

# IEEE FLASH!<sup>TM</sup>

*Fast*

*IEEE*

*Interface*



Skyles Electric Works

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IEEE-Flash!

FAST IEEE INTERFACE

for

Commodore 64

INSTRUCTION MANUAL

by

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## Introduction

Congratulations on purchasing IEEE-Flash!, the fastest IEEE cartridge for the Commodore C-64 and C-128/64 computers. IEEE-Flash! will greatly increase the speed of loading and saving programs and files from the Commodore 2031, 2040, 4040, 8050, 8250, SFD1001, and MSD SD1, SD2, disk drives, and the Commodore 64/128 computer.

In addition to being the fastest IEEE disk drive enhancement available for the Commodore 64/128 and IEEE disk drives, IEEE Flash! is invisible to almost all computer programs. programs. IEEE Flash! does not occupy and of the Commodore 64 RAM Memory. IEEE Flash! replaces the cassette tape recorder control routines in the Commodore 64 ROM memory. The cassette recorder will not work with the Commodore 64 while IEEE-Flash! is turned on. Install the IEEE-Flash! cartridge and enjoy a whole new world of speed.

### WHAT IEEE-Flash! WILL NOT DO

IEEE-Flash! will not, repeat, not fix or improve the loading of a marginal or non functioning disk drive. IEEE-Flash! will not speed up a program load or file transfer that involves lots of blinking of the red error light on the IEEE disk drive. If you are having trouble (lots of error light blinking) with just one or two disks, and the rest work okay, replace your faulty disks. If you are having trouble loading all your diskettes, your disk drive usually needs cleaning, lubricating, aligning, or electronic repair. See your dealer for the appropriate fix before you attempt to install IEEE-Flash!. If you do not have a local dealer capable of these repairs, contact Commodore, MSD, or Skyles Electric Works.

## Introduction

Skyles Electric Works warrants the IEEE-Flash! Cartridge parts and labor for 3 months from date of purchase. Please take a moment now to fill out and return the postpaid warranty card.

Installation instructions start on page 7. They are at the end of the manual because they are used only once and then hopefully forgotten. Please turn to page 7 and start enjoying your IEEE-Flash!.

ENJOY

## Operation Commands

### Symbology

We have adopted the following symbology for all the commands used in this manual.

First you should note that all the keys on the Commodore 64 and Commodore 128 have upper case letters on their top surface. We refer to all the keys therefore with upper case (capital) letters. If we wish you to strike a series of keys in sequence, like normal typing, we present the the sequence as follows:

If you should type "load" we show LOAD without any quotes or brackets.

Spaces between typing letters are for clarity only. SYS 65526 is exactly the same as SYS65526 to the Commodore 64/128.

If you should strike a function key such as "run/stop", we show <RUN/STOP> with brackets. We have abbreviated "return" to <RET>.

If you should strike two function keys together, we show <SHIFT><RUN/STOP>

If you should strike two function keys one after the other, we show <C=>, <CTRL>. WE use both a comma and a space between keys.

### Preface

The IEEE-Flash! cartridge contains 4 selection switches and a momentary reset switch. The description of these commands and functions begin on the next page.

### Cartridge Mounted Switches

Located at the right rear of the IEEE-Flash! Cartridge, when it is plugged into the C-64/128, is a bank of 4 DIP switches. Switch number 1 is located farthest from the computer and switch number 4 is located closest to the computer. The on (or select) position of all the switches is to the right as viewed from the computer keyboard.

#### Selection Switch Number 1

Switch number 1 located farthest from the computer is the main on-off switch for the IEEE-Flash! cartridge. When this switch is to the right the IEEE-Flash! is on or selected. When this switch is toward the left the IEEE-Flash! cartridge is off or deselected.

#### Selection Switch Number 2

When switch number 2 is to the right, all program or keyboard references to device #8, are routed through IEEE-Flash! to the attached IEEE bus. When switch number 2 is to the left all keyboard or program references to device #8 are routed to the original C-64/128 serial bus.

#### Selection Switch Number 3

When switch number 3 is to the right, all program or keyboard references to devices #9 or 10, are routed through IEEE-Flash! to the attached IEEE bus. When switch number 3 is to the left all keyboard or program references to devices #9 or #10 are routed through the original C-64/128 serial bus.

## Operation Commands

### Selection Switch Number 4

When switch number 4, located nearest the computer, is to the right, all program or keyboard references to device #4 are routed through IEEE-Flash! to the attached IEEE bus. When switch number 4 is to the left, all keyboard or program references to device #4 are routed to the original C-64/128 serial bus.

### Cartridge Reset Switch

For user convenience a momentary reset switch is mounted on the left rear of the IEEE-Flash! cartridge.

### Command   SYS 64738   <RET>

Typing 'SYS 64738' and striking the 'RETURN' key will reset the C-64 computer and the C-128 computer in the C-64 mode.

### Command   LOAD "PROGRAM NAME" <RET>

This command replaces the longer command; LOAD "PROGRAM NAME",8 <RET> . This will load the program with the name "program name" from the 1541 Disk Drive. You may in any of the load commands substitute an asterisk (\*) in place of any or all of the program name. Any combination of letters are substituted for the asterisk. For example;

LOAD "PR\* <RET>

Will load the first program on the diskette from the following names; "prime number", "prone", "premier", "program name", "promotion" etc..

## Operation Commands

### IEEE-SERIAL Bus Assignment

Device Number	Function
0	Keyboard, automatically
1	Datasette, automatically
2	RS-232, automatically
3	Screen, automatically
4	Switch #4, IEEE-SERIAL
5	SERIAL, automatically
6	SERIAL, automatically
7	IEEE, automatically
8	Switch #2, IEEE-SERIAL
9,10	Switch #3, IEEE-SERIAL
11	SERIAL, automatically
12-31	IEEE, automatically



## IEEE-Flash! INSTALLATION

Installation of your IEEE-Flash! will take about 10 minutes. The following installation instructions are detailed and lengthy. Hopefully every question and concern that might come up is answered. For most Commodore 64's anybody familiar with the use of a phillips screwdriver can easily install the IEEE-Flash!.

