

THE SHADOW

The Ultimate Disk Backup Utility

Designed and Developed by

Jack C. Cornelius

World Wide Exclusive Distribution

MegaSoft LTD.

## THE SHADOW

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## THE SHADOW

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Thank you for ordering the SHADOW. We know you will feel you have picked the best backup utility available today as soon as you begin using this fantastic new product. Although you are anxious to get started using your SHADOW please take the time to read these instructions carefully. A improperly installed SHADOW can damage your 1541 Disk Drive and your new SHADOW board so please follow each instruction step carefully and you will enjoy many years of quality duplicate disks.

### ABOUT THE SHADOW:

Several man-years have been put into development of this unique product. First a thorough investigation of the many protection schemes was compiled, then a hardware solution was created to enable your 1541 Disk Drive to read and reproduce these patterns and finally software was created to automate this hardware into a foolproof copy system.

We have made our best efforts to create a product that will provide you backup copies of your favorite program disks. If you should find any software that you have trouble creating a copy of, please write the name of the program and manufacturer on you SHADOW REGISTRATION CARD in the spaces provided so that we will know. Rest assured that the SHADOW hardware is capable of copying the latest protection schemes. When new types of software come available, ROM (read only memory) updates will be available to instruct SHADOW as to how to reproduce these same patterns.

### ROM UPDATES:

The ROM you have received with your SHADOW is the original ROM release and you will be receiving your first update at no charge provided that you return you SHADOW REGISTRATION CARD within 30 days of your date of purchase. Any future updates will also be available at a nominal handling charge.

### THE CREATOR OF SHADOW:

The SHADOW was created by Jack C. Cornelius a 15 year veteran of the micro-computer industry. Mr. Cornelius microprocessor designs are currently being used world wide by major industry, education, and government giants. After consulting for major communications & banking firms Mr. Cornelius has decided to enter the consumer market and has now developed the SHADOW. At this time there are 15 products on the drawing board for the Commodore which will all be released this year. In the following years there will be many more products to come.

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## INSTALLATION OF THE SHADOW:

The SHADOW circuit board installs in your 1541 Disk Drive. Most 1541s allow you to install the SHADOW in about 5 minutes. Please follow the instructions carefully. If you have any difficulty in understanding the instructions, please request the help of a friend who has more experience with these matters. The SHADOW is not difficult to install but someone familiar with computer board level products will be more effective at this task.

## DETERMINING THE TYPE OF DRIVE YOU OWN:

Determine the type of drive you have. There are two basic types of circuit boards in the 1541 Disk Drives. The SHADOW is equipped to handle either type but you must first determine which type of drive you own and then follow the instructions for that Drive type.

- 1) Unplug the drive from AC power.
- 2) Unplug the Serial Buss cord that goes to the C-64.
- 3) Turn Drive over and remove 4 phillips head screws.
- 4) Turn Drive right-side-up and take off plastic top.
- 5) Remove 2 phillips screws from metal cage.
- 6) Lift off metal cage exposing circuit board.

Now that you have the internal part of the drive exposed, you can determine the type of drive you have. Below are a list of factors that will help you choose your circuit board type.

## TYPE A: SHORT BOARD - Diagram "A" on Page 4

This new version board is found in most drives and will be the easiest to install. We call this the "short board" because it is three inches shorter than its predecessor. This board measures 9.5 inches by 6 inches. You will find (4) 40 pin IC (integrated circuit) chips on this board, all side by side in about the middle of the board.

## TYPE B: LONG BOARD - Diagram "C" on Page 6

This early version board is usually found on older drives. The board was re-released recently so some new drives may have also have it. We call it the "long board" because it extends from the front of the drive to the rear of the drive. It measures approximately 12.5 inches by 6 inches. You will find (3) 40 pin IC (integrated circuit) chips on this board, two side by side and one near the back of the drive.

Now that you have determined the type of board you have, follow the instructions that pertain to you particular drive.

## INSTALLATION FOR TYPE A DRIVES:

1) Locate the following 40 pin IC chips and determine if they are in 40 PIN sockets. UC4 will have the numbers 6502 printed on the top and UC1 will have 325572-01 (or similar) printed on its top. If these two chips are in sockets (most drives have sockets) proceed to step 3.

2) Your drive has no sockets and therefore you must install sockets for these two chips. This will require unsoldering and soldering skills. If you are not experienced in these advanced skills please contact a qualified technician. A SOLDER JOB BY UNEXPERIENCED PERSONS WILL CAUSE PERMANENT DAMAGE TO YOUR DISK DRIVE. Due to the experience required for this installation, we will not attempt to include exact instructions on socket installation. Any person with these skills will know exactly how to install the 40 pin sockets for UC4 and UC1.

