

## **DYNAMIC ELECTRONICS INC.**

P.O. Box 896 (205) 773-2758  
Hartselle, AL 35640

### **PRODUCT OVERVIEW**

We have designed our Color Computers to provide the most value per dollar invested. Our hardware modifications are designed for a plug in installation whenever possible. For example our memory expanders do not require trace cutting or any rewiring of the circuits. We get around this by providing prewired assemblies with jumpers if required. This means that our assemblies can be removed and your computer restored to its original state. We have gone to the modular approach for our 96KX-M and our 128K memory expanders. This means that certain chips are removed and the modules installed in the sockets. Then the chips are installed in the sockets on the modules. This is a very efficient and compact way to add additional circuits.

With each product we will try to tell in as much detail as possible what the product does and how it is installed in your computer. One of our most popular products is the video reverser. Instead of a bright screen glaring at you, reversed video gives you a dark background with bright characters. This is much easier on the eyes especially if you do a lot of operating. These do not work in the graphics modes, so if you have a word processor that uses the graphic mode for generating characters, then the reverser is disabled.

Our software works on both disk and tape systems. It is supplied on tape but can be saved to a disk. Our philosophy is that you should not have to buy software for tape and additional software for disk.

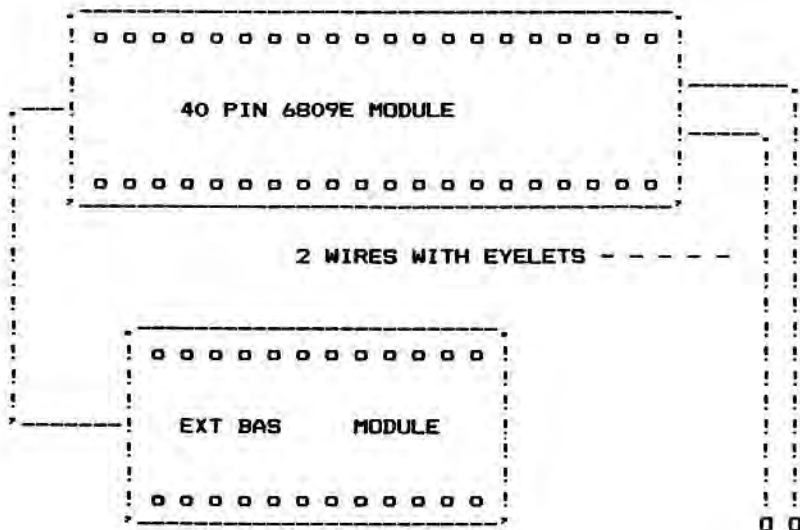
### **RETURN POLICY**

We have had some problems with people wanting to use our products for a while and then return them for a refund. We can not accept any software for a refund. If we did this then people would purchase the software, copy it, and then return it for a refund. However if it doesn't do as advertised then we will replace it. On hardware we will accept it if returned within 10 days after receipt. Call or write for a return authorization number for hardware to be returned. There will be a 15% restocking fee for returned hardware.

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## HARDWARE PRODUCTS for Color Computers



96KX-M ASSEMBLY

## 96KX EXPANDERS

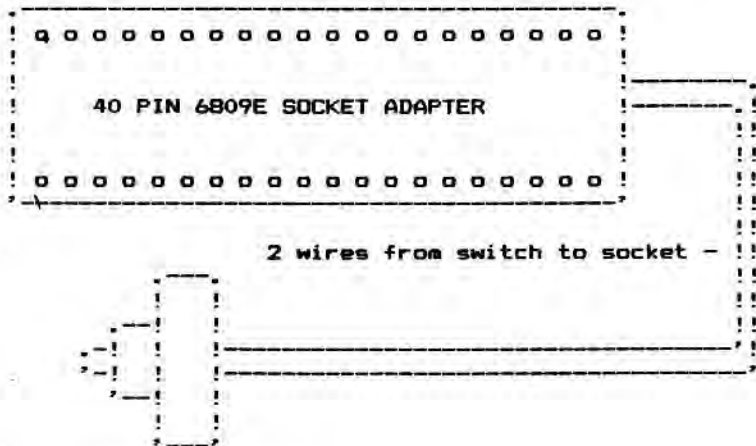
96KX expanders allow you to use all 64K of your memory in 64K computers by allowing programs to be loaded into both 32K memory pages. The 96KX software is in a ROM that uses the upper 8K of memory in the memory map. It allows arranging the memory so that it consists of two 32K memory banks or pages that can be selected while retaining the ROMS. The software is accessed from Basic by EXEC 57701. In addition to managing both memory pages, the software performs many of the everyday operating and program writing requirements and aids in troubleshooting defective programs. Your 64K computer becomes two 32K computers. There is nothing to load since the 96KX software is in permanent ROM the same as the Basic and Extended Basic ROMS