If you are concerned about "getting your fingers into" your Commodore 64 Computer, please have your local dealer install the IEEE-Flash!. If your Computer is under its original 90 day Commodore warranty remember that if you carefully follow the installation instructions you can always return the Computer to its original condition without Commodore or the local dealer being upset. We don't recommend that you wait 90 days before you take advantage of the IEEE-Flash!'s fantastic IEEE loading speeds.

Installation of the IEEE-Flash! requires:

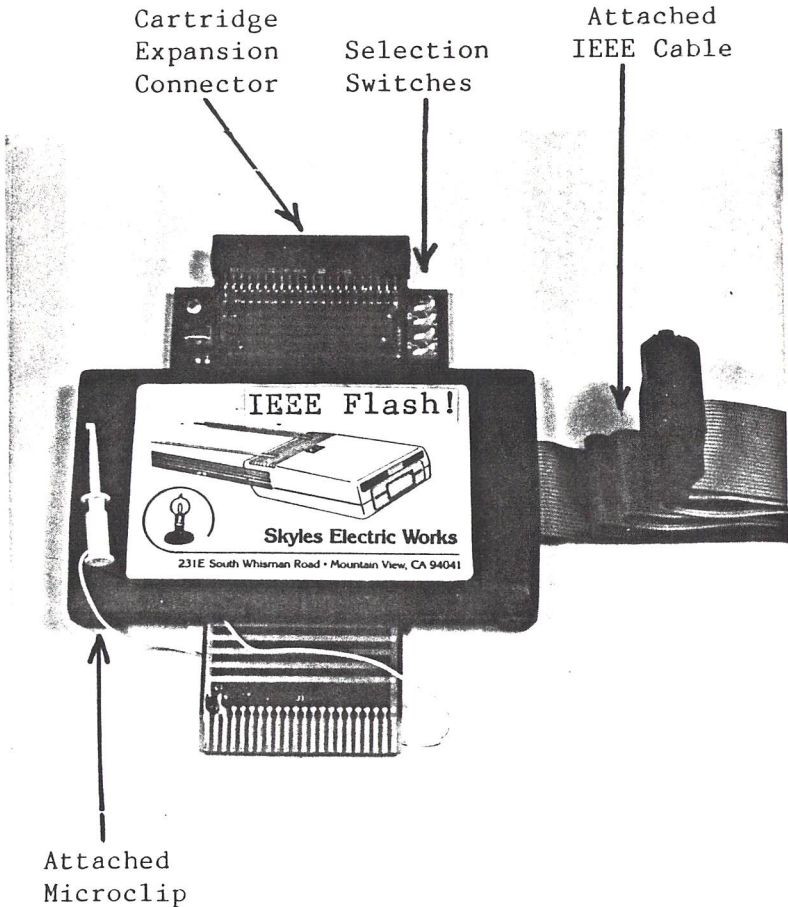
A Phillips (Crosshead) screwdriver

**LET US TURN THE PAGE AND BEGIN**

## INSTALLATION

### Part Identification

In the style of the original Commodore PET computer, IEEE-Flash! has every thing built into a single compact package.



IEEE-Flash!

## INSTALLATION

### Installation, Commodore 64

We will install IEEE-Flash! onto the Commodore 64.

- 1) Unplug all cables, cartridges, and peripheral assemblies from your Commodore 64.
- 2) Place the Commodore 64 upside down on a well lighted surface. The front edge of the C-64 should be toward you.
- 3) Using the Phillips screwdriver remove the 3 screws located in wells along the front bottom of the C-64.
- 4) Holding the C-64 together at the front place it rightside up.
- 5) Now carefully lift the front top half of the C-64. This should unsnap the back catches. Set the top half of the C-64 about 3 inches forward.
- 6) If your Computer has the metalized cardboard inner cover untape it and open the cardboard. If your computer has a thin metal cover and heatshield, remove the five screws mounting screws. Place the heatshield upside down on a newspaper.
- 7) Holding your IEEE-Flash! cartridge in one hand plug in the two white support feet, into the two holes, located in the green board (near the blue connector), at the back of the cartridge.
- 8) From behind your computer, poke the white microclip through the cartridge connector port. Poking it through at either side of the port is easiest.

## INSTALLATION

- 9) Pulling the white wire out of the way, plug IEEE-Flash! into the cartridge port of your computer. The IEEE-Flash! label should be up, the IEEE cable to the right, and the blue cartridge extension connector furthest away from the computer. For more details see the pictures on the next pages.
- 10) There are three different styles of electronics boards inside the C-64. Using the pictures, on the next five pages, locate your style of electronic board.

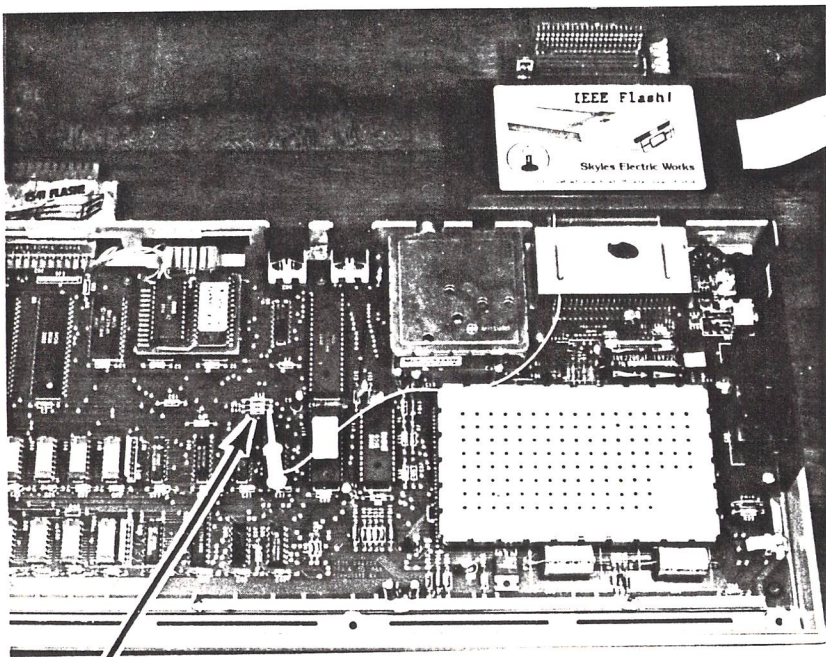
Style 1; oldest C-64s, Assembly # 326298  
(number small), pictures next page.

