smart Track

Users Guide

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SmartTrack
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Product Description

SmartTrack is an analog 3-button trackball for use with Commodore 64, 64C, 128 and 128-D computers and software. SmartTrack also contains a joystick emulation mode, and is fully backwards-compatible with the Commodore 1351 mouse—thus, you may use your SmartTrack with any program which would normally use a Commodore 1351 or Commodore 1350 mouse. You may also use SmartTrack with any program which would normally use a joystick.

The left and right buttons located on the SmartTrack are identical in operation to the left and right buttons on the Commodore 1351 mouse. The center button on the SmartTrack is a new feature which has not been provided on any previous Commodore or Commodore-compatible mouse or trackball. Information for programmers on accessing the third button is provided in the programming section of this manual.

In addition to the third button, SmartTrack comes equipped with another unique feature—a built-in battery-backed real-time clock (RTC). This clock gives GEOS users the opportunity to have the time and date automatically set during the GEOS boot process. Programmers may also access this clock using the information provided in the programming section of this manual.

General Use

SmartTrack connects directly to either of the joystick ports located along the right-hand side of your Commodore 64, 64C, 128 or 128-D computer.

IMPORTANT NOTE: *Never connect SmartTrack to your computer while the computer power is on. Doing so could result in permanent damage to either SmartMouse or your computer.*

Check the documentation of your software to determine which port SmartTrack should occupy. If the program supports a Commodore 1351 mouse, follow any special instructions for such use. If the program supports only a joystick or Commodore 1350 mouse, you must place SmartTrack into joystick emulation mode (see '*Joystick Emulation Mode*').

Before you begin using SmartTrack with your software, you may wish to set the clock, so that the time and date stored in SmartTrack will match the current time and date in your locality. To do this, use the SMART-TOOLS program supplied on the

SmartTrack Utilities disk. Instructions for this program may be found in the '*Utilities*' section of this manual.

Joystick Emulation Mode

The following procedure outlines the steps required to place SmartTrack into joystick emulation mode:

- turn off your computer
- hold down the right-most button on SmartTrack
- while holding the button down, turn on your computer

Using SmartTrack with GEOS

The SmartTrack Utilities disk contains drivers and an autoexec utility program for use in port 1 with GEOS. While SmartTrack is fully compatible with all other Commodore 1351 GEOS mouse drivers, the new drivers supplied on the utilities disk will allow GEOS users to take advantage of the additional features found in SmartTrack. Installation and use of these drivers (`SmartMouse 64` and `SmartMouse 128`) and the autoexec (`AutoSmartTime`) are detailed in the section titled, "*Utilities*'.

Utilities

This section documents the various utilities you'll find located on the SmartTrack Utilities disk. In order to avoid possible problems or conflicts, please refer to the instructions for each specific program before using it.

SMART-TOOLS

General SmartTrack Utility Program

SMART-TOOLS allows you to set the SmartTrack Real-Time Clock. This program operates on both the Commodore 64 and the Commodore 128 (in either 40 or 80 column mode). It should generally be loaded and operated from the SmartTrack Utilities disk, since it must load a number of the modules located on that disk. To start the program, plug your SmartTrack into joystick port 1, then turn on your computer and enter the following command:

```
LOAD"SMART-TOOLS",8        <RETURN>
```

When the READY prompt appears, type:

RUN <RETURN>

Windows will appear that allow you to change the hours, minutes, seconds, hours, mode, AM/PM status, day of the week, month, date and year.

To change any of these parameters, position the trackball pointer over the item you wish to change and press the left trackball button to decrease its value, or the right trackball button to increase it. The center trackball button brings up a help screen should you forget these functions.

The 'READ SMARTMOUSE' button at the bottom of the screen allows you to read the current values stored in the clock; 'UPDATE SMARTMOUSE' writes changes you have made to the clock. An exit button is also located at the bottom of the screen for when you've finished using the program.

`SMART-TOOLS` uses the following modules from the SmartTrack Utilities disk: `MOUSE64.OBJ`, `MOUSE128.OBJ`, `SMART80.O`, `MTIME($CC00).OBJ`, `MTSM($1A80).OBJ`, MON/MOFF.