3) Have an unpainted piece of metal handy to set IC chips on. This metal will prevent static damage to the delicate circuits. Before touching the circuits touch the metal frame of the drive. This will prevent static buildup in your hand. Using a flat blade screwdriver, carefully remove UC1 and UC4 by lifting them STRAIGHT UP and out of their sockets. It may help to lift on each side alternately until they are free. Set each chip on the metal surface once removed.

4) Plug the SHADOW circuit board into the sockets. Notice that the wire clips coming off the SHADOW board will be next to the FRONT of the disk drive.

5) Clip the following clips to there respective points on the board.

- a) Black to UD5 pin 9
  - b) Orange to UC8 pin 9 (~~possibly in square metal box~~)
  - c) Brown to UF4 pin 7
  - d) Red to UF4 pin 8
- OR UC7 (74LS42)

The Blue, Yellow, Green and Purple clips may be removed from the board as they are not needed for Short Board installations. Note: UC8 may be contained in a square metal box on some version of drives. If so, pop the top of the metal box open and connect to the chip inside. You may put the top back on leaving the Orange wire exiting the box but PLEASE BE CAREFUL NOT TO PINCH THE WIRE TO AVOID DAMAGE.

6) Install UC4 IC numbered 6502 in the SHADOW board socket provided, see Diagram "B" below for correct installation. Remember there are two ways to plug it in, only one is correct. The dot in the upper left hand corner of the chip will be toward the REAR of the drive when installed correctly.

7) Install UC1 IC numbered 325572-01 (or similar) into the two strip sockets provided, see Diagram "B" below. Some UC1 chips have a dot in the upper left hand corner which is correctly installed toward the REAR of the drive. Other UC1 chips have a solid groove from pin 1 to pin 20 on the left side of the chip which is correctly installed with the groove on the outside edge of the SHADOW board.

8) Go now to the section called "SHADOW TEST PROCEDURES".

DIAGRAM A:

```

|-----MAIN CIRCUIT BOARD-----|
|----- 9.5 INCHES -----|
|-----|-----|
|          UD5          |
| D B      UC8          | D F
| R A      UF4          | R R
| I C      DISK         | I O
| V K      6502         | V N
| E          6522         | E T
|          6522         |
|          325572-01     |
|-----|-----|

```

DIAGRAM B:

```

|-----SHADOW BOARD-----| CLIPS AND DISPLAY
|-----|-----|
|XXXXXXXXXX  oooooooooooooooooo XXXXX| (USE THESE 4)
|XXXXXXXXXX   NO CHIP                 |
|          oooooooooooooooooo XXXXX|===== ORANGE, RED
|XXXXXXXXXX  -----|===== BROWN, BLACK
|XXXXXXXXXX  [ 6502 ]                 |=|-----\
|          -----|=| |-----GT OPTION /
|XXXX XXXXX XXXXXXXXXXXXXXXXXXXX     |=| |-----\
|          XXXXXXXXXXXXXXXXXXXX      |=| |-----/
|XXXX XXXXX oooooooooooooooooo XXXXX|===== PURPLE, GREEN
|          325572-01                 |===== YELLOW, BLUE
|XXXX XXXXX oooooooooooooooooo XXXX |
|-----|-----| (REMOVE THESE 4)

```

## INSTALLATION FOR TYPE B: DRIVES:

1) Locate the 40 pin IC chip UCD5 and determine if it is in a 40 pin socket. This chip should have the numbers 6502 printed on the top. If this chip is in a socket (most drives have sockets) proceed to step 3.

2) Your drive has no socket and therefore you must install a 40 pin socket for this chip. This will require unsoldering and soldering skills. If you are not experienced in these advanced skills please contact a qualified technician. A SOLDER JOB PERFORMED BY UNEXPERIENCED PERSONS WILL CAUSE PERMANENT DAMAGE TO YOUR DISK DRIVE. Due to the experience required for this installation, we will not attempt to include exact instructions for the installation of a socket for UCD5. Any skilled technician will know exactly how to remove this chip and install a socket for it.

3) Have an unpainted piece of metal handy to set the IC chip on. This metal will prevent static damage to the delicate circuit. Before touching the circuit touch the metal frame of the drive. This will prevent static buildup in your hand. Using a flat blade screwdriver, carefully remove UCD5 by lifting it STRAIGHT UP and out of its socket. It may help to lift each side alternately until it is free. Set this chip on the metal surface once removed.

4) Using a wire cutter, clip the two strip sockets off the bottom of the board. Be careful not to short any of the wires. See Diagram "D" on Page 6 for the exact location of the pins to clip.

5) Now plug UCD5 IC numbered 6502 into the appropriate socket provided on the SHADOW board. See diagram "D" on Page 6 for the exact location of this socket. Remember there are two ways to plug it in, only one is correct. The dot in the upper left hand corner of the chip will be toward the REAR of the drive when installed correctly.