- 11) Locate resistor # R44, a small tan cylinder with two orange, one red, and one gold stripe. There are three identical resistors labeled (reading from the rear of the computer), R43, R45, and R44.
- 12) Squeezing the white microclip, hook the hook under the wire lead coming out of the right side of resistor R44. See next page for details.
- 13) Check and reconnect if necessary the Keyboard cable and the power light cable connectors. Your C-64 should appear as shown in the accompanying pictures on the next page. Now is the time to check carefully the installation to this point.
- 14) Retape the metalized cardboard if required and replace, backside first, the top of your computer onto the bottom half of the housing. Check that both sides are lined up. If not, readjust the top.

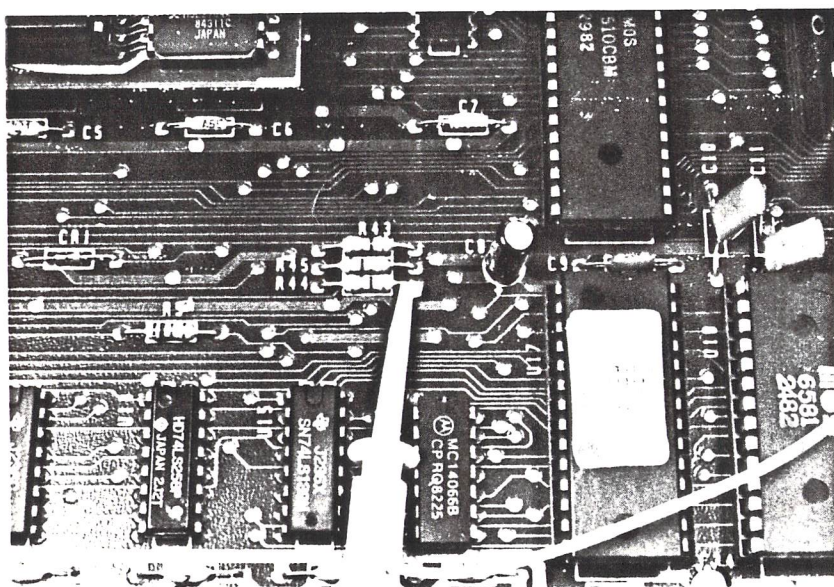
Go to page 16.



## INSTALLATION



R44 IEEE-Flash! and Assy. #326298



Details R44 and Microclip, Assy. #326298

## INSTALLATION

- 10) There are three different styles of electronics boards inside the C-64. Using the pictures, on the previous page and the next three pages, locate your style of electronics board

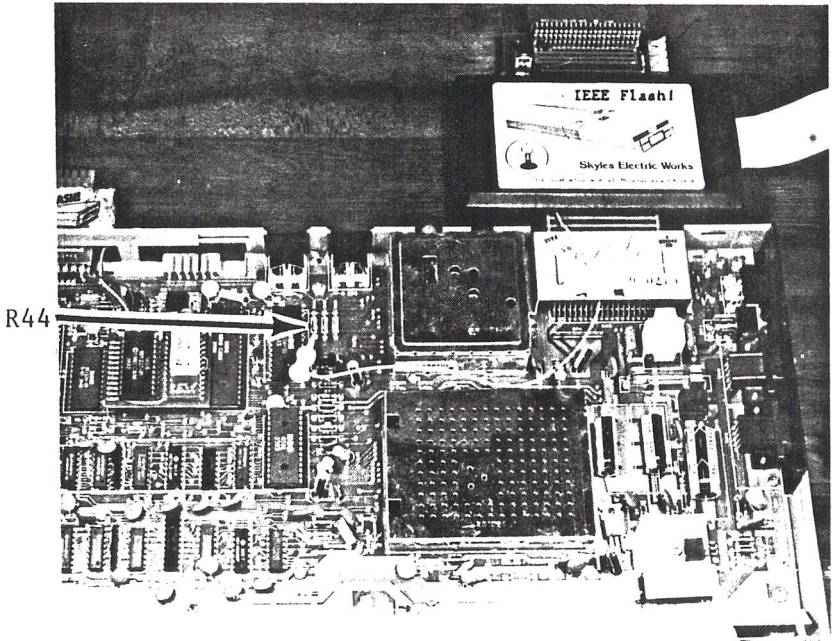
Style 2; newer C-64s, most common style, Assembly # 250407 (number in white, front of electronics board), pictures next page.

- 11) Locate resistor # R44, small tan cylinder with two orange, one red, and one gold stripe. There are three identical resistors labeled (reading from the left of the computer), R44, R45, and R43.
- 12) Squeezing the white microclip, hook the hook under the wire lead coming out of the front side of resistor R44. See next page for details.
- 13) Check and reconnect if necessary the Keyboard cable and the power light cable connectors. Your C-64 should appear as shown in the accompanying pictures on the next page. Now is the time to check carefully the installation to this point.
- 14) Retape the metalized cardboard and replace, backside first, the top of your computer onto the bottom half of the housing. Check that both sides are lined up. If not, readjust the top.

