

```

641
642 LIST S, X, M, T
643 ; *****
644 ; * CALCULATOR *
645 ; *****
646 ;
647 ; CALCULATOR EQUATES:
648 ; SCREEN PARAMETERS:
>005C 649 CALCLN EQU 92 ; LAST DISPLAY LINE USED
650 ; SCREEN MEMORY STACK PARAMETERS:
>005C 651 MAXSTK EQU CALCLN ; MAX NUMBER OF STACK ENTRIES
>4E58 652 STKBOT EQU MAXSTK*BYTEPL+4000H-8 ; ADDR OF STK BOTTOM
653 ; CALCULATOR MAJOR STATES:
>0000 654 ARG1MD EQU 0 ; ARG1 STATE
>0001 655 ARG2MD EQU 1 ; ARG2 STATE
>0002 656 SHOWMD EQU 2 ; SHOW STATE
657 ;
658 ORG 1020H ; ***
1020 31C04E 659 CLEAR: LD SP, CALSTK ; BUSHWACK THE STACK
1023 660 SYSTEM INTPC ; INTERPRET
1023 FF 660 + RST 56
1024 00 660 + DEFB INTPC
660 + IF INTPC EQ INTPC
>0001 660 +INTPC DEFL 1
660 + ENDF
1025 661 DO FILL
1025 1B 661 + DEFB FILL+1
1026 0040 662 DEFW 4000H
1028 600E 663 DEFW CALCLN*BYTEPL
102A 00 664 DEFB 0
102B 665 DO RECTA
102B 1D 665 + DEFB RECTA+1
102C 08 666 DEFB 8
102D 52 667 DEFB 82
102E 70 668 DEFB 112
102F 09 669 DEFB 9
1030 FF 670 DEFB 11111111B
1031 671 DO SETOU
1031 17 671 + DEFB SETOU+1
1032 B8 672 DEFB CALCLN*2
1033 1F 673 DEFB 31
1034 08 674 DEFB 8
1035 675 DO COLS
1035 19 675 + DEFB COLS+1
1036 1C13 676 DEFW COLORS
1038 677 DO FILL
1038 1B 677 + DEFB FILL+1
1039 C04E 678 DEFW CALRAM
103B 9400 679 DEFW ENDCR-CALRAM
103D 00 680 DEFB 0
103E 681 DO ACTINT
103E 0F 681 + DEFB ACTINT+1
103F 682 DO XINTC ; QUIT INTERPRETING
103F 03 682 + DEFB XINTC+1
1040 CD8&11 683 CALL DOCLRE ; SHOW A ZERO WHEN WE COME UP
684 ; GET NEXT KEY DEPRESSION
1043 214310 685 KEYGET: LD HL, KEYGET

```

PROPRIETARY INFORMATION
 Dave's Bitting Associates, Inc.

DO NOT REPRODUCE

1046	E5	686		PUSH HL	
1047		687		SYSSUK SENTRY	
1047	FF	687	+	RST 56	
1048	43	687	+	DEFB SENTRY+1	
		687	+	IF SENTRY.EQ.INTPC	
		687	+	ENDIF	
1049	1402	688		DEFW ALKEYS	
104B	FE13	689		CP SKYD	; KEY DOWN?
104D	C0	690		RET NZ	; NO - WAIT
104E	78	691		LD A,B	
104F		692		SYSSUK INDEXB	
104F	FF	692	+	RST 56	
1050	5D	692	+	DEFB INDEXB+1	
		692	+	IF INDEXB.EQ.INTPC	
		692	+	ENDIF	
1051	9F10	693		DEFW TOKETB-1	
1053	E60F	694		AND OFH	; ISOLATE 'TRANSLATE TO' FIELD
1055	4F	695		LD C,A	
1056	AE	696		XOR (HL)	; BRANCH ON TOKEN TYPE
1057	0F	697		RRCA	
1058	0F	698		RRCA	
1059	0F	699		RRCA	
105A	0F	700		RRCA	
105B	5F	701		LD E,A	
		702		; ARE WE WAITING FOR USER TO TYPE IN A MEMORY NUMBER?	
105C	21C24E	703		LD HL, MEM1A	; POINT AT MEMORY STATE
105F	7E	704		LD A, (HL)	
1060	A7	705		AND A	
1061	2332	706		JR Z, KEYG1-*	; JUMP IF NOT IN THAT STATE
1063	7B	707		LD A, E	; WAS DIGIT TYPED?
1064	A7	708		AND A	
1065	C0	709		RET NZ	; NO - GO FOR NEXT ENTRY
1066	57	710		LD D, A	; ZERO OUT D
1067	79	711		LD A, C	
1068	FE0E	712		CP 0EH	; DID OPERATOR HIT A DECIMAL PO
106A	C8	713		RET Z	; YES - QUIT
		714		; SET MEMORY DIGIT FOR DISPLAY	
106B	23	715		INC HL	
106C	71	716		LD (HL),	
106D	34	717		INC (HL)	; ZERO DESIGNATES NOTHING
106E	5F	718		LD E, A	
106F	2B	719		DEC HL	
1070	7E	720		LD A, (HL)	; S-R STATUS TO A AGAIN
1071	0F	721		RRCA	; TEST STATUS
1072	3807	722		JR C, GMEM1-*	; JUMP IF RECALL
		723		; STATE PROCESSING	
1074	CDCA10	724		CALL XMEM	; DO POINTING AND SETUP
1077	EDB0	725		LDIR	; PERFORM STORE
1079	1809	726		JR SHONUM-*	
		727		; RECALL PROCESSING	
107B	CD0A12	728	GMEM1:	CALL SHOWCK	; CHECK FOR SHOW MODE
107E	CDCA10	729		CALL XMEM	
1081	EB	730		EX DE, HL	
1082	EDB0	731		LDIR	; COPY MEM TO ARG2
1084	210000	732	SHONUM:	LD HL, 0	
1087	22DA4E	733		LD (DIGITS), HL	; CLEAR DIGIT FLAGS
108A	21DD4E	734		LD HL, SHOWBF	

