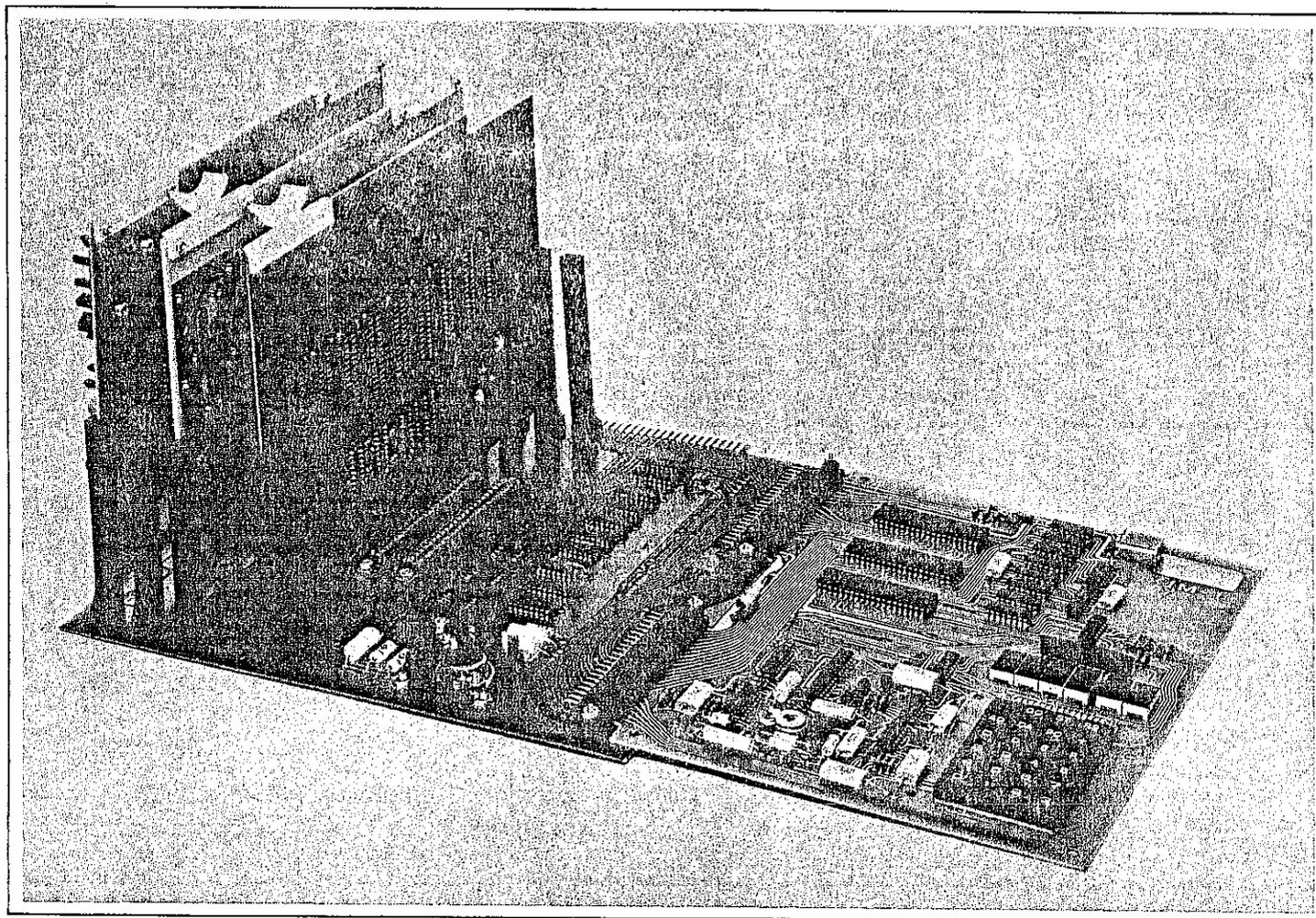
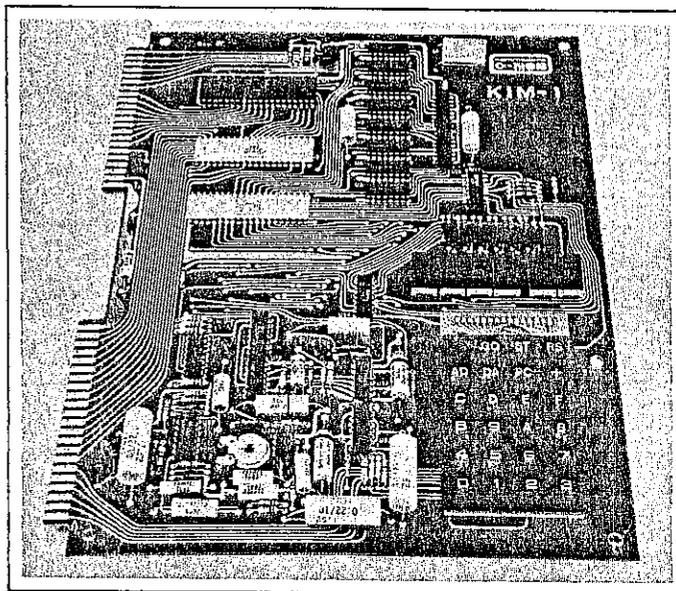