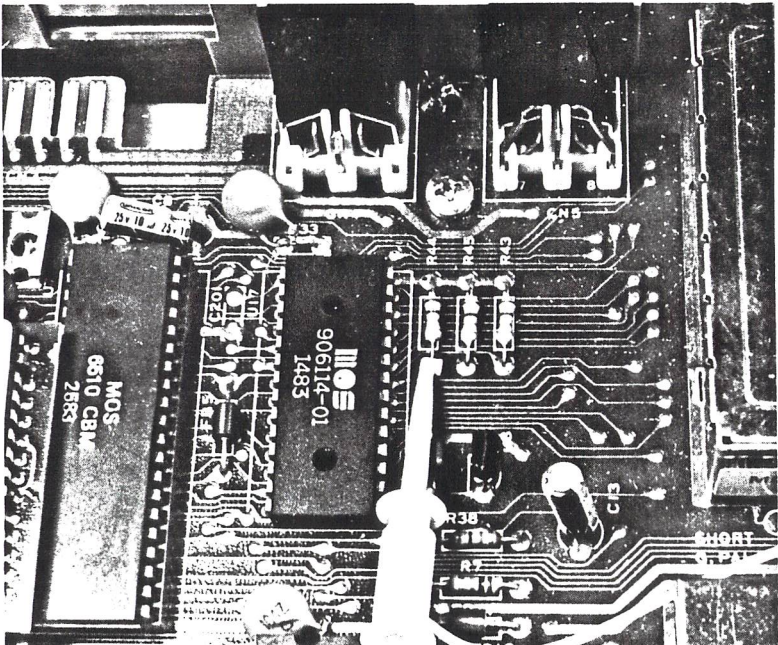
Go to page 16.



## INSTALLATION



IEEE-Flash! and Assy. #250407



Details R44 and Microclip, Assy. #250407

## INSTALLATION

- 10) There are three different styles of electronics boards inside the C-64. Using the pictures, on the previous three pages and the next page, locate your style of electronic board

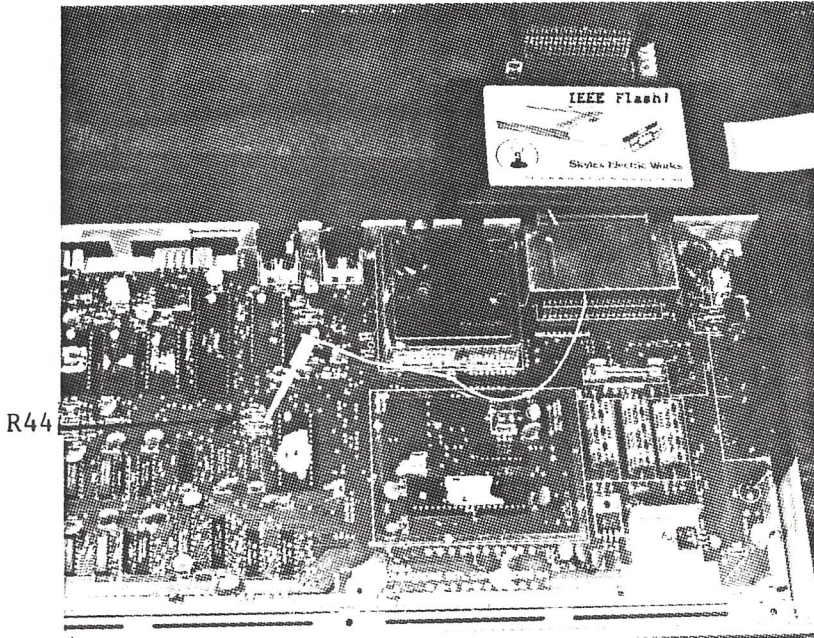
Style 3; newest C-64s, sheetmetal heatshield-cover, Assembly # 250425, number in white, front of electronics board, pictures next page.

- 11) Locate resistor # R44, small tan cylinder with two orange, one red, and one gold stripe. There are three identical resistors labeled (reading from the rear of the computer), R43, R44, and R45.
- 12) Squeezing the white microclip, hook the hook under the wire lead coming out of the right side of resistor R44. See next page for details.
- 13) Check and reconnect if necessary the Keyboard cable and the power light cable connectors. Your C-64 should appear as shown in the accompanying pictures on the next page. Now is the time to check carefully the installation to this point.
- 14) Replace the sheetmetal heatsink cover and install the five screws. Do not over tighten the screws. Do not leave out any screws.
- 15) Replace, backside first, the top of your computer onto the bottom half of the housing. Check that both sides are lined up. If not, readjust the top.

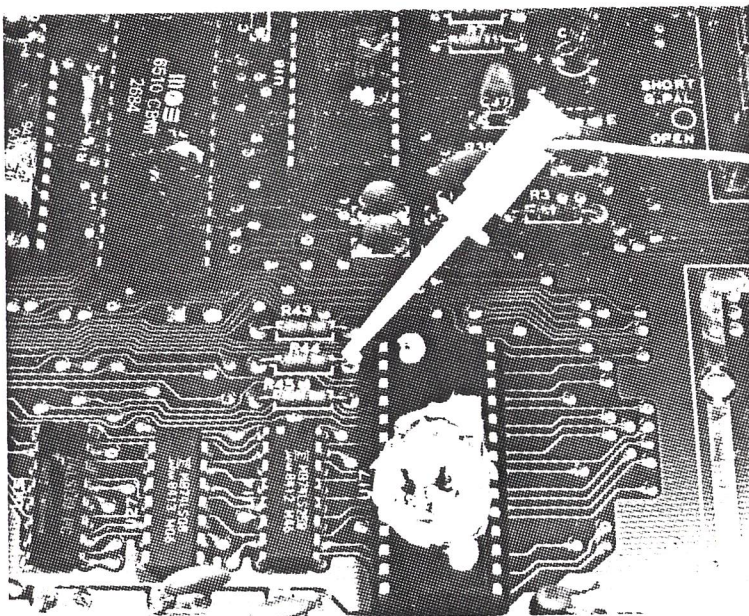
Go to page 16.