PROPRIETARY INFORMATION

Dave Nutting Associates, Inc.

DO NOT REPRODUCE

```

108D E5      735      PUSH HL
108E CDC712  736      CALL CONVRT
1091 E1      737      POP HL
1092 C3DE11  738      JP ADIG7      ; JOIN DISPLAY SEQUENCE
1095        739      KEYGT1:
1095 7B      740      LD A,E
1096        741      SYSSUK INDEXW
1096 FF      741 +     RST 56
1097 5B      741 +     DEFB INDEXW+1
                741 +     IF INDEXW.EQ.INTPC
                741 +     ENDIF
1098 B810    742      DEFW TOKEJT
109A D5      743      PUSH DE
109B 21C14E  744      LD HL,STATEV
109E 7E      745      LD A,(HL)
109F C9      746      RET      ; CALL VIA RETURN
                747 ; TOKEN TYPE-TRANSLATE TABLE
                748 ; HIGH NIBBLE IS TYPE, LO NIBBLE IS WHAT TO TRANSLATE TO
10A0 80      749      DEFB 80H      ; 1 C
10A1 60      750      DEFB 60H      ; 2 UA
10A2 61      751      DEFB 61H      ; 3 DA
10A3 31      752      DEFB 31H      ; 4 %
10A4 51      753      DEFB 51H      ; 5 MF
10A5 52      754      DEFB 52H      ; 6 MS
10A6 40      755      DEFB 40H      ; 7 +
10A7 14      756      DEFB 14H      ; 8 DIVIDE
10A8 07      757      DEFB 07H      ; 9 7
10A9 08      758      DEFB 08H      ; 10 8
10AA 09      759      DEFB 09H      ; 11 9
10AB 13      760      DEFB 13H      ; 12 X
10AC 04      761      DEFB 04H      ; 13 4
10AD 05      762      DEFB 05H      ; 14 5
10AE 06      763      DEFB 06H      ; 15 6
10AF 12      764      DEFB 12H      ; 16
10B0 01      765      DEFB 01H      ; 17 1
10B1 02      766      DEFB 02H      ; 18 2
10B2 03      767      DEFB 03H      ; 19 3
10B3 11      768      DEFB 11H      ; 20 +
10B4 70      769      DEFB 70H      ; 21 7
10B5 00      770      DEFB 00H      ; 22 0
10B6 0E      771      DEFB 0EH      ; 23 E
10B7 20      772      DEFB 20H      ; 24 =
                773 ; TOKEN TYPE JUMP TABLE
10B8 8A11    774      DEFW ACTNUM      ; 0 NUMBER
10BA E810    775      DEFW OPROUT      ; 1 OPERATOR
10BC 1111    776      DEFW EQROUT      ; 2 EQUAL SIGN
10BE 2311    777      DEFW PERCEN      ; 3 PERCENT
10C0 DE10    778      DEFW CHGSGN      ; 4 CHANGE SIGN
10C2 D810    779      DEFW MEMFUN      ; 5 MEMORY
10C4 3812    780      DEFW SCRLKY      ; 6 SCROLL KEYS
10C6 AF11    781      DEFW CLRENT      ; 7 CLEAR ENTRY
10C8 2010    782      DEFW CLEAR      ; 8 CLEAR CALC
                783 ; SUBROUTINE TO POINT DE AT A MEMORY AND LOAD HL
10C8 2010    784 ; INPUT: D=0,E=DIGIT (0 TO 9 MEMORY #)
                785 ; OUTPUT: DE = POINTER TO MEM HL=ARG2 BC=12
10CA 21E64E  786      XMEM: LD HL,CMEMO
10CD 060B    787      LD B,11

```

PROPRIETARY INFORMATION

Have Nutting Associates, Inc.

