

COMMODORE[®] **1351**
MOUSE

user's
guide



For Use With Commodore
C64[®], 64C[™], C128[™] Computers



1351 MOUSE USER'S GUIDE

USER'S MANUAL STATEMENT

WARNING:

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to subpart J of Part 15 of the Federal Communications Commission's rules, which are designed to provide reasonable protection against radio and television interference in a residential installation. If not installed properly, in strict accordance with the manufacturer's instructions, it may cause such interference. If you suspect interference, you can test this equipment by turning it off and on. If this equipment does cause interference, correct it by doing any of the following:

- Reorient the receiving antenna or AC plug.
- Change the relative positions of the computer and the receiver.
- Plug the computer into a different outlet so the computer and receiver are on different circuits.

CAUTION: Only peripherals with shield-grounded cables (computer input-output devices, terminals, printers, etc.), certified to comply with Class B limits, can be attached to this computer. Operation with non-certified peripherals is likely to result in communications interference.

Your house AC wall receptacle must be a three-pronged type (AC ground). If not, contact an electrician to install the proper receptacle. If a multi-connector box is used to connect the computer and peripherals to AC, the ground must be common to all units.

If necessary, consult your Commodore dealer or an experienced radio-television technician for additional suggestions. You may find the following FCC booklet helpful: "How to Identify and Resolve Radio-TV Interference Problems." The booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, stock no. 004-000-00345-4.

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ABOUT THIS MANUAL

Basically, this manual is divided into two parts. The first part includes the introduction, mouse cleaning, and tips for general care of the mouse. That part is for the user with mouse-compatible software, who wants simply to plug in the mouse and begin using it. The second part of the manual contains information needed by those who wish to develop software for the mouse.

INTRODUCTION

The Commodore 1351 Mouse™ is a controller designed for use with the Commodore 64® or Commodore 128™ computers. It features two buttons on the top, and a ball on the underside that is rolled upon a flat surface to manipulate onscreen activity.

The mouse has two modes of operation—joystick mode and proportional mode.

In joystick mode, the mouse emulates a joystick and can be used with all joystick-compatible software. In this mode, the left button is the fire button and the right button is usually ignored.

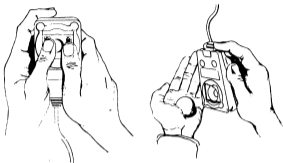
In proportional mode, the mouse uses a new technique to communicate mouse movement to the controlling application software. That requires the software to know the mouse is there and how to read it. For example, the GEOS™ operating system can use many different input drivers. One of them is the Commodore Mouse driver, which can be used with the 1351 in proportional mode.

The 1351 provides proportional mode so that applications can have a fast, responsive pointer that moves easily on the screen. Joystick mode acts as a fallback for those applications that don't have installable device drivers. Therefore, you can use the mouse as a joystick for older software, and take advantage of the benefits provided by proportional mode with newer applications.

The mouse automatically powers up in proportional mode. To choose joystick mode, plug the mouse into either joystick port on the side of the computer and hold down the right button as the computer is powered up.

MOUSE CLEANING

Since the ball of your mouse must roll freely to accurately manipulate the cursor (or whatever) on the screen, it's important that the ball remain free of dirt or debris. This is easily accomplished by sliding out the plastic piece holding the ball in place.



Remove the ball and wipe it off with a soft cloth, such as a handkerchief.



To remove any dirt or dust from the ball area, just blow gently into the opening. Around the top of the opening, there are three metal rollers. To clean these, take a cotton-tipped swab, moistened with head cleaning fluid or alcohol, and gently clean the surface of each roller. Replace the ball inside the controller and snap the plastic piece back on.



MOUSE TIPS

Proper care and use of your mouse mainly requires common sense.

Use your mouse on a clean, smooth surface.

Make sure you have adequate desktop space to manipulate your mouse, so you don't have to constantly pick up and reposition it.

Don't hold the mouse by its cord, or let the body of the mouse hang off the table.

PROPORTIONAL MOUSE DEVELOPER'S GUIDE

This section explains the theory of operation of the Commodore 1351 mouse and suggests software strategies for interfacing to it.

INTRODUCTION

The Commodore 1351 mouse for use with the C64/C128 product line is a small two-button device which is connected to either of the joystick ports on the C64/C128.

The mouse supports two distinct operating modes:

- 1) Joystick mode.
- 2) Proportional mode.