SmartMouse 64

GEOS 64 SmartMouse/SmartTrack Driver

This is an input driver specifically designed for use with GEOS 64 and your SmartTrack. It directly replaces the **COMM 1351** mouse input driver included with GEOS 64, but includes additional features not offered by that driver. When using the `SmartMouse 64` driver with GEOS, all three buttons have assigned functions. These functions are outlined below:

Left Button	Single-click - This button performs a single click when pressed. Single clicks are used for selecting items and functions throughout GEOS.
Center Button	Turbo Mode - When holding the center button down, all trackball movement occurs at turbo speed. This allows you to quickly move to different areas of the screen.
Right Button	Double-click - This button performs a double-click when pressed. Double-clicks are used to launch programs from the GEOS deskTop.

To install your new driver, perform the following steps:

- With your computer turned off, plug your SmartTrack into joystick port 1 (the joystick port closest to the front of your computer).

- Turn on your computer and boot GEOS 64 as you normally would.
- Wait for GEOS to finish booting, then hold down the <COMMODORE> key and press the <I> key. This will bring up the GEOS driver selection box.
- Using your cursor keys, move the pointer until it rests over the **COMM 1351** input driver. Press the <RETURN> key twice, in rapid succession. This will load the **COMM 1351** input driver, and exit you back to the GEOS deskTop. You may now use your SmartTrack as an input device while you complete the remaining installation steps.
- Copy the `SmartMouse 64` input driver from the SmartTrack Utilities disk to the disk you use to boot GEOS 64 (this will usually be the SYSTEM or BACKUP SYSTEM disk for GEOS 64). If you don't know how to copy GEOS files from one disk to another, check your GEOS Users Manual.
- Once you have finished copying the driver to your disk, again enter the driver selection box by using the <COMMODORE>-<I> key combination.
- Move the pointer until it rests over the `SmartMouse 64` input driver selection, then double-click with the left trackball button. This will load the SmartMouse 64 input driver, and exit you back to the GEOS deskTop. Your SmartTrack will now be fully functional.

Now that you have installed your SmartTrack input driver, you should install the `AutoSmartTime` utility in order to take advantage of the SmartTrack Real-Time Clock. See the `AutoSmartTime` utility documentation for details.

SmartTrack 128

GEOS 128 SmartMouse/SmartTrack Driver

This is an input driver specifically designed for use with GEOS 128 and your SmartTrack. It directly replaces the **128 COMM 1351** mouse input driver included with GEOS 128, but includes additional features not offered by that driver. When using the `SmartMouse 128` driver with GEOS, all three buttons have assigned functions. These functions are outlined below:

Left Button	Single-click - This button performs a single click when pressed. Single clicks are used for selecting items and functions throughout GEOS.
Center Button	Turbo Mode - When holding the center button down, all trackball movement occurs at turbo speed. This allows you to quickly move to different areas of the screen.

Right Button — Double-click - This button performs a double-click when pressed. Double-clicks are used to launch programs from the GEOS deskTop.

To install your new driver, perform the following steps:

- With your computer turned off, plug your SmartTrack into joystick port 1 (the joystick port closest to the front of your computer).
- Turn on your computer and boot GEOS 128 as you normally would.
- Wait for GEOS to finish booting, then hold down the <COMMODORE> key and press the <I> key. This will bring up the GEOS driver selection box.
- Using your cursor keys, move the pointer until it rests over the **128 COMM 1351** input driver. Press the <RETURN> key twice, in rapid succession. This will load the **128 COMM 1351** input driver, and exit you back to the GEOS deskTop. You may now use your SmartTrack as an input device while you complete the remaining installation steps.
- Copy the `SmartMouse 128` input driver from the SmartTrack Utilities disk to the disk you use to boot GEOS 128 (this will usually be the SYSTEM or BACKUP SYSTEM disk for GEOS 128). If you don't know how to copy GEOS files from one disk to another, check your GEOS Users Manual.
- Once you have finished copying the driver to your disk, again enter the driver selection box by using the <COMMODORE>-<I> key combination.
- Move the pointer until it rests over the `SmartMouse 128` input driver selection, then double-click with the left trackball button. This will load the `SmartMouse 128` input driver, and exit you back to the GEOS deskTop. Your SmartTrack will now be fully functional.