DO NOT REPRODUCE

```

10CF 48      788      LD      C, B
10D0 19      789  XMEM1:  ADD   HL, DE
10D1 10FD    790      DJNZ  XMEM1-*
10D3 EB      791      EX    DE, HL
10D4 21CF4E  792      LD    HL, ARG2
10D7 C9      793      RET
          794 ; MEMORY KEY ROUTINE
10D8 21C24E  795  MEMFUN: LD   HL, MEMSTA ; SET MEMORY STATE
10DB 71      796      LD   (HL), C ; SET MEMORY STATE
10DC 1842    797      JR   EQRT1-*
          798 ; CHANGE SIGN ROUTINE
10DE CD0A12  799  CHGSGN: CALL SHOWCK
10E1         800      SYSSUK BCDCHS
10E1 FF      800 +    RST  56
10E2 6B      800 +    DEFB BCDCHS+1
          800 +    IF   BCDCHS. EQ. INTPC
          800 +    ENDIF
10E3 0B      801      DEFB 11
10E4 CF4E    802      DEFW ARG2
10E6 1838    803      JR   EQRT1-*
          804 ; OPERATOR ROUTINE
10E8 FE02    805  OPR1:  CP   SHOWCK ; ARE WE IN SHOW STATE?
10EA 2004    806      JR   NZ, OP1-* ; JUMP IF NOT
10EC 3601    807      LD   (HL), ARG2MD ; GO TO ARG2 STATE
10EE 191B    808      JR   OP3-*
10F0 FE00    809  OP1:  CP   ARG1MD ; ARG1 MODE?
10F2 08      810      EX   AF, AF
10F3 79      811      LD   A, C
10F4 08      812      EX   AF, AF
10F5 200F    813      JR   NZ, OP2-* ; JUMP IF NOT
10F7 3601    814      LD   (HL), ARG2MD ; YEP, GO TO ARG2 STATE
10F9 CD1612  815      CALL PUSHEN ; PUSH ARG1 DOWN
10FC         816      SYSSUK MOVE ; ARG2 ARG2
10FC FF      816 +    RST  56
10FD 5F      816 +    DEFB MOVE+
          816 +    IF   MOVE. EQ. INTPC
          816 +    ENDIF
10FE C44E    817      DEFW ARG1
1100 0B00    818      DEFW 11
1102 CF4E    819      DEFW ARG2
1104 1803    820      JR   OP2A-*
1106 CD4611  821  OP2:  CALL DOOR ; DO IT
1109 08      822  OP2A: EX   AF, A
110A 4F      823      LD   C, A
110B 79      824  OP3:  LD   A, C
110C 32C04E  825      LD   (OPCOD), A
110F 180F    826      JR   EQRT1-* ; JOIN EQUAL DISPLAY CALL
          827 ; EQUALS ROUTINE
1111 3D      828  EQROUT: DEC  A ; ARE WE IN ARG2MD?
1112 C0      829      RET  NZ
1113 3602    830      LD   (HL), SHOWMD ; ENTER SHOW STATE
1115 CD4611  831      CALL DOOP
1118 3E05    832      LD   A, 5
111A 32C04E  833      LD   (OPCOD), A
111D CD1612  834      CALL PUSHEN
1120 C38410  835  EQRT1: JP   SHONUM
1123 A9      836  PERCEN: XOR  C ; ARG2 MODE?

```

PROPRIETARY INFORMATION

Dave Auding Associates, Inc.

DO NOT REPRODUCE

```

1124 C0      837      RET NZ
1125        838      SYSSUK MOVE
1125 FF      838 +      RST 56
1126 5F      838 +      DEFB MOVE+1
              838 +      IF MOVE.EQ. INTPC
              838 +      ENDIF
1127 CF4E    839      DEFW ARG2
1129 0900    840      DEFW 9
112B D04E    841      DEFW ARG2+1
112D 32DS4E  842      LD (ARG2+9),A
1130 21C44E  843      LD HL,ARG1
1133 060B    844      LD B,11
1135 3ACE4E  845      LD A,(ARG1+10) ; SAVE SIGN OF ARG1
1138        846      SYSTEM BCDMUL
1138 FF      846 +      RST 56
1139 66      846 +      DEFB BCDMUL
              846 +      IF BCDMUL.EQ. INTPC
              846 +      ENDIF
113A 32CE4E  847      LD (ARG1+10),A ; RESTORE SIGN OF ARG1
113D EB      848      EX DE,HL
113E 010B00  849      LD BC,11
1141 CD7511  850      CALL OVRCHK ; CHECK FOR OVERFLOW
1144 18DA    851      JR EQRT
              852 ; SUBROUTINE TO DO OPERATION
              853 ; NOTE THIS ROUTINE SETS BOTH ARG1 AND ARG2 EQUAL TO RESU
1146 CD1612  854 DOOP CALL PUSH
1149 3AC04E  855      LD A,(OPCODE)
114C        856      SYSSUK INDEW
114C FF      856 +      RST 56
114D 5B      856 +      DEFB INDEW+1
              856 +      IF INDEW.EQ. INTPC
              856 +      ENDIF
114E 5811    857      DEFW DOOPTB-2
1150 D5      858      PUSH DE
1151 21CF4E  859      LD HL,ARG1
1154 11C44E  860      LD DE,ARG2
1157 060B    861      LD B,11
1159 C9      862      RET ; JUMP USING RETURN
115A 6211    863 DOOPTB DEFW DOADD
115C 6511    864      DEFW DOSUB
115E 6811    865      DEFW DOMUL
1160 6B11    866      DEFW DODIV
1162        867 DOADD SYSTEM BCDADD
1162 FF      867 +      RST 56
1163 62      867 +      DEFB BCDADD
              867 +      IF BCDADD.EQ. INTPC
              867 +      ENDIF
1164 01      868      DEFB 01
1165        869 DOSUB SYSTEM BCDSUB
1165 FF      869 +      RST 56
1166 64      869 +      DEFB BCDSUB
              869 +      IF BCDSUB.EQ. INTPC
              869 +      ENDIF
1167 01      870      DEFB 01
1168        871 DOMUL: SYSTEM BCDMUL
1168 FF      871 +      RST 56
1169 66      871 +      DEFB BCDMUL
  