Proportional mode is usable with the C64 or the C128, and uses a special machine language driver yielding optimum machine language performance.

Mode selection is determined when the mouse is powered up. If the user depresses the right mouse button when the device is powered up, then the mouse will be in joystick mode.

If the user does not depress the right mouse button when the device is powered up, then the mouse will default to proportional mode.

It is the intent of joystick mode to provide a mode of operation where the mouse can be used as a joystick in the event that the software being run does not support the proportional mode.

JOYSTICK MODE

In joystick mode the mouse operates as follows:

- 1) If the mouse is moved, then the appropriate joystick lines are activated for a period of 20 ms. Thus moving the mouse is like pushing the joystick in the appropriate direction.
- 2) The left mouse button is mapped to what would be the fire button on a joystick.
- 3) The right mouse button is mapped into the SID POTX register. If the button is depressed then the SID POTX register will contain a number $< \$80$. If the button is not depressed then SID POTX will contain a number $\geq \$80$.
- 4) See the section on SID REGISTER CAUTIONS.

Software interface:

For most applications, the interface for joystick mode of operation shall be just as any joystick driver, and the right button shall be ignored.

PROPORTIONAL MODE

In proportional mode the mouse operates as follows:

- 1) Mouse movement is tracked internally to the mouse. The position of the mouse MOD 64 is transmitted to the SID POTX and POTY registers every 512 us., requiring no software intervention.

The POTX register is used to read the X position of the mouse and the POTY register is used to read the Y position of the mouse.

The register contents are as follows:

Bit Position	7	6	5	4	3	2	1	0
POT Register	X	P5	P4	P3	P2	P1	P0	N

where:

X is a don't care bit.

P5-P0 is the mouse position MOD 64.

N is a special (noise) bit (keep reading . . .).

- 2) The left mouse button is mapped to what would be the fire button on a joystick.
- 3) The right mouse button is mapped to what would be the UP direction on a joystick.

Software interface:

- 1) Because the left and right buttons appear as joystick lines, reading them from software is a trivial exercise in polling.

Note that as with a joystick, the buttons will interfere with the keyboard map, and software should make some effort to distinguish between a point short in the keyboard matrix (i.e., a key being depressed), and a whole row or column being grounded (i.e., a joystick type of signal).

- 2) The position information is not difficult to handle. It fits ideally in the 60 hz interrupt routine (preferably at the beginning—see the section on SID REGISTER CAUTIONS).

The strategy is as follows:

- 1) Read the mouse position MOD 64.
- 2) Determine if the mouse has moved by comparing the current position with a saved copy of the previous position.
- 3) If the mouse has moved, then modify your pointer position appropriately.

The mouse makes an effort to transmit a position to the SID register. Unfortunately, there is a single bit of noise in the transmission.

For example, even if the mouse is still, it is possible for the POT register to vacillate between \$80 and \$7F. This would result in the mouse position as jittering between two points.

It is therefore necessary to consider the low order bit of the POT register before making any decision as to whether the mouse has moved.

All of this can be seen in the supplied mouse driver code.

SID REGISTER CAUTIONS:

In the C64 & C128, the SID pot lines are connected to both joystick ports. A 4066 analog switch is used to switch the POT lines between the two ports based on one of the keyboard scan lines. This means that the normal keyscan interrupt temporarily affects the values returned in the POT registers. Therefore, in order to perform reliable conversions, the POT lines must be connected to the mouse for a period of >1.6 ms before the value returned in the POT register is valid.

The best way to insure this is to wedge the mouse driver software into the IRQ handler prior to the polled keyscan. This more-or-less assures that the keyscan lines have been sufficiently stable before the POT register is read by the mouse drivers.