Now that you have installed your SmartTrack input driver, you should install the AutoSmartTime utility in order to take advantage of the SmartTrack Real-Time Clock. See the `AutoSmartTime` utility documentation for details.

AutoSmartTime

GEOS 64/128 Clock Utility

This GEOS autoexec utility will automatically set the GEOS clock while booting GEOS if it is placed on your GEOS boot disk. Additionally, it can be used to change the time and date stored in your SmartTrack when executed as an application program within the GEOS environment.

To install the AutoSmartTime program on your GEOS boot disk, perform the following steps:

- Turn on your computer and boot GEOS (64 or 128) as you normally would.
- Copy the `AutoSmartTime` program from the SmartTrack Utilities disk to the disk you use to boot GEOS (this will usually be the SYSTEM or BACKUP SYSTEM disk). If you don't know how to copy GEOS files from one disk to another, check your GEOS Users Manual.

Once you have finished copying the program to your boot disk, you'll be ready to start using it.

`AutoSmartTime` performs two functions; it can be used to transfer the time and date displayed by GEOS into your SmartTrack clock, or it can be used to transfer the time and date stored in your SmartTrack clock into GEOS.

If you have not yet set your SmartTrack clock's time and date, then you may do so by following these steps:

- Move your trackball pointer until it rests over the clock in the upper-right-hand corner of the GEOS deskTop.
- Click once using the left trackball button. This will place GEOS into its time and date input mode.
- Enter the current time and date, then press the `<RETURN>` key to exit from input mode.
- Locate the AutoSmartTime file icon on your GEOS boot disk.
- Move the pointer until it rests over the `AutoSmartTime` icon, then press the right trackball button (or double-click with the left trackball button if you are not using a SmartMouse/SmartTrack input driver). This will load the `AutoSmartTime` program.
- Once the program has booted, move your pointer until it rests over the 'Update SmartMouse' button, then click once using the left trackball button. Your SmartTrack clock will be updated using the time and date from the GEOS clock, and the program will automatically exit back to the GEOS deskTop.

You may also use `AutoSmartTime` to update your GEOS clock, though this will normally be done automatically when you boot GEOS (provided you have placed AutoSmartTime on your GEOS boot disk). To use `AutoSmartTime` to update the GEOS clock manually, do the following:.

- Locate the `AutoSmartTime` file icon on your GEOS boot disk.
- Move the pointer until it rests over the AutoSmartTime icon, then press the right trackball button (or double-click with the left trackball button if you are not using a SmartMouse/SmartTrack input driver). This will load the AutoSmartTime program.
- Once the program has booted, move your pointer until it rests over the Update GEOS button, then click once using the left trackball button. Your GEOS clock will be updated using the time and date from the SmartTrack clock, and the program will automatically exit back to the GEOS deskTop.

RUN PAINT

40 Column Paint Program for C-64 and C-128

RUN Paint lets C-64 and C-128 users create and print out bitmapped graphics. It runs in 40-column mode and uses both hi-res and multicolor screens. Make sure you have a joystick, mouse, or trackball plugged into port 2. Then turn on the computer and place the disk containing RUN Paint into your disk drive. Load the program by typing:

```
LOAD"RUN PAINT",8 <RETURN>
```

When the `READY` prompt appears, type:

```
RUN                    <RETURN>
```

RUN Paint defaults to a joystick in port 2, so if you're using a mouse or trackball instead, press the `<F3>` key at this point. Pressing `<F1>` reselects the joystick.

To draw, select an option from a menu. To activate the menu system, move the pointer at least five pixels above the top of the screen border and press the firebutton (or left mouse/trackball button). When the main menu appears, select one of the options by moving the pointer onto it and pressing the firebutton.

Clicking on an option displays a submenu for further selections. Some of the submenu options perform an action, and some bring yet another submenu down.

To begin, draw something on the screen. Here's how:

Activate the menu system by clicking on the Draw option in the main menu; then, when a submenu appears, click on the Freehand option. Note that making a selection may make the menu disappear.