6) Plug the shadow circuit board into the UCD5 socket. Notice that the wire clips coming off the SHADOW board will be next to the front of the disk drive.



7) Clip the following clips to there respective points on main circuit board. See Diagram "D" below.

- UCC
- a) Black to UD6 pin 9 (in rear metal box )
  - b) Orange to UB8 pin 9
  - c) Brown to UH5 pin 7
  - d) Red to UH5 pin 8
  - e) Blue to UF3 pin 8
  - f) Yellow to UF3 pin 9
  - g) Green to UC2 pin 9
  - h) Purple to UG3 pin 7

8) Go now to the section called "SHADOW TEST PROCEDURES".

DIAGRAM C:

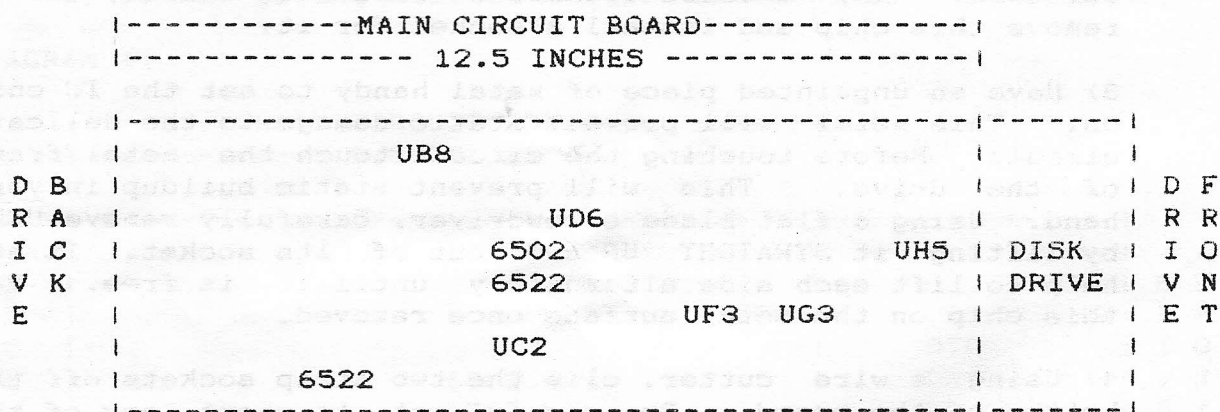
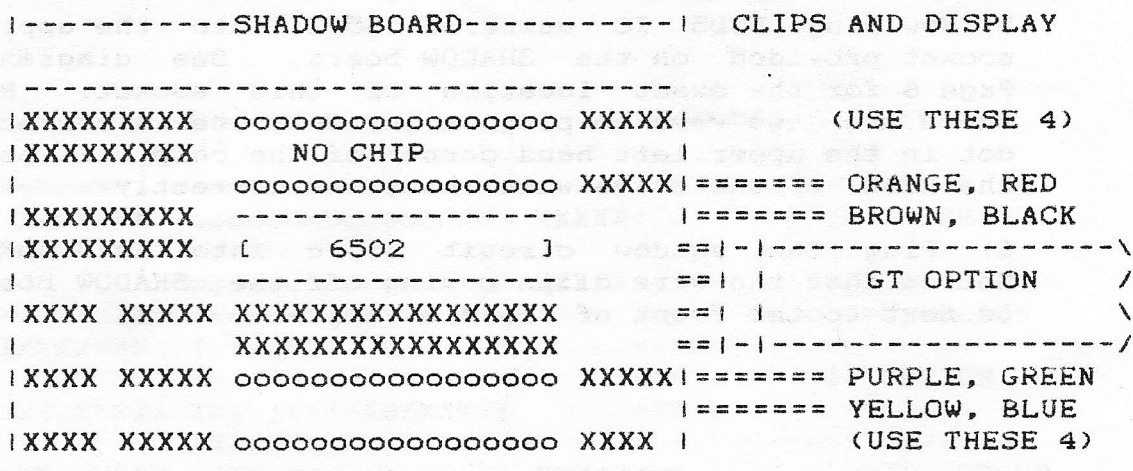


DIAGRAM D:



^ ^ ^  
CUT TWO ROWS OF PINS  
ON THIS SIDE OF BOARD



## SHADOW TEST PROCEDURE:

Your SHADOW is now installed. Please recheck each step and connection. Check to see if the metal tip of each clip is touching only the pin intended. Check to see if the SHADOW board is plugged into the sockets with no bent pins or pins not plugged in. When you are absolutely sure of your installation, proceed with the following steps BEFORE REASSEMBLING YOUR DRIVE.