- \* Initializes the second 32K memory bank so Basic can be run in it.
- \* Transfer blocks of data within or between either bank.
- \* Enter data in DECIMAL, HEX, VECTOR, or ASCII formats.
- \* Copy machine language programs from magazines in HEX.
- \* Allows mixed HEX and DECIMAL entries for data storage.

- \* Displays program statement numbers and their memory locations.
- \* Change statement numbers one at a time.
- \* Gives the beginning, ending, & execute addresses of Machine Language programs.
- \* Software is included for our interrupt switch for a hard reset.
- \* Compatible with all software.
- \* Uses top 8K of memory in the ROM memory area.

96KX-M . . . A plug in module assembly that mount under the extended basic and microprocessor chips. Requires cutting a resistor and crimping or soldering 2 wires to each side of the break. Becomes a permanent part of your computer. Works with disk drives. . . \$59.95

96KX-C . . . The same as above except in a plug in cartridge. Use with cassette systems. Will not work with disk drives. \$49.95



PUSH BUTTON SWITCH

#### INTERRUPT SWITCH ASSEMBLY

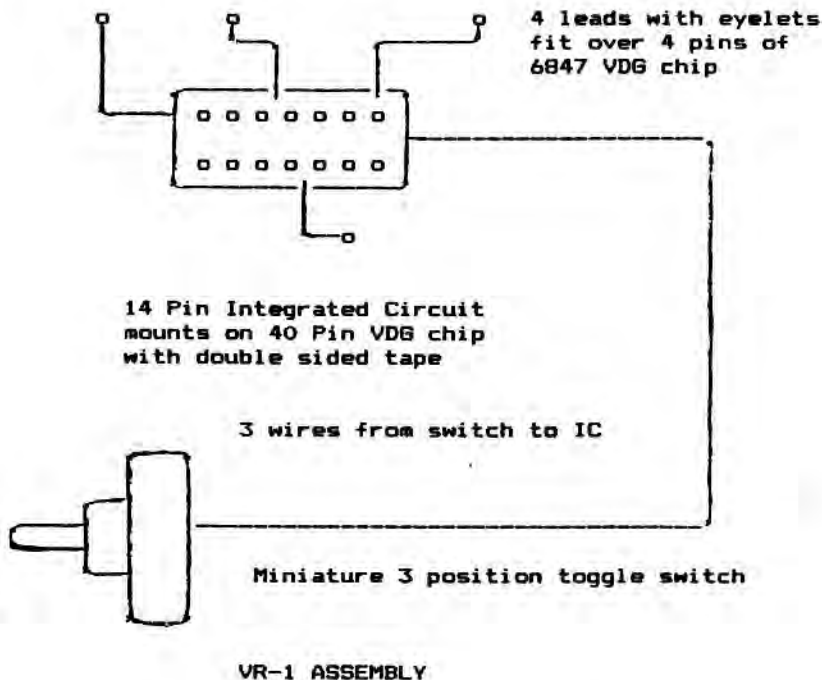
Interrupt Switch . . . Allows the computer to be interrupted and run a machine language program. When used with our 96KX it can provide a hard reset when the normal reset fails. Socket adapter is included for mounting under the 6809E chip. Switch mounts in 1/4 inch hole with instructions. \$9.95

#### VIDEO REVERSERS

Video Reversers reduce eye strain by displaying bright characters against a dark background. They are automatically disabled in the graphics modes. They also work with video monitors. (Continued next page)

VR-1 . . . Consists of an integrated circuit with eyelets on 4 of the leads and double sided tape for mounting on the 6847 chip plus a 3 position toggle switch that mounts in a 1/4 inch hole. It provides

- (1) All characters reversed.
- (2) All characters reversed and displayed as Capital Letters.
- (3) The normal display. \$19.95



VR-1M . . . Same as the above except in a plug in module that mounts under the 6847 chip. \$24.95

VR-2 . . . A module that mounts under the 6847 chip and reverses upper and lower case. Simple plug in installation. \$19.95

SAM BUFFER - An integrated circuit that mounts on the SAM chip and protects pin 35 against shorts due to memory upgrading. \$8.95