Now, position the pointer on the arrow pointing right and press the firebutton. This makes the contents of the screen seem to scroll left, because the screen is being

moved to the right through the page buffer. Releasing the firebutton stops the scrolling and makes the main menu reappear.

Additional documentation for this program can be found on the disk. You may print this documentation with most word processors or SEQ file printing utilities. If you do not have such a utility or program, then use the DOCPRINT program located on the SmartTrack utilities disk.

Other files located on the disk which are required by RUN Paint are: OB.BOOT RP, OB.RP, and SYS.STUFF.H.

DOCPRINT

This is a simple printing program set up specifically to print the RUN Paint documentation. Load DOCPRINT by placing the SmartTrack Utilites disk in your disk drive and entering the command:

```
LOAD"DOCPRINT",8    <RETURN>
```

When the READY prompt appears, type:

```
RUN                 <RETURN>
```

Once the program begins, it will ask you for the device number of your printer. You may select 4, 5, 6, 7 or press the <U> key to indicate a User Port GEOCABLE type of printer connection. The program will immediately print the document. Make sure your printer is on and ready. When the program completes the printout, it will terminate to BASIC.

Other Programs

Your SmartTrack Utilities disk contains a number of other programs which are machine language modules and source code. Many of these are used by the SMART-TOOLS utility, but will also be useful to programmers who wish to create their own mouse- and trackball-driven software. The following is a brief description of these modules. Important memory locations are noted where possible.

MOUSE64.ASM	Source code for MOUSE64.OBJ. (MADBUD format)
MOUSE64.OBJ	This is a self-contained mouse/trackball driver module for the C-64. It loads at $CØØØ, and may be started by performing a SYS to that address. A second SYS to the same address will un-install the driver. This driver also creates a mouse/trackball pointer in Sprite Ø, so that your program will not have to do this itself.

MOUSE128.ASM	Source code for MOUSE128.OBJ. (MADBUD format)
MOUSE128.OBJ	This is a self-contained mouse/trackball driver module for the C-128 in 40 column mode. It loads at $13ØØ, and may be started by performing a SYS to that address. A second SYS to the same address will un-install the driver. This driver also creates a mouse/trackball pointer in Sprite Ø, so that your program will not have to do this itself.
SMART80.EBUD1	Source code for SMART80.O. (BUDDY format)
SMART80.EBUD2	Source code for SMART80.O. (BUDDY format)
SMART80.LNK	Link file for SMART80.O. (BUDDY format)
SMART80.NOTES	Documentation for SMART80.O. (SEQ text format)
SMART8Ø.O	This is a self-contained mouse/trackball driver module for the C-128 in 80 column mode. It loads at $13ØØ, and may be started by performing a SYS to that address. This driver also creates a mouse/trackball pointer by re-defining characters in the character set. For further information on using this module in your own programs, see the SMART-80.NOTES file.
MTIME($CCØØ).ASM	Source code for MTIME($CCØØ).OBJ. (MADBUD format)
MTIME($CCØØ).OBJ	This is a machine language module which contains all the routines required to read to, and write to the Real-Time Clock chip located in the SmartTrack. This version loads at $CCØØ, a good location for use on the C-64. The source code is well documented to provide information on using the routines.
MTIME($13ØØ).ASM	Source code for MTIME($13ØØ).OBJ. (MADBUD format)
MTIME($13ØØ).OBJ	This is a machine language module which contains all the routines required to read to, and write to the Real-Time Clock chip located in the SmartTrack. This version loads at $13ØØ, a good location for use on the C-128. The source code is well documented to provide information on using the routines.

MTSM($1A8Ø).ASM	Source code for MTSM($1A8Ø).OBJ. (MADBUD format)
MTSM($1A80).OBJ	This is a machine language module which contains only the burst clock read and write routines used in the MTIME modules. This version loads at $1A8Ø, a good location for use on the C-128 when using the SMART80.O mouse/trackball driver. The source code is well documented to provide information on using the routines.
MON/MOFF	A small module used by SMART-TOOLS in the C-128 80 column mode. This is used to redirect the CHROUT routine to disable the SMART80 mouse/trackball pointer while printing to the screen.