1) Make sure the power switch is in the off position and plug in the AC power to the drive. Do not hook the drive to the computer at this time. CAREFUL, ONCE PLUGGED IN HAZARDOUS VOLTAGES WILL BE PRESENT ON YOUR DRIVE BOARD. DO NOT TOUCH EXPOSED CIRCUITS WHILE DRIVE IS PLUGGED INTO AN AC OUTLET.

2) Now for the "smoke" test, read this whole step before action. When you turn on the ac power switch, watch the drive carefully. You will hear the drive turn momentarily and then stop. The RED drive led will go on momentarily and then go out. This will happen within the first 10 seconds of power up. If it doesn't start the drive motor turning, turn off the power immediately. If the drive starts turning but doesn't stop in 10 seconds, turn off the power. If the RED led goes on and doesn't go off in 10 seconds, turn off the power. OK, turn it on and try it. If the SHADOW is properly installed, the RED drive led will now start up, the motor will turn momentarily, the drive will stop, and the RED led will go off.

3) Your SHADOW is now ready for operation. You may disconnect the AC power, reassemble your drive and hook it back to your computer in the normal manner. NOTE: Some drives will not contain the space to reinstall the metal cage that covers the circuit board after the SHADOW is installed. In this case you may leave the metal cage out of your drive and just put the plastic case together. If you do reinstall the metal cage, be careful that no part of the cage touches the SHADOW board or damage may result to both your drive and the SHADOW.

MegaSoft, LTD. cannot assume responsibility for improper installation of the SHADOW in your drive. If you are not sure, obtain qualified help. MegaSoft will install your SHADOW for you if you wish. The installation charge is \$35.00. Please send your drive and payment via UPS prepaid and insure your shipment. Installations will be done in one week and returned to you UPS freight collect.

## OPERATION OF SHADOW:

Now that you have successfully installed your SHADOW in your drive you are ready to backup your protected software. Remember that the SHADOW is not a parameter copier, this means that is easy to use. No complicated menus to select from, no beginning or ending tracks to select; only load-and-go.

To start copying any disk, put the SHADOW disk in your drive and type the following after the "READY" prompt.

LOAD "\*",8,1

SHADOW will then load and instruct you through the copy process. It takes about seven disk swaps to complete a protected copy. Some disks will require less. Follow instructions putting "MASTER" disk in drive and then "BACKUP" disk in drive in response to the requests on the screen. Press <RETURN> after each disk swap as instructed.

When the "BACKUP COMPLETE" message is seen on screen your copy is completed. The SHADOW will ask you if you want to make another copy. If you wish to make another copy, type a "Y" and press <RETURN>. SHADOW will restart and allow you to make another copy. If you are finished using SHADOW press "N" and return to reset the C-64 and 1541. Your computer is now ready to use.

NOTE: The SHADOW requires a write protect tab on any master and no write protect tab on any backup copy. If your master disk does not have a write protect tab on it, put one on before attempting to copy. If you get confused as to the master/backup while swapping, the SHADOW will notify you of the error. SHADOW uses the write protect tab to determine which disk is currently in the drive and which one should be in the drive. To correct the error put the proper disk in the drive and then press <RETURN> again. SHADOW will then resume the copy operation.

## MEGASOFT PRODUCT SUPPORT PHONE NUMBER:

For any questions regarding product support you can call MegaSoft LTD. direct by dialing (206) 687-7176. Ask for SHADOW product support. Please call during regular business hours 9:00 AM to 5:00 PM Pacific Standard Time.

## DISCLAIMER OF ALL WARRANTIES AND LIABILITY:

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## FINAL NOTE ABOUT COPYRIGHTED SOFTWARE:

The SHADOW is intended to be used for making backup copies of your copy-protected software. Copyright law allows you to make copies of any disk you purchase for your use in case the original is damaged. Copying for any other purpose is unlawful and we support the software publishers in their requests that you not make copies for any other purpose. We respectfully request that you respect all current and future copyright laws and use this product for the purpose intended.

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# SHADOW REGISTRATION CARD

Please provide us with the following information so that we can send, directly to you, your free copy of the update ROM as soon as it becomes available.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

PLACE OF PURCHASE \_\_\_\_\_ DATE \_\_\_\_\_

INVOICE NUMBER \_\_\_\_\_

## SOFTWARE COPY REQUEST

We at MegaSoft LTD. have developed the SHADOW to copy almost any protected software, however testing for the copy-ability of all software is practically impossible. We therefore request that you the users of SHADOW give us names of any software package you were unable to copy. We will use the information returned by you to provide ROM updates. This will keep our product on the forefront of the latest protection schemes. After all, you the user can best keep us informed of the SHADOWs present capabilities and with your help we can keep the SHADOW at the cutting edge of state of the art as it is today.

1. \_\_\_\_\_

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8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_