Systems Sales Division  
MOS Technology  
A Commodore Company  
950 Rittenhouse Road  
Norristown, Pennsylvania 19401

# KIM System Products

For use with the KIM-1™  
Microcomputer Board



Shown in place: the KIM-4™ Motherboard connected to the KIM-1 Microcomputer. One each of the KIM-3B™ Memory Expansion Module, the KIM-5™ Resident Assembler/Editor and the KIM-6™ Prototyping Board are connected to the KIM-4 Motherboard.

\*A registered trademark of MOS Technology, a Commodore Company.

# Commodore and the Commodore Companies

Commodore is a pioneer consumer electronics company. Less than ten short years ago, Commodore recognized the coming revolution in consumer electronics . . . at a time when that industry scarcely existed. By 1971, Commodore introduced the first popular-priced, compact electronic calculator.

Today Commodore is the only consumer electronics company that is thoroughly vertically integrated, with full MOS/LSI chip and LED/LCD display design and production facilities . . . with worldwide sales and service facilities.

**Commodore/MOS Technology**  
Valley Forge Corporate Center  
950 Rittenhouse Road  
Norristown, Pennsylvania 19401, USA

**Frontier Inc.**  
2955 No. Airway Avenue  
Newport Beach, California 92663

**Commodore Business Machines, Inc.**  
901 California Avenue  
Palo Alto, California 94304, USA

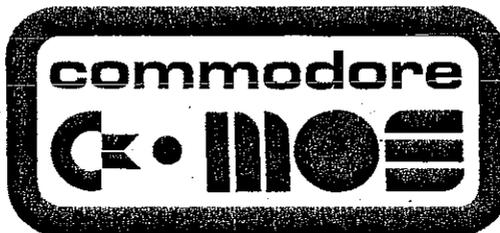
**Commodore Business Machines Limited**  
3370 Pharmacy Avenue  
Agincourt, Ontario, Canada M1W2K4

**Commodore Business Machines Limited**  
360 Euston Road  
London NW1 3BL, England

**Commodore Büromaschinen GmbH**  
Frankfurter Strasse 171-175  
6078 Neu Isenburg  
West Germany

**Commodore Japan Limited**  
Taisei-Denshi Building  
8-14 Ikue 1-Chome  
Asahi-Ku, Osaka 535, Japan

**Commodore Electronics (Hong Kong) Ltd.**  
Watsons Estates  
Block C, 11th floor  
Hong Kong, Hong Kong



# The KIM-3B Memory Expansion Module

The KIM-3B Memory Expansion Module is designed for use with systems using the KIM-1 microcomputer. The module is completely assembled and tested. High speed, low power, static memory integrated circuits are used: no memory slowdown or refresh cycles are required.

An on-board regulator allows system operation from a +8 volt unregulated power supply.

Switches on the board allow the boards to be placed at any 8K (KIM-3B) boundary in the system memory space.