Programming Information

SmartTrack can be operated in one of two modes; Proportional (Commodore 1351 mouse emulation) or Joystick (Commodore 1350 or joystick emulation). To provide the end user with the greatest amount of control, we strongly suggest that programs be created to utilize the proportional operating mode. Programming considerations and important locations for both modes are provided below. In addition, information on programming the clock chip incorporated into SmartTrack has been provided.

JOYSTICK MODE

When joystick mode is used, trackball movement in any direction creates a low condition (Ø) on the appropriate joystick port input. This condition has a duration of approximately 20 ms.

The joystick ports share I/O lines with the keyboard for hardware efficiency. These locations are indicated on the accompanying address chart.

The left and center buttons on the SmartTrack show up in the same register as the joystick direction lines. The center button, however, cannot be differentiated from "down" direction—thus the center button is not considered useful in joystick mode. Additionally, joystick mode causes the right button to show up in bit 7 of the POTX register, located at $D419 (54297). Active buttons deliver a low logic condition (Ø) on the corresponding port bit.

Please note that you must program bits 6 and 7 of CIA #1 Port A to correctly select reading the POTX line from joystick port 1 or 2. Bit 6 should be set high to read

from port 1, while bit 7 should be set high to read from port 2. Whenever you switch these lines, you must delay reading from POTX and POTY for a minimum of 1.6 ms. This delay allows time for the port signals to become stable enough to give correct results. Because many of the signals used to read the joystick port are shared with the keyboard, interrupts must be disabled by joystick reading routines.

Location: $DCØØ (Port 2) & DCØ1 (Port 1)							
7	6	5	4	3	2	1	0
N/A	N/A	N/A	L. Btn.	Right*	Left*	Down*/ C. Btn.	Up*/ Rt. Btn.†
Location: $D419 (Ports 1 & 2)							
7	6	5	4	3	2	1	0
Rt. Btn.*	XPOS†	XPOS†	XPOS†	XPOS†	XPOS†	XPOS†	NOISE†
Location: $D41A (Ports 1 & 2)							
7	6	5	4	3	2	1	0
N/A	YPOS†	YPOS†	YPOS†	YPOS†	YPOS†	YPOS†	NOISE†

*Valid in joystick mode only.
†Valid in mouse mode only.

MOUSE MODE

When mouse mode is used, trackball movement in any direction is reflected by the contents of the SID chip POTX and POTY registers. These registers are located at $D419 (54297) and $D41A (54298), respectively. Both registers have 7 bits of data, however, the low order bit is considered to be 'noise', and will fluctuate between low and high conditions without moving the trackball.

POTX and POTY are registers which indicate a value derived through conversion of analog data into a digital number (A to D conversion). SmartTrack produces a varying pulse width signal, the duration of which becomes longer when the trackball is moved in one direction, and shorter when moved in the opposite direction. Thus, the values in POTX and POTY will appear to either count up or down as the trackball is moved. The direction and amount of change can be recorded by a program and used to determine movement of a pointer or other on-screen tools. The use of machine language interrupt routines to track such movement is required to assure correct assessment.

Please note that you must program bits 6 and 7 of CIA #1 Port A to correctly select reading the POTX line from joystick port 1 or 2. Bit 6 should be set high to read from port 1, while bit 7 should be set high to read from port 2. Whenever you switch these lines, you must delay reading from POTX and POTY for a minimum of 1.6 ms. This delay allows time for the port signals to become stable enough to give correct results.

All three buttons located on SmartTrack are mapped into the CIA port lines when in mouse mode. These lines are shared with the keyboard for hardware efficiency, so keyboard interrupts should be disabled when reading these lines. The locations and bits used are indicated on the accompanying address chart. Active buttons deliver a low logic condition (Ø) on the corresponding port bit.

Clock Chip Programming

SmartTrack incorporates a Dallas Semiconductor DS1202 Serial Timekeeper Chip into its design. This chip provides battery backed time and date in 12 or 24 hour format, and also has 24 bytes of battery backed RAM. Programming of this chip is performed through a serial data transfer method, utilizing one data and two handshaking lines.