```

PROPRIETARY INFORMATION
Have Nothing to Worry About

DO NOT REPRODUCE

```

      871 +      IF BCDMUL EQ. INTPC
      871 +      ENDIF
116A 01      872      DEFB 01
116B      873 DODIV:  SYSTEM BCDDIV
116B FF      873 +      RST 56
116C 68      873 +      DEFB BCDDIV
      873 +      IF BCDDIV. EQ. INTPC
      873 +      ENDIF
116D      874 NUMCHK: SYSSUK MOVE      ; ARG2 = ARG1
116D FF      874 +      RST 56
116E 5F      874 +      DEFB MOVE+1
      874 +      IF MOVE. EQ. INTPC
      874 +      ENDIF
116F CF4E    875      DEFW ARG2
1171 0B00    876      DEFW 11
1173 C44E    877      DEFW ARG1
1175 09      878 OVRCHK:  ADD HL, BC
1176 2B      879      DEC HL
1177 7E      880      LD A, (HL)
1178 E60F    881      AND 0FH      ; OVERFLOW SET?
117A C8      882      RET Z      ; QUIT IF NOT
117B 3E01    883      LD A, 1
117D 77      884      LD (HL), A
117E 3C      885      INC A      ; FOR SHOW MODE
117F 32C14E  886      LD (STATE), A
1182 CD1612  887      CALL PUSHED
1185 E1      888      POP HL      ; THROUGH OUT RETURN ADDRESS
1186 0E00    889 DODIE:  LD C, 0      ; FOR CLEAR ENTRY
1188 1825    890      JR CLREN
      891 ; SUBROUTINE TO ACCEPT A DIGIT
      892 ; ON DIGIT
118A CD0A12  893 ACTNUM:  CALL SHOWC
118D 21DA4E  894      LD HL, DIGITS
1190 11CF4E  895      LD DE, ARG
1193 7E      896      LD A, (HL)      ; HOW MANY DIGITS SO FAR?
1194 FE0A    897      CP 10
1196 C8      898      RET Z      ; QUIT IF LIMIT ATTAINED
1197 23      899      INC HL      ; DECIMAL POINT ENTERED YET?
1198 7E      900      LD A, (HL)
1199 A7      901      AND A
119A 280F    902      JR Z, ADI01-4 ; JUMP IF NO
119C B9      903      CP C      ; IS INPUT A DECIMAL POINT?
      904      ; (FLAG = 0E IF SET!!)
119D C8      905      RET Z      ; QUIT IF EXTRA
119E 79      906      LD A, C
119F 23      907      INC HL
11A0 4E      908      LD C, (HL)      ; C = DECIMAL POINT POINTER
11A1 35      909      DEC (HL)
11A2 EB      910      EX DE, HL
11A3      911      SYSTEM STOREN ; STORE THE NIBBLE
11A3 FF      911 +      RST 56
11A4 58      911 +      DEFB STOREN
      911 +      IF STOREN. EQ. INTPC
      911 +      ENDIF
11A5 4F      912      LD C, A      ; GET DIGIT BACK IN C
11A6 EB      913      EX DE, HL
11A7 2B      914      DEC HL
  
```

PROPRIETARY INFORMATION

Dave Nutting Associates, Inc.