# INSTALLATION



IEEE-Flash! and Assy. #250425



Details R44 and Microclip, Assy. #250425

## INSTALLATION

- 16) Carefully supporting the IEEE-Flash! cartridge turn over your computer and reinstall the three screws that you removed from the 3 wells in the front edge of the bottom of your C-64. Do not over tighten these screws.
- 17) Turn your computer rightside up and return it to its normal operating location. Reconnect all cables and peripherals.
- 18) Place the four switches, in the red DIP switch bank at right rear of the IEEE-Flash! cartridge, to the left.
- 19) Connect the 6 foot IEEE cable to your IEEE device or devices. If you have two IEEE devices the IEEE-Flash! IEEE cable should be the last to be connected.
- 20) Turn on your C-64, disk drives, monitor or TV set, and any other peripherals.
- 21) Test your system by operating it. Everything should still work the same as before you began the installation of IEEE-Flash!. If you do not observe normal operation of your system, recheck the installation of IEEE-Flash!.
- 22) Push the RESET button located at the left rear of the IEEE-Flash! cartridge. Observe that the computer resets.
- 23) Switch to the right the #1 Selection switch. switch #1 is located nearest the blue connector and farthest from the computer. Push the RESET button, and observe the IEEE-Flash! turn on message.

IEEE FLASH! 64 (C) 1986 R CHANG  
64K RAM SYSTEM 38911 BASIC BYTES FREE

## INSTALLATION

- 24) Now switch to the right:  
Switch #2 if you have an IEEE disk drive set as device #8.  
Switch #3 if you have an IEEE disk drive set as device #9 or #10.  
Switch #4 if you have an IEEE printer set as device #4.  
If you have two IEEE devices switch only one IEEE-Flash! selection switch to the right at this time.
- 25) Now test your IEEE device. Use standard commands first then try the IEEE-Flash! commands. Remember all IEEE devices connected to the IEEE bus need to be turned on, whether or not they are selected by the IEEE-Flash! selection switches.
- 26) Now deselect your first IEEE device and select your second IEEE device. Test your second IEEE device.
- 27) If you have trouble with one of the tests described above, carefully recheck the installation instructions starting at step 1.
- 28) If you are still having trouble, remove IEEE-Flash!. Test that this has return the computer to its original condition. Every IEEE-Flash! is tested before leaving the factory, but mistakes can happen. Notify your local dealer for test and/or possible replacement of the IEEE-Flash!.
- 29) In case of trouble you may also contact:

SKYLES ELECTRIC WORKS  
231-E South Whisman Road  
Mountain View, CA 94041  
1-415-965 1735

between the hours of 1 and 6 PM Pacific  
Coast time.



## SX-64 IEEE-Flash! INSTALLATION

We will first prepare the SX-64 Computer for the installation of the SX-64 IEEE-Flash!.

- 1) Unplug all keyboards, cables, cartridges, and peripheral assemblies from your SX-64.
- 2) Place the carrying handle in the normal carrying position, in front of the SX-64.
- 3) Place the SX-64 rightside up on a clean well lighted surface. The rear of the computer should be facing you.
- 4) Using the Phillips screwdriver remove the two small black screws, on each side of the rear heatsink, that fasten the side strips of the SX-64. Place screws in a small dry cup for safe keeping. Refer to the picture on the next page for location.
- 5) Slide the side strips toward the rear of the SX-64 and remove them to a safe spot.
- 6) Unscrew the 8 screws holding the top cover of the SX-64. Two screws are located on the upper corners of the rear heatsink, and three screws are located along each side of the computer. See the picture on the next page for the location of screws.
- 7) Remove all children, and any adults that like to poke their fingers into electronics boards, from the immediate area. Now remove the top cover of the SX-64 to a safe place.
- 8) There are three main electronics boards inside the SX-64. their locations are shown in the picture on the next page.

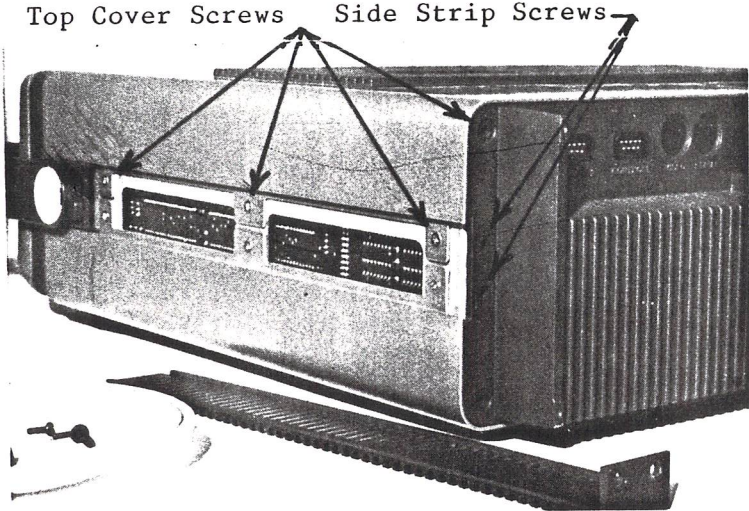
CPU board located along the side.

Disk board located along the rear.

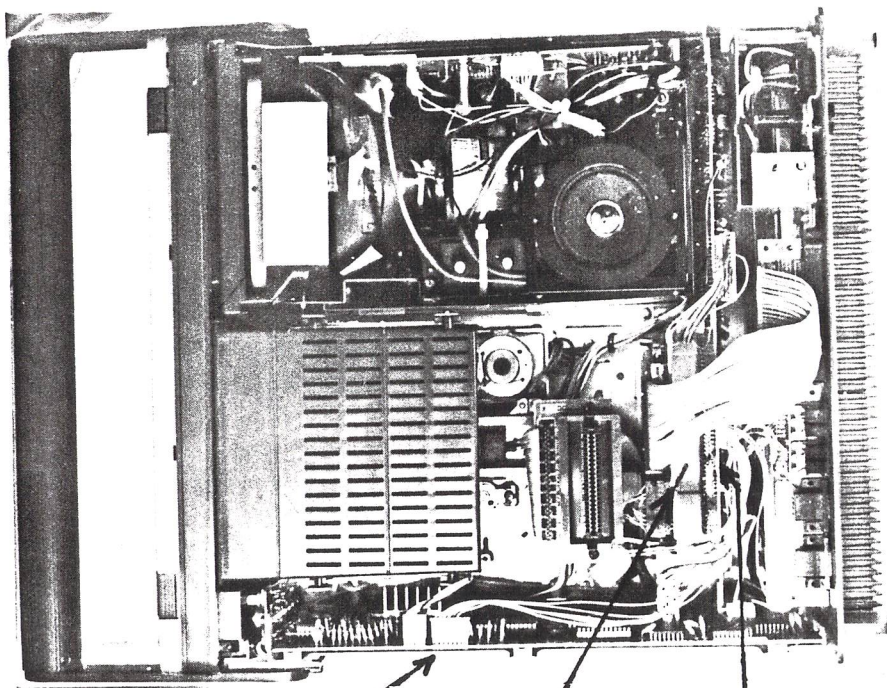
I/O board located in front of Disk board.

