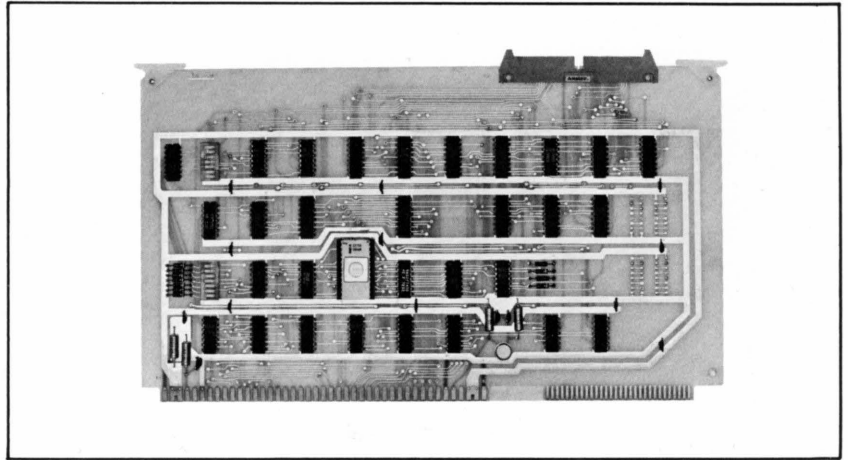


# icom<sup>®</sup> MICROPERIPHERALS<sup>™</sup>

## iCOM 360-56 Interface Card and FDOS-II Disk Operating System for Intel's SBC 80/10



By adding iCOM's 360-56 Floppy Disk to your SBC 80/10 Single Board Computer, it becomes a complete development system including Assembler, Editor and iCOM's powerful FDOS-II software. The 360-56 interface card plugs directly into any SBC card cage (or equivalent). Storage capacity, with a two drive system, is 512,512 bytes. The recording format is IBM compatible. A similar version operates with the Intel Intellec MDS-800.\*

### iCOM FDOS-II

iCOM's famous FDOS-II comes to you on diskette and includes FDOS-II Executive, iCOM Macro Assembler for the 8080, and iCOM String Oriented Editor. The Executive has features such as up to 256 named files (5 characters), file directory listing, merge of multiple files into one file, disk file to punch device, reader device to disk file, build a new file from console keyboard, view a file on CRT (or TTY), print a file to list device, copy entire disk (requires two drives). Also load a hex object program from a disk file and begin execution according to the end statement, error messages for invalid commands. File sizes are variable from 1 sector (128 bytes) through 1975 sectors (252,800 bytes). Files can be deleted with automatic repacking of disk.

Listings of the PROM resident portion are supplied. FDOS-II Executive, Assembler and Editor are supplied in object code only on diskette.

iCOM is a registered trademark of PCC.

\*Intel and Intellec are trademarks of Intel Corporation.

### SPECIFICATIONS

**Interface Card:** Plugs into SBC card cage and requires one slot. Includes extensive software to run on SBC's 8080 MPU.

**Card Size:** 12.0" x 6.75" approximately. Plug compatible with SBC.

**Voltages Required:** +5V @ 0.5A  
+12V @ 0.1A  
-10V/-12V @ 0.05A

**Regulator:** On board regulator provides -5 volts.

**On Board PROM:** (2708 type) holds firmware drivers

**Memory Used/Required:** PROM at E800-EBFF (1024 bytes on iCOM board), RAM at 3C80-3CEF (112 bytes on SBC 80/10 board), RAM at 4000 Hex (8K minimum required for FDOS-II).

Intel 16K byte read/write memory board recommended.

PROM monitor required. Order part # SBC-910 from your Intel distributor. Uses 0000-07FF (Hex).

**Address Ports:** Out 6, Out 7, In 7.

**Card Cage Requirements:** Intel SBC 80/10, Intel 16K byte read/write RAM (or equivalent), iCOM 360-56 Floppy Disk Interface, 1 spare slot for iCOM PP80 2708 PROM programmer/8K memory expander. Card cage is Intel SBC-80 modular backplane/card cage assembly.