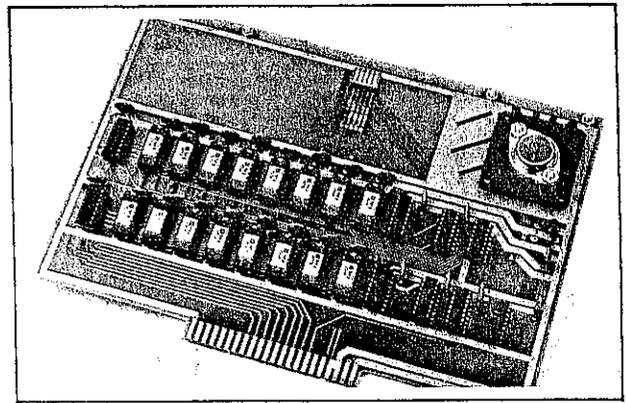
Complete documentation is provided for board installation, checkout, and operation. Schematics and theory of operation are also provided.

A single KIM-3B can be wired directly to a KIM-1 module. System expansion to 65K of memory can be implemented using a KIM-4 motherboard.

## SPECIFICATIONS

### Current required

at +5V (5% regulated)  
or 8-10V unregulated: 3.0A



Memory size (8-bit words) 8192 words

Physical Dimensions: 10" x 6½" exclusive of connector tab and removal tabs.

Connector: Single 44-connection male edge connector. Mating female connector—similar to Vector R644. Connector tab is centered on 10" side of board.

Warranty: 90 days parts and labor.

Memory Circuits: High speed, low power 2114-type static memories. 450ns access time. Suitable for systems using 1 MHz, 2 phase clocks.

# The KIM-4 Motherboard

The KIM-4 Motherboard is designed to interface a single KIM-1 microcomputer with up to six system expansion modules. The motherboard also contains circuitry for buffering all appropriate system address, data, and control lines. A +5V regulator is included to provide power for the KIM-1 module from the system's 8-10V D.C. unregulated power bus. A +12V regulator is provided for powering the KIM-1 audio cassette interface from user-supplied +15V.

## SPECIFICATIONS

Dimensions: 11.0" x 11.5" inclusive of connector tabs.

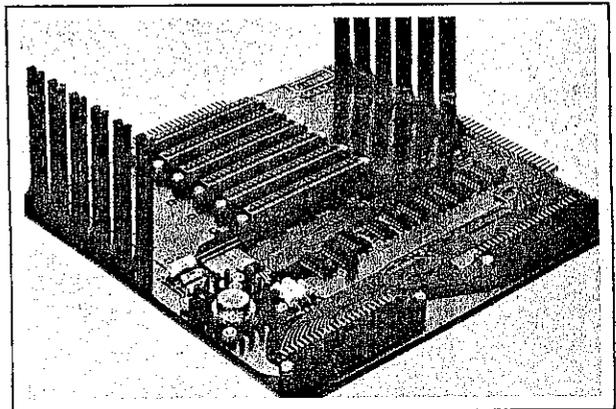
- Connectors provided: (6) 44 pin female (similar to Vector R644) for expansion modules.  
(2) 44 pin female connectors for interface to KIM-1.  
(1) 44 pin male connector duplicating the function of KIM-1 application connector.  
(1) 44 pin male with standard bus pinout for connection to expansion motherboard or backplane.

### Power Connections:

+8V unregulated system power to be connected to motherboard jack and bussed to all expansion module connectors.

+15V and -15V (optional) to be connected to motherboard jack and bussed to all expansion module connectors. Regulator provided to derive +12V for audio cassette interface from user-supplied +15V.

*Note: +5V regulated is not bussed to expansion module connectors. Each module will have on-board regulators powered from the system +8V unregulated bus.*



KIM-4  
STANDARD BUS CONNECTIONS

1 GND	A GND
2 B SYNC	B BAB 0
3 B RDY	C BAB 1
4 B IRQ	D BAB 2
5 -15V	E BAB 3
6 B NMI	F BAB 4
7 B RST	G BAB 5
8 BDB 7	J BAB 6
9 BDB 6	K BAB 7
10 BDB 5	L BAB 8
11 BDB 4	M BAB 9
12 BDB 3	N BAB 10
13 BDB 2	P BAB 11
14 BDB 1	R BAB 12
15 BDB 0	S BAB 13
16 BD SELECTED	T BAB 14
17 +15V	U BAB 15
18 DMA	V B 0 2
19 +8V RAW DC	W B R/W
20 +8V RAW DC	X B 0 2
21 +5V	Y +5
22 GND	Z GND

\*The "B" prefix indicates the same signal output by KIM-1 but buffered on the motherboard. E.G. the B RDY line is the KIM-1 RDY line.