## SX-64 IEEE-Flash! INSTALLATION

Top Cover Screws      Side Strip Screws



Rear Corner View SX-64, screw locations



CPU Board      I/O Board      Disk Board

Top View SX-64, Electronic board locations

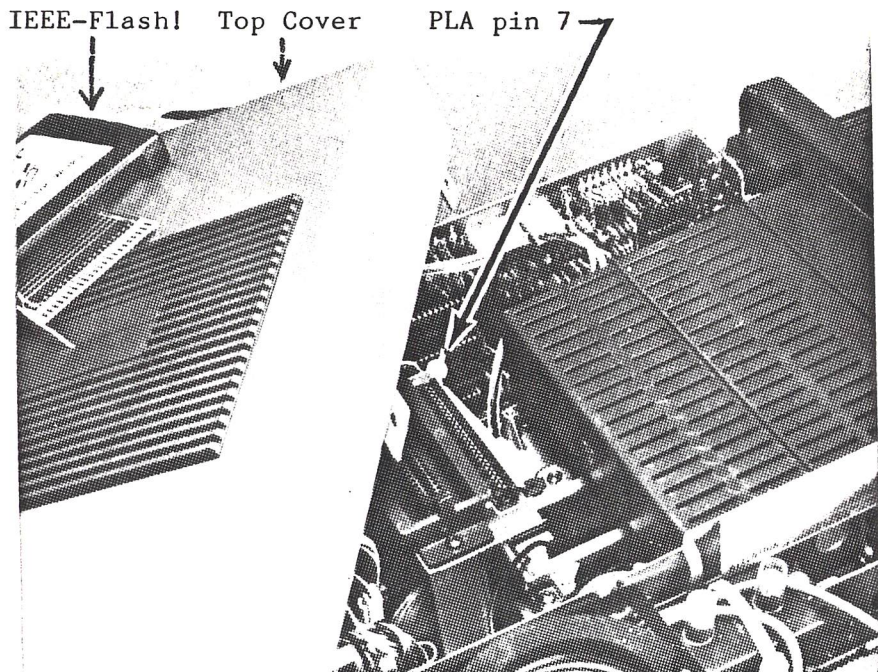
## SX-64 IEEE-Flash! INSTALLATION

We will first locate the CPU board located along the left side of the SX-64 as viewed from the rear. We will then locate the "PLA" chip and pin 7 of the "PLA" chip.

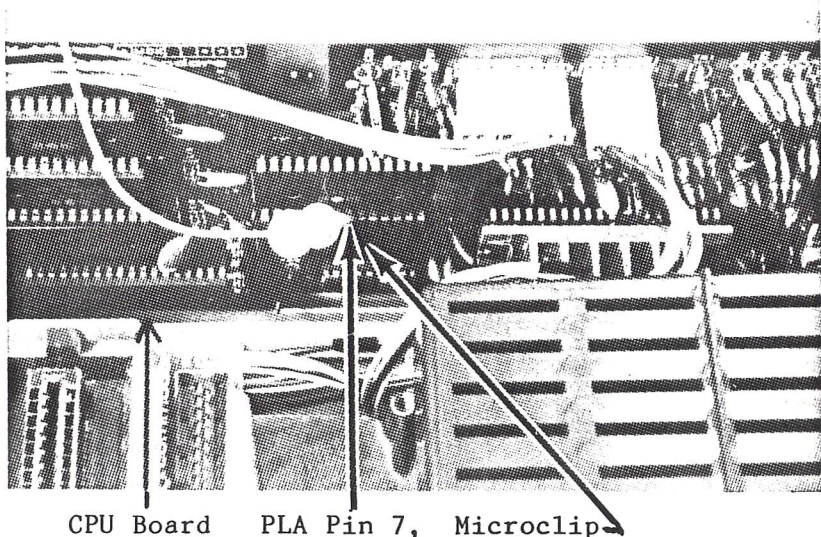
- 9) Locate the 6 pin and 8 pin connectors from the top front of the CPU board. The PLA chip is the second chip down just to the rear of the 8 pin connector. Please refer to the pictures on the next page showing the location of the PLA chip.
- 10) Locate pin seven of the PLA chip by counting seven back, on the top row of pins of the PLA chip. The bottom picture on the next page gives a close up view of pin 7 of the PLA chip.
- 11) Carefully place the top cover of the SX-64 over the rear half of the SX-64. Place the IEEE-Flash! on top of the SX-64 top cover and thread the white microclip through the cartridge doors of the top cover. See the top picture on the next page for visual details.
- 12) Counting from the top front corner of the PLA chip locate pin 7 of the PLA chip. Carefully clip the white microclip onto pin 7. Please check the pictures on the next page for details.
- 13) Without pulling on the white wire and microclip, rotate and place the top cover onto the SX-64.
- 14) Replace the 8 screws holding the top cover. Replace the two side strips and the 4 screws holding the side strips.
- 15) Return SX-64 to it's normal operating location and plug in the IEEE-Flash!. Please see page 22 for more pictures.