DO NOT REPRODUCE

11A6 2B	915		DEC HL	
11A9 182A	916		JR ADIG4-*	; GO ADD TO SHOW BUFFER
	917		; PRE DECIMAL POINT	
11AB 2B	918	ADIG1:	DEC HL	; BACKUP TO DIGITS
11AC B6	919		OR (HL)	; HOW MANY ENTRIES?
11AD 2012	920		JR NZ,ADIG2-*	; ADIG2 IF NONZERO
11AF CDOA12	921	CLRENT:	CALL SHOWCK	; PUSH DOWN IF RESULT IS THERE
11B2 C5	922		PUSH BC	; CLEAR ARG2, SHOWBUF AND VARS
11B3	923		SYSSUK FILL	
11B3 FF	923 +		RST 56	
11B4 1B	923 +		DEFB FILL+1	
	923 +		IF FILL. EQ. INTPC	
	923 +		ENDIF	
11B5 CF4E	924		DEFW ARG2	
11B7 1500	925		DEFW 21	
11B9 00	926		DEFB 0	
11BA 21DA4E	927		LD HL, DIGITS	
11BD C1	928		POP BC	
11BE B1	929		OR C	; WAS DIGIT ZERO?
11BF 281C	930		JR Z, ADIG6-*	; JUMP IF SO
	931		; CODE FOR NONZERO PREVIOUS ENTRY OR NONZERO FIRST ENTRY	
11C1 79	932	ADIG2:	LD A, C	
11C2 FE0E	933		CP OEH	; WAS CHAR A DECIMAL PT
11C4 2007	934		JR NZ, ADIG3-*	; NO ADIG3
11C6 23	935		INC HL	; TO DECIMAL FLAG
11C7 77	936		LD (HL)	; SET IT
11C8 23	937		INC HL	
11C9 3609	938		LD (HL)	; SET DECIMAL POINT POINTER
11CB 1809	939		JR ADIG4-*	; GO STUFF INTO SHOW BUFFER
11CD 13	940	ADIG5:	INC DE	; LEADING NUMERIC - STUFF IT
11CE 13	941		INC DE	
11CF 13	942		INC DE	
11D0 13	943		INC DE	
11D1 13	944		INC DE	
11D2 CDOF13	945		CALL ADDTB	
11D5 34	946	ADIG7:	INC (HL)	; BUMP DIGIT COUNTER
11D6 79	947	ADIG8:	LD A, C	; GET DIGIT BACK
11D7 11DD4E	948		LD DE, SHOWBF	; ADD DIGIT TO SHOW BUFFER
11DA CDOF13	949		CALL ADDTB	
11DD EB	950	ADIG6:	EX DE, HL	
11DE	951	ADIG7:	XYRELL DE, 83	
11DE 110853	951 +		LD DE, RES. (83). SHL 8+(8)	
11E1 0E07	952		LD C, 1B	; DISPLAY ALWAYS POSITIVE
	953		; DISPLAY RECALL OR STORE?	
11E3 E5	954		PUSH HL	
11E4 21C24E	955		LD HL, MEMSTA	
11E7 7E	956		LD A, (HL)	
11E8 A7	957		AND A	
11E9 2802	958		JR Z, ADIG8-*	; ADIG8 IF NOT WANTED
11EB C631	959		ADD A, 'R'-21H	
11ED C620	960	ADIG8:	ADD A, 20H	
11EF	961		SYSTEM CHRDIS	
11EF FF	961 +		RST 56	
11FO 32	961 +		DEFB CHRDIS	
	961 +		IF CHRDIS. EQ. INTPC	
	961 +		ENDIF	
	962		; SAME THING FOR STORE-RECALL DIGIT	

PROPRIETARY INFORMATION
 © 1983 Intellivision, Inc.

DO NOT REPRODUCE

```

11F1 23      963      INC  HL
11F2 7E      964      LD   A,(HL)
11F3 A7      965      AND  A
11F4 2807    966      JR   Z,ADIG9-$
11F6 C60F    967      ADD  A,'0'-21H
11F8 3600    968      LD   (HL),0      ; CLEAR DIGIT AND RECALL CODE
11FA 2B      969      DEC  HL
11FB 3600    970      LD   (HL),0
11FD C620    971      ADD  A,20H      ADIG9:
11FF        972      SYSTEM CHRDIS
11FF FF      972 +     RST  56
1200 32      972 +     DEFB CHRDIS
          972 +     IF   CHRDIS.EQ.INTPC
          972 +     ENDF
1201 E1      973      POP  HL
1202 3AC04E  974      LD   A,(OPCODE)
1205 0E03    975      LD   C,0011B
1207 C38A12  976      JP   NUMBA
          977 ; SUBROUTINE TO CHECK TO SEE IF WE ARE IN SHOW MODE
          978 ; IF SO - PUSH ARG2 AND GO INTO ARG1 MODE
120A 21C14E  979      SHOWN: LD  HL,STATEV
120D 7E      980      LD   A,(HL)
120E FE02    981      CP   SHOWK
1210 C0      982      RET  NZ
1211 AF      983      XOR  A
1212 77      984      LD   (HL),A
1213 2B      985      DEC  HL
1214 77      986      LD   (HL),A      ; CLEAR OPERATOR
1215 C9      987      RET
          988 ; SUBROUTINE TO ADD AN ENTRY TO THE STACK
1216        989      PUSH: SYSSUK SCROLL      ; PUSH STACK UP
1216 FF      989 +     RST  56
1217 31      989 +     DEFB SCROLL+1
          989 +     IF   SCROLL.EQ.INTPC
          989 +     ENDF
1218 2800    990      DEFW BYTES
121A 08      991      DEFB 8
121B 5C      992      DEFB MAXSTK
121C 2040    993      DEFW 4020H      ; (FIRST LINE)
121E 21584E  994      LD   HL,STKBOT
1221 CDC712  995      CALL CONVRT      ; CONVERT AND ADD TO STACK
1224 21E44E  996      LD   HL,NLINES      ; HOW MANY ENTRIES?
1227 7E      997      LD   A,(HL)      ; ON THE STACK?
1228 FE3C    998      CP   MAXSTK      ; AT MAX?
122A 2901    999      JR   Z,PUSHE1-$      ; JUMP IF SO
122C 34      1000     INC  (HL)      ; BUMP ENTRY COUNT
          1001 ; ARE WE AT TOP OR BOTTOM OF STACK?
122D 23      1002     PUSH: INC  HL      ; POINT AT SCROLL POINTER
122E 7E      1003     LD   A,(HL)
122F A7      1004     AND  A      ; JUMP IF AT BOTTOM
1230 2819    1005     JR   Z,SCRLU1-$
1232 FE32    1006     CP   MAXSTK-10      ; OR IF AT TOP
1234 2915    1007     JR   Z,SCRLU1-$
1236 34      1008     INC  (HL)      ; FIX SCROLL POINTER
1237 C9      1009     RET      ; AND QUIT
          1010 ; SCROLL KEY ENTRY
1238 AF      1011     SCRLKY: XOR  A      ; CLEAR KEYSEX FOR SCROLL MOTOR
  