# The KIM-5 Resident Assembler/Editor

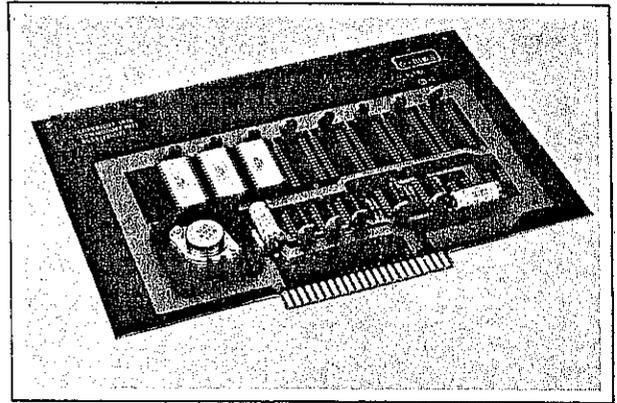
The KIM-5 Resident Assembler/Editor is a complete system for entering, storing, editing and assembling programs for KIM-based processing systems. The program is stored in three MCS6540 ROM packages, mounted on a KIM-4 compatible board. The memory locators are addresses E000 to F7FF.

## Text-Editor

*A program for creating, editing and saving line-numbered text files stored in a random-access memory.*

**Functions supported are:** Enter new text • Delete text • Find designated string in text • Resequence line numbers • List specified block of text • Load text from paper tape or audio cassette • Dump text to paper tape or audio cassette • Transfer control to assembler • Return to KIM monitor • Clear text area.

**Features:** Line-number orientation for ease of use • Any command preceded by an "X" is passed to a user-specified routine. The user can create his own commands • Simple interface to paper tape or audio cassette files • User-specified location of text in memory. No restriction on location of text file; multiple text files may be stored in memory simultaneously • Length of text file limited only by available memory • Text files are com-



pletely relocatable • ROM-resident—no need to buy or reload RAM • Complete documentation provided.

## Resident Assembler

*A single-pass assembler which accepts the entire 650X instruction set. Source code may be memory or paper-tape resident. Object code is always written to memory.*

**Features:** Single pass provides source listing, object code and error messages • User may specify input and output device routines or accept TTY as default • All 650X instruction and addressing modes supported • User defines symbol table and source location for complete memory flexibility • ROM-resident.

# The KIM-6 Prototyping Board

The KIM-6 Prototyping Board is a wirewrap board for user-defined expansion of a KIM System.

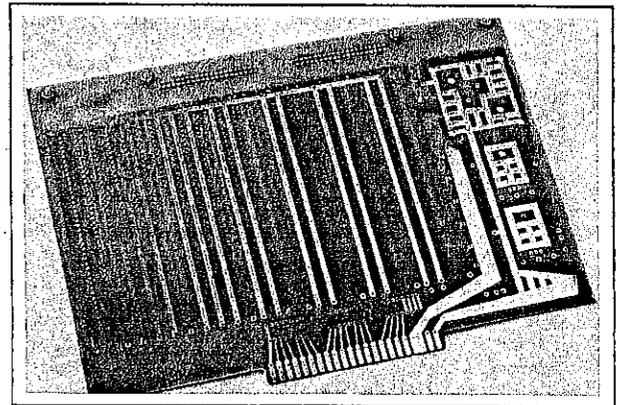
The board provides a 5" x 7½" predrilled area for wirewrap or soldertail IC sockets. The KIM-6 also provides a prewired area for a 5-volt T0-3 style IC voltage regulator, and pads are provided for two additional T0-220 style regulators. PC runs are provided throughout the wirewrap area for V<sub>CC</sub> and ground busses.

A gold-plated tab connector is provided for standard interconnection to a KIM-4 Motherboard. The board is predrilled to accept two 40-pin flat cable connectors for connection to external devices.

**Dimensions:** 7" x 10" including tab connector

**Board Type:** G-10 or equivalent, 4 oz. tin-plated copper

**Wirewrap Sockets Accepted:** All common pinouts from 14 to 40 pins including 22 pin.



**I/O Connectors:** (2) Ainsley 609-4042M or equivalent (not supplied)

**Bus Connector:** KIM Buss 44 pin edge connector (gold-plated). All buss connections brought out to three 16-pin socket pads.

**Wirewrap Area:** 1144 holes, 5" x 7½" area