The three lines used for programming the DS1202 are connected to the same memory location as the joystick lines; `$DCØ1` for port 1, and `$DCØØ` for port 2. The following is a description of the lines and their port assignments.

SCLK	`$DCØØ/$DCØ1 Bit 1`	Used to clock data in and out of the I/O line
I/O	`$DCØØ/$DCØ1 Bit 2`	Single bit Input/Output port for transfer of data between the chip and the host computer
RST	`$DCØØ/$DCØ1 Bit 3`	Second handshaking line used to insure against false data transfers

Due to the extensive nature of programming the DS1202, we will not attempt to document this task in any great detail. Ample programming utilities with commented source code have been provided on the SmartTrack Utilities disk, and those who wish further information on the DS1202 may pursue obtaining the data specification and programming information directly from Dallas Semiconductor. The following brief overview, along with the command table for the DS1202, should provide sufficient information to allow programmers to access this device with our programs.

The DS1202 has two distinct functional areas; an 8 byte clock data register area, and an area comprised of 24 bytes of static RAM. These areas are addressed via a command byte sent to the DS1202 prior to any read or write operation. The command byte specifies several things; whether you intend to read or write; whether

the operation is intended for RAM or clock registers; and the address of the specific RAM or clock register you intend to access. Further, the DS1202 has a special command byte used to inform the chip that you wish to perform a burst read or write of RAM or clock register data; this allows the transfer of all 8 bytes of clock register data, or 24 bytes of RAM data, in a single operation. The diagram below gives an overview of the bit assignments in the command byte.

DS1202 COMMAND BYTE BIT ASSIGNMENTS							
7	6	5	4	3	2	1	Ø
1	RAM/CK	A4	A3	A2	A1	AØ	RD/WR

Note that bit 7 is always high; bit 6 determines whether the access will be to RAM (bit 6 high) or to the clock registers (bit 6 low); bits 1 through 5 are used to make up the address of the specific RAM byte or register to be accessed; and bit Ø controls whether the operation will be a read (bit Ø high) or a write (bit Ø low). The five address bits are also used to specify burst reads and writes (all address bits high).

The DS1202 clock register definitions can be seen in the next table. Data stored in these registers is in BCD (binary coded decimal) format. This format separates each 8-bit byte into two 4-bit nibbles. Each nibble holds a binary version of the numbers Ø through 9. Thus, the number 10 is stored with a binary one in the high nibble, and a binary Ø in the low nibble.

Since most of the numbers stored in these registers never reach a very high value, the high nibble of some registers is further broken down into special flags. The following is a brief description of these flags.

CH Clock Halt - When zero (Ø), the clock operates normally. Setting this bit high (1) causes the clock to stop, and places the DS1202 into a power saving mode.

HM Hour Mode - This bit controls whether the clock is in 12 hour (HM set high) or 24 hour mode (HM set low). Note that this mode controls the function of bit 5 of the hour register. When 12 hour mode is being used, bit 5 is used as an AM/PM flag; in 24 hour mode, bit 5 is used as a second bit for the high nibble of the hours.

AP AM/PM - As mentioned under the HM flag description, the AP flag is used to designate AM or PM when in 12 hour mode. This bit is used as a second bit for the high nibble of the hours when in 24 hour mode.

WP Write Protect - The write protect bit is used to prevent writing to the other registers, and is active when set high.

DS1202 CLOCK REGISTER DEFINITIONS										
REGISTER	FUNCTION	RANGE	7	6	5	4	3	2	1	Ø
Ø	Seconds	Ø-59	CH	Sec/1Ø			Sec			
1	Minutes	Ø-59	Ø	Min/1Ø			Min			
2	Hours	1-12/Ø-23	HM	Ø	AP	HR/1Ø	Hour			
3	Date	1-31	Ø	Ø	Date/1Ø		Date			
4	Month	1-12	Ø	Ø	Ø	Mo/1Ø	Month			
5	Day	1-7	Ø	Ø	Ø	Ø	Day			
6	Year	Ø-99	Year/1Ø				Year			
7	Write Prot.	Ø/8Ø	WP	Always Zero						

Limited Warranty

Creative Micro Designs, Inc., 15 Benton Dr., P.O. Box 646, East Longmeadow, Massachusetts 01028, warrants to the original retail purchaser of the SmartTrack that it is free of defects in material and workmanship for a period of 90 days from date of purchase from an authorized CMD dealer or 90 days from the date of delivery if purchased direct from CMD.