```

PROPRIETARY INFORMATION

DO NOT REPRODUCE

Data Mating Associates, Inc.


```

1239 32E34F 1012 LD (KEYSEX),A
123C 21E44E 1013 LD HL,NLINES
123F 7E 1014 LD A,(HL) ; A = NUMBER OF LINES ON STK
1240 CB41 1015 BIT 0,C ; UP OR DOWN?
1242 201A 1016 JR NZ,SCRLDN-$ ; JUMP IF DOWN
1244 A7 1017 AND A ; QUIT IF ZERO LINES ON STACK
1245 C8 1018 RET Z
1246 23 1019 INC HL ; WHERE'S THE SCROLL POINTER?
1247 7E 1020 LD A,(HL)
1248 A7 1021 AND A ; QUIT IF AT BOTTOM
1249 C8 1022 RET Z
124A 35 1023 DEC (HL) ; ELSE DECREMENTETH
1024 ; PUSHEN JOINS HERE
124B 3E08 1025 SCRLU1: LD A,8 ; DOIT 8 TIMES
124D 1026 SCRLU2: SYSSUK SCROLL
124D FF 1026 + RST 56
124E 31 1026 + DEFB SCROLL+1
1026 + IF SCROLL.EQ.INTPC
1026 + ENDIF
124F 2800 1027 DEFW BYTEPL
1251 20 1028 DEFB 32
1252 4F 1029 DEFB 79
1253 2840 1030 DEFW 4028H
1255 3D 1031 DEC A
1256 20F5 1032 JR NZ,SCRLU2-$
1258 3C 1033 INC A
1259 1034 XYRELL DE,24,73
1259 111849 1034 + LD DE,RES.(73).SHL 8+(24)
125C 1818 1035 JR SCRLD1-$ ; JOIN SCRLDN DISPLAY CALL
1036 ; SCROLL DOWN ROUTINE
125E 23 1037 SCRLD1: INC HL ; ADVANCE TO SCROLLPTR
125F 96 1038 SUB (HL) ; SUBTRACT FROM LINES ON STACK
1260 FE0B 1039 CP 11 ; FAR ENOUGH APART?
1262 D8 1040 RET C ; QUIT IF NOT
1263 34 1041 INC (HL) ; YEAH - ADVANCE SCROLLPTR
1264 3E08 1042 LD A,8
1266 1043 SCRLD2: SYSSUK SCROLL
1266 FF 1043 + RST 56
1267 31 1043 + DEFB SCROLL+1
1043 + IF SCROLL.EQ.INTPC
1043 + ENDIF
1268 D8FF 1044 DEFW -BYTEPL
126A 20 1045 DEFB 32
126B 50 1046 DEFB 80
126C 804C 1047 DEFW 4000H+3200
126E 3D 1048 DEC A
126F 20F5 1049 JR NZ,SCRLD0-$
1271 3E0A 1050 LD A,10
1273 1051 XYRELL DE,24,1
1273 111801 1051 + LD DE,RES.(1).SHL 8+(24)
1276 21E54E 1052 SCRLD1: LD HL,SCRPTR
1279 86 1053 ADD A,(HL) ; ADD SCROLL PTR
127A 21904E 1054 LD HL,STKBOT+BYTEPL
127D 01D5FF 1055 LD BC,-BYTEPL
1280 09 1056 SCRLD2: ADD HL,BC
1281 3D 1057 DEC A
1282 20FC 1058 JR NZ,SCRLD2-$

```

PROPRIETARY INFORMATION

Dave Nutting Associates, Inc.