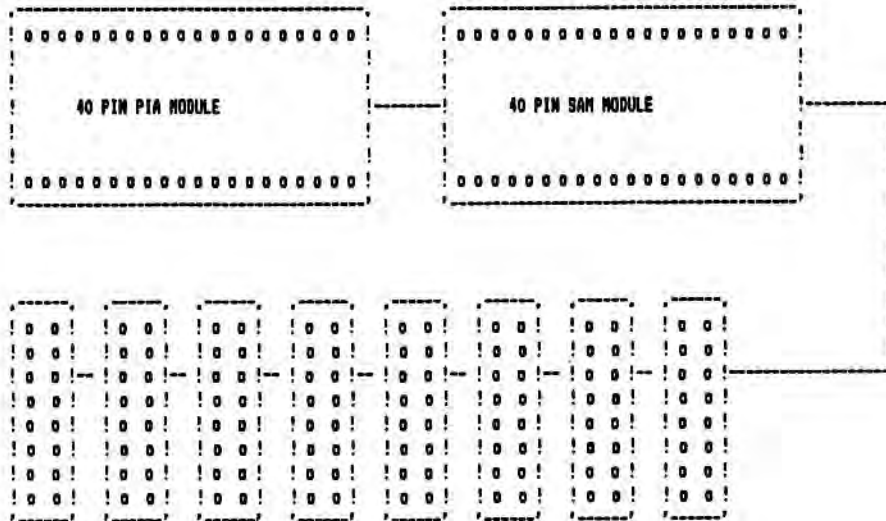
SAM Amplifier - A module that mounts under the SAM chip and isolates B of the signals leaving it. This protects the SAM chip against shorts. The SAM Amplifier may be required with our 128K memory upgrades if loading is a problem. \$19.95.

## MEMORY EXPANDERS 32K to 128K

Our Memory upgrades are solderless & reversible prewired assemblies and do not require trace cutting. 64K and 128K upgrades require a 1.1 ROM. Exec 41175 <ENTER> for your ROM type. State board or computer type when ordering. To determine your board type look for numbers ending with the letters "D" or "E" or the number 285 on the top side of the circuit board. One year warranty.

ME-1 . . .	Kit of 8-4116 chips	\$10.00
ME-3 . . .	D, E, & 285 from 16K to 32K	\$36.95
ME-4F . . .	F or 285 Computers to 64K	\$79.95
ME-4 . . .	D & E Computers to 64K	\$89.95
* ME-5 . . .	8-64K chips for COCO 2 to 64K	\$59.95
	* Two jumpers to solder for COCO 2	

### 128K MEMORY UPGRADES



CONTROL CIRCUIT IN 40 PIN MODULES  
TWO 64K BANKS of MEMORY CHIPS

We are the first to offer 128K upgrades for Color Computers. We have been using them since the Fall of 1983 and have developed modules that mount under two of the large chips. Our assemblies consist of 2-64K memory banks, a 3 position toggle switch, and a control circuit.

The banks can either be switched manually or by software. The unselected bank is in the power down mode where it draws about 1/10 of its normal operative power. Program control and variables can be transferred by software from one bank to the other. Our 128K expanders support all software that can be used with 64K computers. Our multiprogram manager software will allow 10 programs to be loaded into the computer and 20 programs into computers with the 96KX.

- \* Provides two 64K memory banks which can be selected either by software or hardware.
- \* Runs any software that can be used with a 64K computer.
- \* Program control can be transferred from one bank to the other by two simple memory pokes.
- \* Transfer variables from one bank to the other by software.
- \* Unselected bank is placed in power down mode where it draws about 1/10 of its normal operating power without loosing its data.
- \* Plug in modules provide easy installation without modifications to the computer.
- \* Select banks by the 3 position hardware switch or by software.

ME-128-64 . . .	If you have a 64K computer then you can upgrade it to 128K with this upgrade kit.	<del>\$199</del> \$ 169
ME-128D . . .	Upgrades D & E Computers to 128K.	<del>\$269</del> \$ 239
ME-128F	Upgrades 285 and Color Computer 2 to 128K.	<del>\$259</del> \$ 229

## PROGRAMS IN CARTRIDGES OR MODULES

### YOUR BASIC OR MACHINE LANGUAGE (ML) PROGRAMS IN A CARTRIDGE

We can put your programs in a cartridge and you will have all of your memory. To access these you POKE 25,192: RUN for Basic or EXEC 49152 for ML programs. There is nothing to load and it is much faster than tape or disk. Send a cassette with 2 copies of your program on it. Don't use PCLEAR command. Up to 8K \$29.95. Up to 16K \$49.95.