## SX-64 IEEE-Flash! INSTALLATION



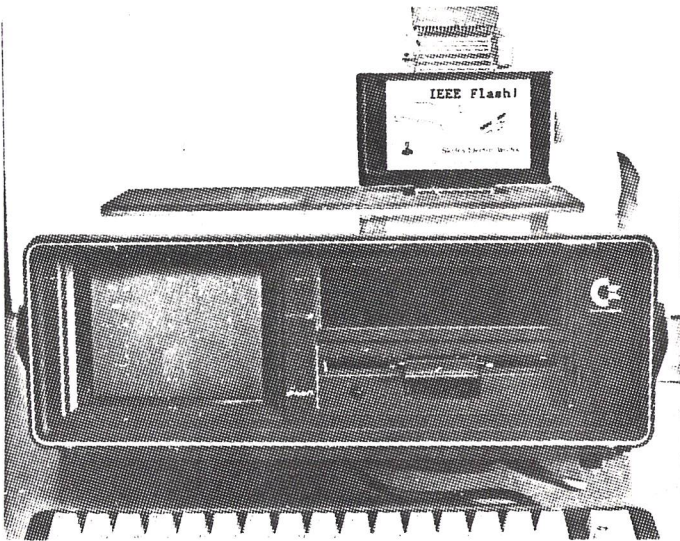
Front Corner View SX-64, PLA location



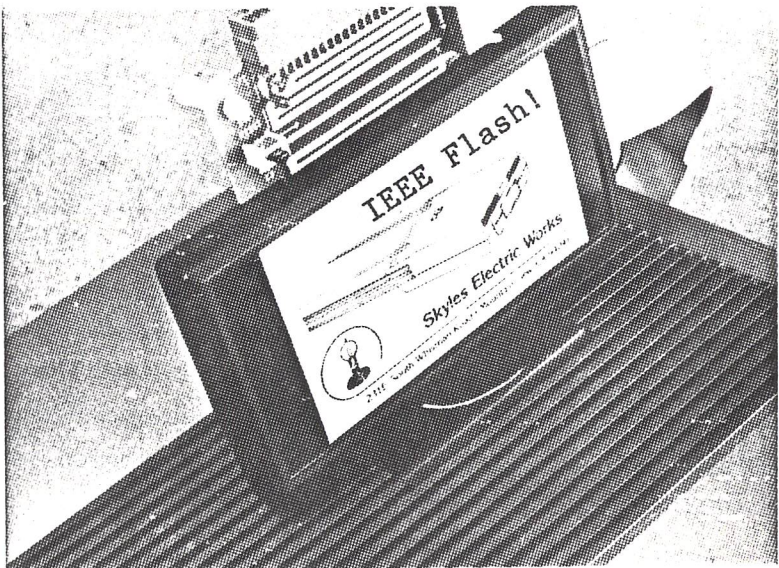
SX-64, CPU board, PLA pin 7 locations

## SX-64 IEEE-Flash! INSTALLATION

- 16) Please return to page 16 for testing instructions for the IEEE-Flash!.



IEEE-Flash! Installed in SX-64



Detail IEEE-Flash!, SX-64



### Installation, Commodore 128

We will install IEEE-Flash! onto the Commodore 128.

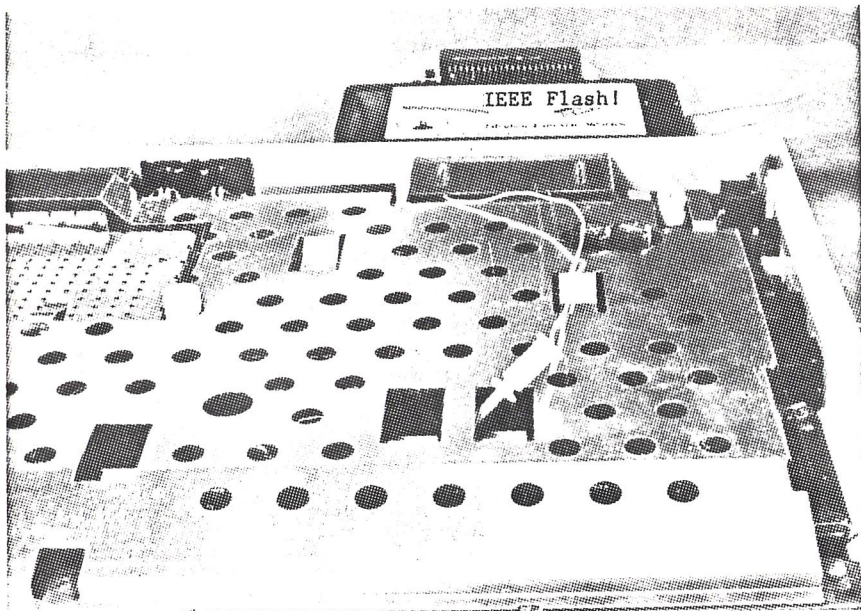
- 1) Unplug all cables, cartridges, and peripheral assemblies from your Commodore 128.
- 2) Place the Commodore 128 upside down on a well lighted surface. The front edge of the C-128 should be toward you.
- 3) Using the Phillips screwdriver remove the 3 screws located in wells along the front bottom of the C-128. Continuing to use the screwdriver remove the 2 screws in the wells in the rear corners of the C-128 and the screw in the well in the center of the C-128.
- 4) Holding the C-128 together at the front place it rightside up.
- 5) Now carefully lift the front top half of the C-128. This should unsnap the catches. Unplug the two connectors and set the top cover about 2 inches to the left.
- 6) Your C-128 has a thin metal cover and heatshield and a ground wire strap connected to the front right corner. Remove the front right hand screw holding grounding strap.
- 7) Holding your IEEE-Flash! cartridge in one hand plug in the two white support feet, into the two holes, located in the green board (near the blue connector), at the back of the cartridge.