**BASIC AND MACHINE
LANGUAGE PROGRAMS
FOR 1351 MOUSE
AND C64**

```
100 GOSUB140:GOSUB330
110 V = 13*4096:POKEV + 21,1:POKEV + 39,1:POKEV +
    0,100:POKEV + 1,100:POKEV + 16,0
120 POKE2040,56:SYS12*4096 + 256
130 END
140 FORX = 0TO129:READA$:GOSUB430:POKE49408 + X,Y:NEXTX:
    RETURN
150 DATAAD,15,03,C9,C1,F0,19,08
160 DATA78,AD,14,03,8D,00,C0,AD
170 DATA15,03,8D,01,C0,A9,21,8D
180 DATA14,03,A9,C1,8D,15,03,28
190 DATA60,D8,AD,19,D4,AC,02,C0
200 DATA20,58,C1,8C,02,C0,18,6D
210 DATA00,D0,8D,00,D0,8A,69,00
220 DATA29,01,4D,10,D0,8D,10,D0
230 DATAAD,1A,D4,AC,03,C0,20,58
240 DATAC1,8C,03,C0,38,49,FF,6D
250 DATA01,D0,8D,01,D0,6C,00,C0
260 DATA8C,05,C0,8D,04,C0,A2,00
270 DATA38,ED,05,C0,29,7F,C9,40
```

```
280 DATAB0,07,4A,F0,12,AC,04,C0
290 DATA60,09,C0,C9,FF,F0,08,38
300 DATA6A,A2,FF,AC,04,C0,60,A9
310 DATA00,60
320 REM-----
330 FORX = 0TO63:READA$:GOSUB430:POKE3584 + X,Y:NEXTX:
    RETURN
340 DATAF8,00,00,90,00,00,B8,00
350 DATA00,DC,00,00,8E,00,00,07
360 DATA00,00,02,00,00,00,00,00
370 DATA00,00,00,00,00,00,00,00
380 DATA00,00,00,00,00,00,00,00
390 DATA00,00,00,00,00,00,00,00
400 DATA00,00,00,00,00,00,00,00
410 DATA00,00,00,00,00,00,00,00
420 REM-----
430 Y = 1:Y1 = 0
440 IFLEFT$(A$,1)<>MID$("0123456789ABCDEF",Y,1)
    THENY = Y + 1:GOTO440
450 Y1 = (Y-1)*16:Y = 1
460 IFRIGHT$(A$,1)<>MID$("0123456789ABCDEF",Y,1)
    THENY = Y + 1:GOTO460
470 Y = Y1 + Y-1:RETURN
```

READY.

```

1 ;
2 ; C/64 mouse driver for BASIC 2.0 applications
3 ;
4
5 =0314      ; irq
6 =D000     ; vic
7 =D400     ; sld
8 =D419     ; potx
9 =D41A     ; poty
10
11 =D000     ; vicdata = $d000 ; vic registers
12 =D000     ; xpos = vicdata+$00 ; low order x position
13 =D001     ; ypos = vicdata+$01 ; y position
14 =D010     ; xposmsb = vicdata+$10 ; bit 0 is high order x position
15
16 =C000
17
18 =C002     ; irq2
19 =C003     ; opotx
20 =C004     ; opoty
21 =C005     ; newvalue
22 =C006     ; oldvalue
23
24 =C100     ; * = $c100
25
26 instell lda irq+1
27 cmp #>#10
28 beq 90$
29 sbp
30 sei
31 lda irq
32 stx irq2
33 lda irq+1
34 stx irq+1
35
36 lda #<#10
37 stx irq
38 lda #>#10
39 stx irq+1
40
41 pip
42 rts

