINING TWO CONSECUTIVE POINTS
196      70      CALL O$XP (XXX,YYY,I3)
197      75      NA=NA+1
198      80      I3=NV
199          I2=NW
200 C
201 C IS THE CYCLE TO BE REPEATED?
202      90      NO=NO-KK
203          RETURN
204 C
205 C END OF LINE 15.JUL.70 HAD
206      END
```