DO NOT REPRODUCE

```

12C3 2D      1092      DEFB '-'
12C4 62      1093      DEFB 62H
12C5 63      1094      DEFB 63H
12C6 3D      1095      DEFB '='
12C7 11CF4E  1096  CONVRT: LD  DE, ARG2
12CA 3AC04E  1097      LD  A, (OPCOD)
12CD 0E0D    1098      LD  C, 13
12CF        1099      SYSTEM STOREN      ; STORE THAT NIBBLE
12CF FF      1099 +    RST  56
12D0 58      1099 +    DEFB STOREN
1099 +    IF  STOREN.EQ. INTPC
1099 +    ENDIF
1100      ; TRANSFER SIGN
12D1 3AD94E  1101      LD  A, (ARG2+10)    ; GET SIGN BYTE
12D4 07      1102      RLCA                ; PUT SIGN IN LO BIT
12D5 0D      1103      DEC  C
12D6        1104      SYSTEM STOREN
12D6 FF      1104 +    RST  56
12D7 58      1104 +    DEFB STOREN
1104 +    IF  STOREN.EQ. INTPC
1104 +    ENDIF
12D8 EB      1105  PACKED EX  DE, HL      ; DE = SAVE HL = ARG
12D9 010600  1106      LD  BC, 6           ; CLEAR SAVE
12DC AF      1107      XOR  A
12DD        1108      SYSTEM FILL
12DD FF      1108 +    RST  56
12DE 1A      1108 +    DEFB FILL
1108 +    IF  FILL.EQ. INTPC
1108 +    ENDIF
12DF 0E13    1109      LD  C, 19
12E1        1110  CCVT: SYSTEM INDEXN      ; GET NIBBLE
12E1 FF      1110 +    RST  56
12E2 56      1110 +    DEFB INDEXN
1110 +    IF  INDEXN.EQ. INTPC
1110 +    ENDIF
12E3 CDOF13  1111      CALL ADDTB          ; ADD INTO 'SAVE'
12E6 200D    1112      JR  NZ, CCVT1A-$   ; JUMP IF DONE
12E8 0D      1113      DEC  C              ; DECREMENT ARGPTR
12E9 79      1114      LD  A, C
12EA FE09    1115      CP   9              ; IS IT NOW 9?
12EC 20F3    1116      JR  NZ, CCVT1-$   ; NO - KEEP GOING
12EE 3E0E    1117      LD  A, 0EH         ; YEAH - PUT IN DECIMAL POINT
12F0 CDOF13  1118      CALL ADDTB
12F3 29EC    1119      JR  Z, CCVT1-$   ; JUMP BACK IF OK
1120      ; NOW REMOVE TRAILING ZEROS AND DECIMAL POINT
12F5 EB      1121  CCVT: EX  DE, HL      ; HL = SAVE
12F6 7E      1122  CCVT: LD  A, (HL)    ; GET LO NIBBLE
12F7 E60F    1123      AND  0FH           ; IS IT NONZERO?
12F9 2005    1124      JR  NZ, CCVT3-$   ; JUMP IF NOT ZERO
12FB CD0313  1125      CALL KILTRZ        ; REMOVE ONE TRAILING ZERO
12FE 18F6    1126      JR  CCVT2-$
1300 FE0E    1127  CCVT3: CP   0EH     ; DECIMAL POINT?
1302 C0      1128      RET  NZ            ; QUIT IF NOT
1303 010600  1129  KILTRZ: LD  BC, 6
1306 09      1130      ADD  HL, BC
1307 A7      1131      AND  A
1308 41      1132      LD  B, C
  
```

PROPRIETARY INFORMATION
 Dave Nutting Associates, Inc.