YOUR PROGRAMS IN A MODULE . . . We can put your program in the module designed for our 96KX-M. Cost for up to 8K \$49.95.

EXTENDED BASIC ROM . . .	\$49.95
1.2 BASIC ROM . . . .	35.00
6809E Microprocessor chip	21.95
6883 SAM Chip . . . .	25.95
6847 VDG Chip . . . .	19.95
6821 PIA Chip . . . .	5.95
6822 PIA CHIP . . . .	6.95

## We Loan Computers

No need to be without a computer while you have yours upgraded or repaired. Send a deposit of \$200 for a 32K or \$250 for a 64K computer with extended Basic plus \$20 for shipping, handling, and labor. When you receive our Computer, send us yours in the same box. After yours is returned and you verify that it works correctly,

then return ours for your deposit.

### **We Repair Computers**

Our rate is \$25 an hour for repairing color computers plus parts. Most repairs can be done within an hour.

### **We Upgrade Computers**

We will upgrade your computer with one or more of our accessories for \$10 plus shipping plus the cost of the accessories. Send computers for repair or upgrading by UPS to

**Dynamic Electronics Inc.  
2118 Westwood Rd.  
Hartselle, AL 35640**

### **COLOR COMPUTER SOFTWARE**

We save you money because our software works on both tape and disk systems. Extended Basic is not required except for DYFIN. Programs are supplied on tape and can be saved to a disk. Most software is also available in plug in cartridges.

#### **Terminal Program**

DYTERM - An inexpensive terminal program that allows color computers to interface with modems, terminals, or other computers using the serial ASCII port. Excellent for bulletin boards. Features include

- \* User defined buffer for composing messages off line or storing received messages.
- \* 300 to 2400 baud rates
- \* 1 or 2 stop bits
- \* Low cost \$14.95 tape, \$24.95 cart.
- \* 7 or 8 bit words
- \* Variable parity

#### **Decimal Assembler & Disassembler**

DISASM - 6809 Decimal Machine Language Assembler and Disassembler. Especially designed for the beginner, DISASM uses English mnemonics (Symbols for Instructions) instead of hard to remember symbols. DISASM is a real time assembler and stores the machine codes in memory after each instruction is entered. You don't have to remember formats as DISASM asks you for the information needed to complete an instruction if more information is required. The disassembler can be used to display the mnemonics in English and branch locations in decimal for any 6809 machine language program or subroutine. Tape \$19.95, Cart. \$29.95

#### **Multiprogram Manager (MPM)**

MPM - Multiprogram manager allows up to 5 programs to be loaded into a 16K or 32K computer. When used with our 96KX you can load 5 programs into both 32K memory pages in 64K computers. Select the program you



want to run from the menu. Add or delete programs, and save or load all programs at once as a block. Uses about 2K of memory. \$14.95

### **Finance Program**

DYFIN - Finance Program. DYFIN is designed to aid in the Financial Planning of Loans, Savings, Annuities, Investments, and Retirements. Also included is a 500 year Calender plus a Checkbook Program. Requires 16K extended basic. Was \$19.95. Now \$12.95 on tape.

### **Utility Program**

UP-1 - This utility program does many of the every day computer operating requirements. Features include:

- \* Write data to a cassette
  - \* Read values from memory
  - \* ASCII to DECIMAL conversion
  - \* Vector Combination & Reduction
  - \* Machine language subroutine for stacking 2 programs and switching programs with EXEC command
  - \* Allows text to be stored in memory and printed on a printer
  - \* Read data from a cassette
  - \* Store values in memory
  - \* Data Relocation
  - \* Cassette Motor On or OFF with one key
- Cassette \$14.95

### **Uninterrupted Power Source (UPS)**

\* NEW PRODUCT

Don't loose your programs when power fails. The UPS powers your random access memories so that your program is saved within your computer when commercial power is lost. The UPS assembly consists of a rechargeable battery, an electronic control circuit, and a miniature switch for enabling the UPS. The control circuit allows the battery to charge from the unregulated 5 volt supply and has circuitry to prevent it from overcharging. When the switch is on the battery will supply power to the 5 volt regulator preventing the random access memories (RAM) from loosing their data should power fail. The battery will power the computer up to a couple of hours depending on the number of accessories within the computer and the expansion port. While operating the computer the switch should be "ON" to provide the protection. When the computer is turned off, the program saver switch should also be turned "OFF" to keep the battery charged. Features include:

- \* Supplies power to RAMs when commercial power fails.
- \* Prevents programs from being lost during power failures.
- \* Charges battery while computer is on.
- \* Control circuit prevents battery from overcharging.
- \* Miniature toggle switch is included to enable the UPS.
- \* Can be mounted under keyboard or outside the computer.
- \* Works on all 64K computers and 16K CoCo 2.
- \* Only one wire to solder during installation.
- \* One year warranty, Cost \$59.95

## 96KX, 64K, and 128K MEMORIES

We have been asked the following question many times. "How much memory will I have if I upgrade to 64K or 128K"? The most memory you can have at one time is 32K. For 64K memories you can partition the memory map so that all of the memory is RAM. Then transfer the basic and extended basic ROMS to RAM and you will have from 8K to 16K more memory to use. It wastes RAM when you transfer the ROM data. So we designed the 96KX software to allow both 32K memory pages to be used with the Basic, Extended Basic, and 96KX ROMS. This gives 64K of RAM and 32K of ROM for a total of 96K of memory. If you need a program longer than 32K then break it into parts and put part in one memory bank and part in the other. The 96KX software will switch banks for you.

Our 128K memories consist of two 64K memory banks. Anything that could be done with 64K memories can be done with our 128K memories. The only problem is the SAM chip has to be initialized for the same configuration when the banks are switched. For example if you were in the graphics mode using a word processor and switched to the other bank where you are running a basic program, then there would be a problem because the SAM chip would have to be reconfigured. However if you are running the same word processor in both banks, or basic programs, there would not be a problem when the banks are switched. For normal operation you still would not have but 32K of memory at a time that could be used. However you would have four 32K memory pages with our 128K memories and the 96KX-M.

Also our multiprogram manager software can be used with each 32K page to allow managing up to 5 basic programs in each page. By adding our uninterrupted power source these programs will stay in the computer even when power fails.

## INSTALLATION

We recommend the 96KX-M because once it is installed it is always available for use. This product has gone through several evolutions and we think that the module design will be our final version. To install the 96KX-M remove the microprocessor chip and the extended basic chip and install the modules. One resistor has to be broken and two wires connected to the break. It is a pretty easy installation.

For the 128K memories again we use two modules which mount under a 6821 PIA chip and the 6883 SAM chip. There is no soldering required and the installation only takes a few minutes. A small hole has to be drilled in the computer case for the bank select switch. The modification takes less time than a 64K upgrade.

We hope these comments are helpful. If you have additional questions please write or give us a call.

## COMPUTER CLUB DISCOUNTS

We give discounts to computer clubs. If you are a club officer, call or write for information.

## DEALER DISCOUNTS

If you are a computer dealer, call or write for dealer information on our products.

## DYNAMIC COLOR NEWS SERVICE

(monthly engineering newsletter ++)

In February of 1984 we published our first newsletter. The purpose of the newsletter is to provide instruction on Basic and Machine Language programming, Computer theory, operating techniques, Computer expansion, plus provide answers to questions from our subscribers. It is written in a non technical style and is designed as a learning tool. Also we provide consulting service for only \$10 for those who want a personal answer to their computer questions.

## DISCOUNTS ON OUR PRODUCTS

DCN subscribers are eligible for discounts of 10% on hardware items and 20% on DEI software. You will be the first to know of our new products and will be given special discounts for them as they are introduced. The discounts can pay for the cost of the subscription so why not sign up and start receiving the newsletter. SEND \$1 FOR A SAMPLE OF OUR NEWSLETTER

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* Please sign me up for one year for the DYNAMIC COLOR NEWS SERVICE. I *
* understand I will receive a monthly news letter, Discounts on DYNAMIC *
* ELECTRONIC INC. Computer products plus the Individual Reply to my *
* Computer problems for a special of $10 each. Also I understand that *
* there will be no charge for letters printed with answers in the *
* Newsletter. Cost $15 USA & Canada, $30 foreign. *
* *
* Name _____ Mail payment to *
* Address _____ Dynamic Electronics Inc *
* City _____ P. O. Box 896 *
* State & Zip _____ Hartselle, AL 35640 *
* Enclosed is a check ____ *
* charge to VISA ____ MC ____ Number _____ Exp. ____ *
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