IMPLIED WARRANTIES, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, ARE LIMITED IN DURATION TO THE DURATION OF THE EXPRESS WARRANTY SET FORTH ABOVE. IN NO EVENT SHALL CMD BE LIABLE FOR ANY LOSS, INCONVENIENCE, OR DAMAGE WHETHER DIRECT, INCIDENTAL, CONSEQUENTIAL OR OTHERWISE RESULTING FROM BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, WITH RESPECT TO THE EQUIPMENT, EXCEPT AS SET FORTH HEREIN.

SOME STATES DO NOT ALLOW THE LIMITATIONS ON THE LIFE OF AN IMPLIED WARRANTY. SOME STATES MAY ALSO DISALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT PERTAIN TO YOU.

DESCRIPTION OF WARRANTY RIGHTS

From the date of purchase or date of delivery, in the case of a direct sale through CMD, through the warranty period, CMD will, at its discretion, repair or replace any part deemed to be defective at no charge for parts/labor to the original retail customer. During the applicable warranty period wherein CMD will repair or replace defective parts without charge for labor, all warranty inspections and repairs must be performed at a CMD authorized service agency or by CMD itself.

CONDITIONS TO WARRANTY SERVICE

For this warranty to become effective the following requirements must be met:

1. Any postage, insurance and shipping charges of warranted items to a CMD authorized service agency or CMD itself must be prepaid by the original retail purchaser and these costs are not included under this warranty. Return shipping during the warranty period will be paid by CMD to addresses in the continental U.S. All other addresses will be charged for shipping, insurance and any other charges related to the return shipping of the item.
2. The dealer's original bill of sale or a charge or credit or delivery receipt must be retained by the original retail purchaser as proof of purchase date of the warranted item and must be presented to the CMD authorized service agency or CMD itself when warranty claims are advanced.
3. Any CMD product being returned for warranty repairs must be in its original shipping container or one of equivalent structure.

EXCLUSIONS FROM THE WARRANTY

This warranty does not cover the specific items/or conditions described below:

1. Equipment which has been damaged due to:
   - Accident, misuse, abuse, fire, flood, or "Acts of God" or other contingencies beyond the control of CMD.
   - Use of incorrect line voltages.
   - Improper or insufficient ventilation.
   - Failure to follow CMD's operating instructions.
   - Improper or unauthorized repair's.
   - Any unauthorized modification to the device.
   - Improper return packaging or damages caused by failure to insure.
2. Damage to warranted items sustained in shipment to the original retail purchaser.
3. Power transformer voltage or Power Supply conversion to foreign or domestic voltage or current frequency.
4. Any damage resulting from the infection of the unit by a computer virus.
5. Routine adjustments.
6. Damage resulting from the commercial use of this unit.

CMD will not be responsible for labor charges of unauthorized service agencies. CMD will not be responsible for labor charges from CMD authorized service agencies or CMD itself except during the warranty period applicable thereto. CMD will not be responsible for the loss or damage to equipment while in the possession of a CMD authorized service agency. CMD reserves the right to make changes in its design and improvements upon its product without assuming the obligation to install such changes on any of its products previously manufactured.

This warranty gives you specific legal rights and you may also have other rights which vary state to state.

RETURN POLICY

This unit may be returned to Creative Micro Designs, Inc. within 30 days of purchase for a refund of the purchase price less a 10% restocking fee. Shipping charges and taxes are not refundable.

Goods being returned must be returned in original condition in the original shipping container, freight prepaid, and must also include all accessories and be accompanied by a letter stating the reason for return. This letter should contain a return authorization number obtained from Creative Micro Designs, Inc. The return authorization number should also be clearly visible in large characters on the shipping carton.