DO NOT REPRODUCE

```

12C3 2D      1092      DEFB '-'
12C4 62      1093      DEFB 62H
12C5 63      1094      DEFB 63H
12C6 3D      1095      DEFB '='
12C7 11CF4E  1096  CONVRT: LD  DE, ARG2
12CA 3AC04E  1097      LD  A, (OPCOD)
12CD 0E0D    1098      LD  C, 13
12CF        1099      SYSTEM STOREN      ; STORE THAT NIBBLE
12CF FF      1099 +    RST  56
12D0 58      1099 +    DEFB STOREN
1099 +    IF  STOREN.EQ. INTPC
1099 +    ENDIF
1100      ; TRANSFER SIGN
12D1 3AD94E  1101      LD  A, (ARG2+10)    ; GET SIGN BYTE
12D4 07      1102      RLCA                ; PUT SIGN IN LO BIT
12D5 0D      1103      DEC  C
12D6        1104      SYSTEM STOREN
12D6 FF      1104 +    RST  56
12D7 58      1104 +    DEFB STOREN
1104 +    IF  STOREN.EQ. INTPC
1104 +    ENDIF
12D8 EB      1105  PACKED EX  DE, HL      ; DE = SAVE HL = ARG
12D9 010600  1106      LD  BC, 6           ; CLEAR SAVE
12DC AF      1107      XOR  A
12DD        1108      SYSTEM FILL
12DD FF      1108 +    RST  56
12DE 1A      1108 +    DEFB FILL
1108 +    IF  FILL.EQ. INTPC
1108 +    ENDIF
12DF 0E13    1109      LD  C, 19
12E1        1110  CCVT: SYSTEM INDEXN      ; GET NIBBLE
12E1 FF      1110 +    RST  56
12E2 56      1110 +    DEFB INDEXN
1110 +    IF  INDEXN.EQ. INTPC
1110 +    ENDIF
12E3 CD0F13  1111      CALL ADDTB          ; ADD INTO 'SAVE'
12E6 200D    1112      JR  NZ, CCVT1A-$   ; JUMP IF DONE
12E8 0D      1113      DEC  C             ; DECREMENT ARGPTR
12E9 79      1114      LD  A, C
12EA FE09    1115      CP   9             ; IS IT NOW 9?
12EC 20F3    1116      JR  NZ, CCVT1B-$   ; NO - KEEP GOING
12EE 3E0E    1117      LD  A, 0EH        ; YEAH - PUT IN DECIMAL POINT
12F0 CD0F13  1118      CALL ADDTB
12F3 28EC    1119      JR  Z, CCVT1C-$   ; JUMP BACK IF OK
1120      ; NOW REMOVE TRAILING ZEROS AND DECIMAL POINT
12F5 EB      1121  CCVT: EX  DE, HL      ; HL = SAVE
12F6 7E      1122  CCVT: LD  A, (HL)    ; GET LO NIBBLE
12F7 E60F    1123      AND  0FH          ; IS IT NONZERO?
12F9 2005    1124      JR  NZ, CCVT3-$   ; JUMP IF NOT ZERO
12FB CD0313  1125      CALL KILTRZ       ; REMOVE ONE TRAILING ZERO
12FE 18F6    1126      JR  CCVT2-$
1300 FE0E    1127  CCVT3: CP   0EH        ; DECIMAL POINT?
1302 C0      1128      RET  NZ           ; QUIT IF NOT
1303 010600  1129  KILTRZ: LD  BC, 6
1306 09      1130      ADD  HL, BC
1307 A7      1131      AND  A
1308 41      1132      LD  B, C
  
```

PROPRIETARY INFORMATION

DO NOT REPRODUCE

Dave Nutting Associates, Inc.

```

1309 2B      1133 KILTR1: DEC HL
130A ED67   1134          RRD
130C 10FB   1135          DJNZ KILTR1-*
130E C9     1136          RET
           1137 ; SUBROUTINE TO ADD A DIGIT TO NUMBER POINTED AT BY DE
130F 0605   1138 ADDTB: LD B,5
1311 EB     1139 ADDTD: EX DE,HL
1312 E5     1140          PUSH HL
1313 ED6F   1141 ADDTB1: RLD
1315 23     1142          INC HL
1316 10FB   1143          DJNZ ADDTB1-*
1318 77     1144          LD (HL),A ; STUFF LAST
1319 E1     1145          POP HL
131A EB     1146          EX DE,HL
131B C9     1147          RET
           1148 ; COLORS FOR CALCULATOR
131C 76     1149 COLORS: DEFB 76H ; GREY
131D 5C     1150          DEFB 5CH ; RED
131E 00     1151          DEFB 00H ; WHITE
131F 07     1152          DEFB 07H ; BLACK
1320 0707  1153          DEFW 0707H
1322 0707  1154          DEFW 0707H
           1155 ; *****
           1156 ; * CALCULATOR RAM
           1157 ; *****
           1158          ORG 4000H
4000      1159          DEFS CALCLN, BYTEPL
4E60      1160          DEFS 96
4EC0      1161 CALSTK:
>4EC0     1162 CALR: EQU $
4EC0      1163 OPCODE: DEFS 1 ; OPERATION TO DO
4EC1      1164 STATE: DEFS 1 ; STATE VARIABLE
4EC2      1165 MEMSTA: DEFS 1 ; MEMORY STATE VARIABLE
4EC3      1166 MEMDIG: DEFS 1 ; MEMORY DIGIT VARIABLE
4EC4      1167 ARG1: DEFS 11
           1168 ; ** NOTE *** CODE EXPECTS ARG2 THRU SHOWBF TO BE IN ONE
4ECF      1169 ARG2: DEFS 11 ; ARGUMENT 2
4EDA      1170 DIGIT: DEFS 1 ; DIGIT COUNTER
4EDB      1171 DPOINT: DEFS 1 ; DECIMAL POINT ENTERED FLAG
4EDC      1172 POINTP: DEFS 1 ; DECIMAL POINT POINTER
4EDD      1173 SHOW: DEFS 7 ; ENTRY FEEDBACK BUFFER
4EE4      1174 NLIN: DEFS 1 ; NUMBER OF LINES ON SCROLL STA
4EE5      1175 SCRP: DEFS 1 ; CURRENT POS OF SCROLL SYSTEM
4EE6      1176 CMEM: DEFS 110 ; CALCULATOR MEMORYS
>4F34     1177 ENDC: EQU $
4F34      1178          END
  
```

PROPRIETARY INFORMATION

Dave Nutting Associates, Inc.

DO NOT REPRODUCE

TOTAL ASSEMBLER ERRORS =