```

```

C121 D8 D419
C122 AD D419
C123 AC C002
C124 20 C158
C125 8A C003
C126 18 D000
C127 6D D000
C128 8D D000
C129 8A C003
C130 AD D41A
C131 AC C003
C132 20 C158
C133 8C C003
C134 38 7F
C135 6D 0001
C136 8D 0001
C137 6C C000
C138 29 01
C139 4D D010
C140 8D D010
C141 AD D41A
C142 AC C003
C143 20 C158
C144 8C C003
C145 38 7F
C146 6D 0001
C147 8D 0001
C148 6C C000
C149 29 01
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C151 8D D010
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C156 38 7F
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C695 38 7F
C696 6D 0001
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C703 AC C003
C704 20 C158
C705 8C C003
C706 38 7F
C707 6D 0001
C708 8D 0001
C709 6C C000
C710 29 01
C711 4D D010
C712 8D D010
C713 AD D41A
C714 AC C003
C715 20 C158
C716 8C C003
C717 38 7F
C718 6D 0001
C719 8D 0001
C720 6C C000
C721 29 01
C722 4D D010
C723 8D D010
C724 AD D41A
C725 AC C003
C726 20 C158
C727 8C C003
C728 38 7F
C729 6D 0001
C730 8D 0001
C731 6C C000
C732 29 01
C733 4D D010
C734 8D D010
C735 AD D41A
C736 AC C003
C737 20 C158
C738 8C C003
C739 38 7F
C740 6D 0001
C741 8D 0001
C742 6C C000
C743 29 01
C744 4D D010
C745 8D D010
C746 AD D41A
C747 AC C003
C748 20 C158
C749 8C C003
C750 38 7F
C751 6D 0001
C752 8D 0001
C753 6C C000
C754 29 01
C755 4D D010
C756 8D D010
C757 AD D41A
C758 AC C003
C759 20 C158
C760 8C C003
C761 38 7F
C762 6D 0001
C763 8D 0001
C764 6C C000
C765 29 01
C766 4D D010
C767 8D D010
C768 AD D41A
C769 AC C003
C770 20 C158
C771 8C C003
C772 38 7F
C773 6D 0001
C774 8D 0001
C775 6C C000
C776 29 01
C777 4D D010
C778 8D D010
C779 AD D41A
C780 AC C003
C781 20 C158
C782 8C C003
C783 38 7F
C784 6D 0001
C785 8D 0001
C786 6C C000
C787 29 01
C788 4D D010
C789 8D D010
C790 AD D41A
C791 AC C003
C792 20 C158
C793 8C C003
C794 38 7F
C795 6D 0001
C796 8D 0001
C797 6C C000
C798 29 01
C799 4D D010
C800 8D D010
C801 AD D41A
C802 AC C003
C803 20 C158
C804 8C C003
C805 38 7F
C806 6D 0001
C807 8D 0001
C808 6C C000
C809 29 01
C810 4D D010
C811 8D D010
C812 AD D41A
C813 AC C003
C814 20 C158
C815 8C C003
C816 38 7F
C817 6D 0001
C818 8D 0001
C819 6C C000
C820 29 01
C821 4D D010
C822 8D D010
C823 AD D41A
C824 AC C003
C825 20 C158
C826 8C C003
C827 38 7F
C828 6D 0001
C829 8D 0001
C830 6C C000
C831 29 01
C832 4D D010
C833 8D D010
C834 AD D41A
C835 AC C003
C836 20 C158
C837 8C C003
C838 38 7F
C839 6D 0001
C840 8D 0001
C841 6C C000
C842 29 01
C843 4D D010
C844 8D D010
C845 AD D41A
C846 AC C003
C847 20 C158
C848 8C C003
C849 38 7F
C850 6D 0001
C851 8D 0001
C852 6C C000
C853 29 01
C854 4D D010
C855 8D D010
C856 AD D41A
C857 AC C003
C858 20 C158
C859 8C C003
C860 38 7F
C861 6D 0001
C862 8D 0001
C863 6C C000
C864 29 01
C865 4D D010
C866 8D D010
C867 AD D41A
C868 AC C003
C869 20 C158
C870 8C C003
C871 38 7F
C872 6D 0001
C873 8D 0001
C874 6C C000
C875 29 01
C876 4D D010
C877 8D D010
C878 AD D41A
C879 AC C003
C880 20 C158
C881 8C C003
C882 38 7F
C883 6D 0001
C884 8D 0001
C885 6C C000
C886 29 01
C887 4D D010
C888 8D D010
C889 AD D41A
C890 AC C003
C891 20 C158
C892 8C C003
C893 38 7F
C894 6D 0001
C895 8D 0001
C896 6C C000
C897 29 01
C898 4D D010
C899 8D D010
C900 AD D41A
C901 AC C003
C902 20 C158
C903 8C C003
C904 38 7F
C905 6D 0001
C906 8D 0001
C907 6C C000
C908 29 01
C909 4D D010
C910 8D D010
C911 AD D41A
C912 AC C003
C913 20 C158
C914 8C C003
C915 38 7F
C916 6D 0001
C917 8D 0001
C918 6C C000
C919 29 01
C920 4D D010
C921 8D D010
C922 AD D41A
C923 AC C003
C924 20 C158
C925 8C C003
C926 38 7F
C927 6D 0001
C928 8D 0001
C929 6C C000
C930 29 01
C931 4D D010
C932 8D D010
C933 AD D41A
C934 AC C003
C935 20 C158
C936 8C C003
C937 38 7F
C938 6D 0001
C939 8D 0001
C940 6C C000
C941 29 01
C942 4D D010
C943 8D D010
C944 AD D41A
C945 AC C003
C946 20 C158
C947 8C C003
C948 38 7F
C949 6D 0001
C950 8D 0001
C951 6C C000
C952 29 01
C953 4D D010
C954 8D D010
C955 AD D41A
C956 AC C003
C957 20 C158
C958 8C C003
C959 38 7F
C960 6D 0001
C961 8D 0001
C962 6C C000
C963 29 01
C964 4D D010
C965 8D D010
C966 AD D41A
C967 AC C003
C968 20 C158
C969 8C C003
C970 38 7F
C971 6D 0001
C972 8D 0001
C973 6C C000
C974 29 01
C975 4D D010
C976 8D D010
C977 AD D41A
C978 AC C003
C979 20 C158
C980 8C C003
C981 38 7F
C982 6D 0001
C983 8D 0001
C984 6C C000
C985 29 01
C986 4D D010
C987 8D D010
C988 AD D41A
C989 AC C003
C990 20 C158
C991 8C C003
C992 38 7F
C993 6D 0001
C994 8D 0001
C995 6C C000
C996 29 01
C997 4D D010
C998 8D D010
C999 AD D41A