## C-128 IEEE-Flash! INSTALLATION

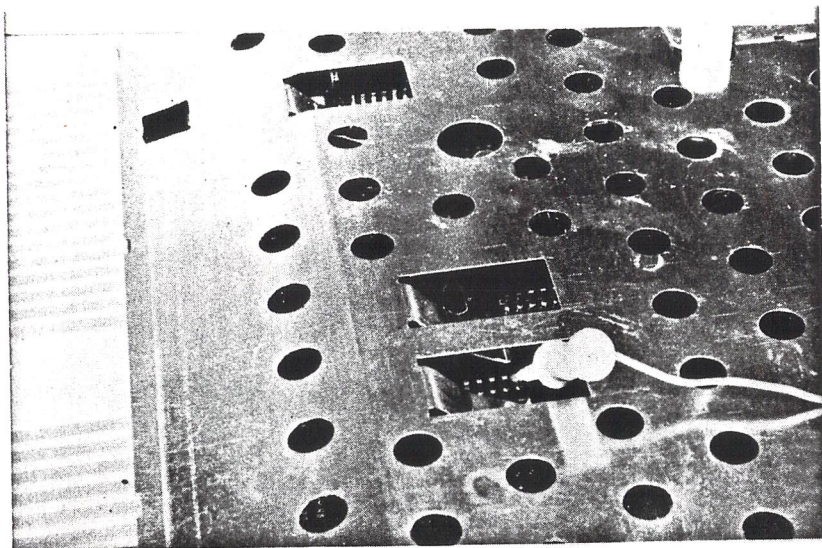
- 8) From behind your computer, poke the white microclip through the cartridge connector port. Poking it through at center while deforming downward the metal shield is the recommended method.
- 9) Pulling the white wire out of the way, plug IEEE-Flash! into the cartridge port of your computer. The IEEE-Flash! label should be up, the IEEE cable to the right, and the blue cartridge extension connector furthest away from the computer. For more details see the pictures on the next pages.
- 10) Locate the 8502 CPU chip underneath the heat clip hole, located second from the right side front of the metal shield. Refer to the pictures on the next two pages for details.
- 11) Locate pin 29 of the 8502. Pin 29 is the ninth pin from the front of the C-128 on the right side of the 8502 CPU chip. Pin 29 is the twelfth pin from the rear on the right side of the 8502 CPU chip. Please refer to the pictures on page 26 for more details.
- 12) Entering through the right hand heatclip hole and squeezing the white microclip, hook the hook under pin 29 of the 8502 CPU chip. Check that you have clip onto pin 29 of the 8502 CPU.
- 13) Place the top cover on top of the C-128 and reconnect the Keyboard cable, power light cable and the ground strap. Check that both sides are lined up.
- 14) Carefully supporting the IEEE-Flash! turn over your C-128 and replace the 6 cover screws. Do not over tighten the screws.

## C-128 IEEE-Flash! INSTALLATION

- 15) Please turn to page 16 for IEEE-Flash! testing instructions.



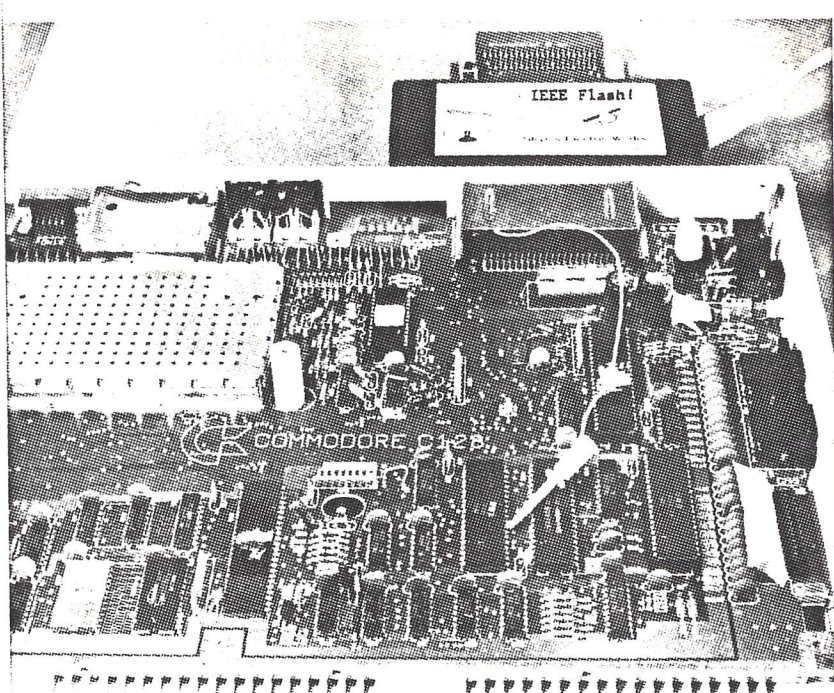
Overview IEEE-Flash! Installation



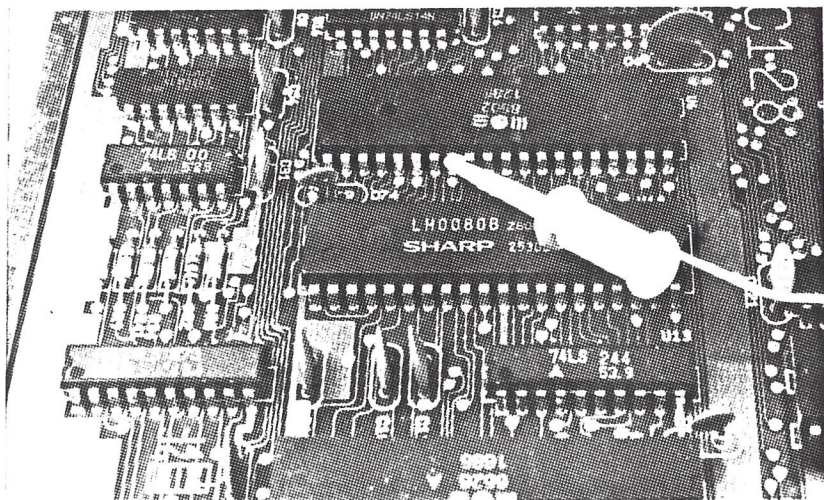
Details Pin 29 of the 8502



## C-128 IEEE-Flash! INSTALLATION



Overview IEEE-Flash! Installation



Details Pin 29 of the 8502