```

```

70
71 ; movchk      y = old value of pot register
72 ;            a = current value of pot register
73 ;            y = value to use for old value
74 ;            x,a = delta value for position
75 ;
76
77 movchk      sty oldvalue      save old & new values
78             stx newvalue
79             ldx #0
80             a <= mod64( new-old )
81             sbc oldvalue
82             and #01111111
83             cmp #01000000      if > 0
84             bcs 50$
85             lsr a
86             beq 80$
87             ldy newvalue
88             rts
89
90
91 50$         ora #11000000      else or in high order bits
92             cmp #fff
93             beq 80$
94             sec
95             ror a
96             ldx #fff
97             ldy newvalue
98             rts
99
100 80$         ldx #0
101             a <= 0
102             return w/ y = old value
103

```


**BASIC AND MACHINE
LANGUAGE PROGRAMS
FOR 1351 MOUSE
AND C128**

```
100 GOSUB230:GOSUB420:SYS6144
120 BA = DEC("0A04"):POKE BA,1ORPEEK(BA)
130 SPRITE 1,1,2:MOVSPR 1,100,100
140 GRAPHIC1,1:CHAR 1,8,1,"1351 MOUSE PAINT"
150 DO:IF (JOY(1) AND 128) THEN GOSUB 180
160 IF (JOY(1) AND 1) THEN GRAPHIC 1,1:CHAR 1,8,1, "1351 MOUSE PAINT"
170 LOOP
180 X = RSPPOS(1,0) - 25:Y = RSPPOS(1,1) - 51:X = - X*(X>0):Y = - Y*(Y>0)
190 LOCATE X,Y: C = 1 - RDOT(2):DRAW C,X,Y
200 DO:X = RSPPOS(1,0) - 25:Y = RSPPOS(1,1) - 51:
   X = - X*(X>0):Y = - Y*(Y>0)
210 DRAW C TO X,Y:LOOP WHILE JOY(1) AND 128 : RETURN
220 REM-----
230 FORX = 0TO135:READA$:POKE6144 + X,DEC(A$):NEXTX:
   RETURN
240 DATAAD,15,03,C9,18,F0,19,08
250 DATA78,AD,14,03,8D,F0,18,AD
260 DATA15,03,8D,F1,18,A9,21,8D
270 DATA14,03,A9,18,8D,15,03,28
```

```
280 DATA60,D8,AD,7E,11,D0,33,AD
290 DATA19,D4,AC,F2,18,20,5D,18
300 DATA8C,F2,18,18,6D,D6,11,8D
310 DATAD6,11,8A,69,00,29,01,4D
320 DATAE6,11,8D,E6,11,AD,1A,D4
330 DATAAC,F3,18,20,5D,18,8C,F3
340 DATA18,38,49,FF,6D,D7,11,8D
350 DATAD7,11,6C,F0,18,8C,F5,18
360 DATA8D,F4,18,A2,00,38,ED,F5
370 DATA18,29,7F,C9,40,B0,07,4A
380 DATAF0,12,AC,F4,18,60,09,C0
390 DATAAC,FF,F0,08,38,6A,A2,FF
400 DATAAC,F4,18,60,A9,00,60,00
410 REM-----
420 FORX = 0TO63:READA$:POKEDEC("0E00") + X,DEC(A$):NEXTX:
    RETURN
430 DATAF8,00,00,90,00,00,B8,00
440 DATA00,DC,00,00,8E,00,00,07
450 DATA00,00,02,00,00,00,00,00
460 DATA00,00,00,00,00,00,00,00
470 DATA00,00,00,00,00,00,00,00
480 DATA00,00,00,00,00,00,00,00
490 DATA00,00,00,00,00,00,00,00
500 DATA00,00,00,00,00,00,00,00
```

```

1 ;
2 ; C/128 mouse driver for BASIC 7.0 applications
3 ;
4
5 =0314      iirg      = $0314
6 =0000      vic      = $0000
7 =0400      sid      = $0400
8 =0419      potx     = sid+$19
9 =041A      poty     = sid+$1A
10
11 =117E      active   = $117E      ; 12 zero, then move sprite
12
13 =1106      vicdata  = $1106      ; basic's copy of vic register image
14 =110E      xpos     = vicdata+$00 ; low order x position
15 =1107      ypos     = vicdata+$01 ; y position
16 =11E6      xpossub  = vicdata+$10 ; bit 0 is high order x position
17
18 =18F0
19
20 =18A2      iirg2    = $18A2      ***2
21 =18A3      opotx    = $18A3      ***1
22 =18F5      opoty    = $18F5      ***1
23 =18F5      newvalue = $18F5      ***1
24 =18F6      oldvalue = $18F6      ***1
25
26 =1800      * = $1800
27
28 install   lda iirg+1
29 cmp #>maxg
30 beq 905
31 php
32 sei
33 lda iirg
34 sta iirg2
35 lda iirg+1
36 sta iirg2+1
37
38 lda #>maxg
39 sta iirg
40 lda #>maxg
41 sta iirg+1
42
43 pip
44 905      rts
45
46 =1800      AD 0314
47 =1803      C9 18
48 =1805      40 19
49 =1807      08
50 =1808      78
51 =1809      AD 0314
52 =180C      8D 18F0
53 =180E      AD 0315
54 =1812      8D 18F1
55
56 =1815      A9 21
57 =1817      8D 0314
58 =181A      A9 18
59 =181C      8D 0315
60
61 =181F      28
62 =1820      60

```



```

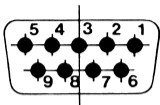
74 : movchk
75 :      entry y = old value of pot register
76 :      a = current value of pot register
77 :      exit y = value to use for old value
78 :      x/a = delta value for position
79 :
80
81 movchk stv oldvalue save old & new values
82 stx newvalue
83 ldx #0 preload x w/ 0
84
85 sec #0
86 sbc oldvalue a <= mod64( new-old )
87 and #01111111
88 cmp #010000000 if > 0
89 bcs 50$
90 lsr a a <= a/2
91 bge 80$ if <= 0
92 ldy newvalue y <= newvalue
93 rts return
94
95 50$ cbr #110000000 else or in high order bits
96 cbr #52$ if <> -1
97 bge 80$
98 sec #0
99 cor a
100 ldx #52$ x <= -1
101 ldy newvalue y <= newvalue
102 rts return
103
104 80$ ldx #0 a <= 0
105 rts return w/ y = old value
106

```

* * Cross Reference * *

Reference flag	Value	Definition	Write	Blank	Read
Symbol	Value	References			
ACTIVE	=11E	11	47		
ISO	=0314	54	28	33	398
ISO2	18F0	204	346	73	
INSTALL	1800	284			
MISO	1821	29	38	40	464
NOCHK	185D	51	68	88	
NEWVALDE	18F4	238	645	92	101
OLDVALDE	18F5	244	814	86	
OPTX	18P2	214	50	53	
OPTY	18P3	224	64	66	
POTX	=0419	88	49		
POTY	=041A	98	61		
SID	=0400	78	8	9	
VIC	=0000	68			
VICDATA	=11D6	138	14	16	
XOS	=11D6	148	55	59	
XOSMSB	=11E6	168	60	65	
XOS	=11D7	158	70	73	

1350 MOUSE PIN-OUT



CONNECTION TABLE		
FUNCTION		
PIN NO.	JOYSTICK MODE	PROPORTIONAL MODE
1	UP	RIGHT BUTTON
2	DOWN	UNUSED
3	LEFT	UNUSED
4	RIGHT	UNUSED
5	UNUSED	Y-POSITION
6	LEFT BUTTON	LEFT BUTTON
7	+5V	+5V
8	GND	GND
9	RIGHT BUTTON	X-POSITION

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