**Floppy Disk Requirements:** iCOM FF-36-X Frugal Floppy or iCOM FD360-X Floppy Disk System where X defines the number of drives from 1 to 4.

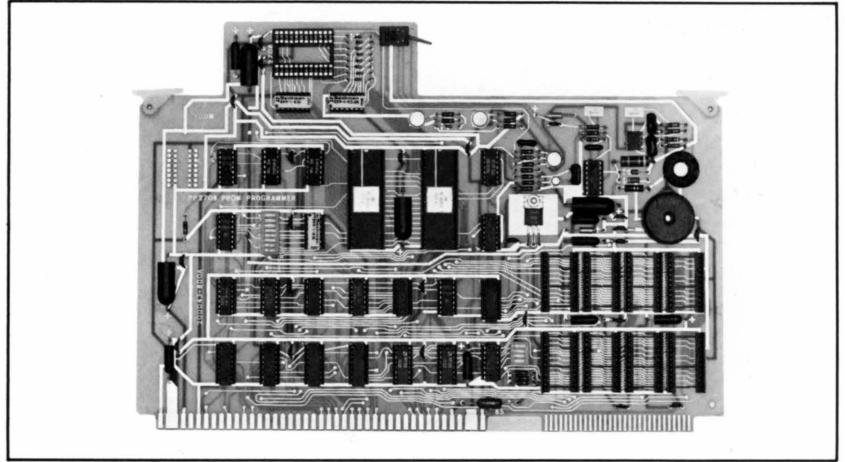
### Ordering Information:

#### MODEL

360-56 Intel SBC 80/10 Interface Package. Requires one card slot in SBC card cage. Includes software driver PROM on interface card. Includes all software: FDOS, Assembler, and Editor on IBM Diskette.

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## PROM Programmer for Intel MDS and SBC Systems



The iCOM Model PP80 MDS/SBC-R PROM Programmer/Memory Expander works with both the Intel SBC 80/10 and Intellec\* MDS-800. It installs in just one card slot in either system. Under control of the ROM software provided with the -R option, the console operator can program 2708 and 2704 type devices. A low insertion force socket provides quick installation and removal of the PROM under program. Programs can be permanently stored in the PROM in just over 100 seconds including automatic verify. The 2704 PROM has a capacity of 512 bytes and the 2708 has a capacity of 1024 bytes. Using the software provided with the -R option any number of bytes of the PROM may be programmed starting at any address in the PROM. The data used to fill the PROM can come from any location in the 65K of addressable memory. The contents of the PROM can be transferred to any RAM memory locations under operator control. In addition to the automatic verify while programming, a separate verify command compares the contents of the PROM to a selected portion of system memory and prints the locations and contents where they differ.

In addition to the programming capabilities, the PP80 MDS/SBC provides sockets for 8 2708/2704 type devices for memory expansion. Address location banks are switch selectable. While programming a PROM, the required high voltage supply is generated right on the board. No external supplies are required. The -5 volt supply for the PROMs is also provided internally on the board.

\*Intel and Intellec are trademarks of Intel Corporation.

\*\*PROM socket protrudes an additional 1.5 inches above main board.

### FEATURES

- Programs PROM from any contents of memory.
- Programs any number of bytes starting at any location in the PROM.
- Automatically verifies after programming and prints locations and contents not programmed properly.
- Transfer command puts contents of PROM (in low insertion socket) into selected RAM memory. Useful for copying, examining, loading, etc.
- Compare command checks contents of PROM vs. memory and prints discrepancies.
- Board holds 8 additional PROMS for program storage/memory expansion.
- Software for PROM programming supplied in ROM with -R version.

### SPECIFICATIONS

- Board size 12.00" X 6.75"\*\*\*
- 8 PROM sockets with selectable block address
- Programs 2708 in just over 100 seconds
- SBC and MDS bus compatible
- SBC and MDS software compatible
- No additional power required
- Low insertion force socket
- Programs 2704 and 2708 PROMS
- Uses +5VDC @ 700 ma; +12VDC @ 320 ma; -10VDC @ 140 ma from SBC/MDS chassis.

### Ordering Information:

#### MODEL

PP80MDS/SBC

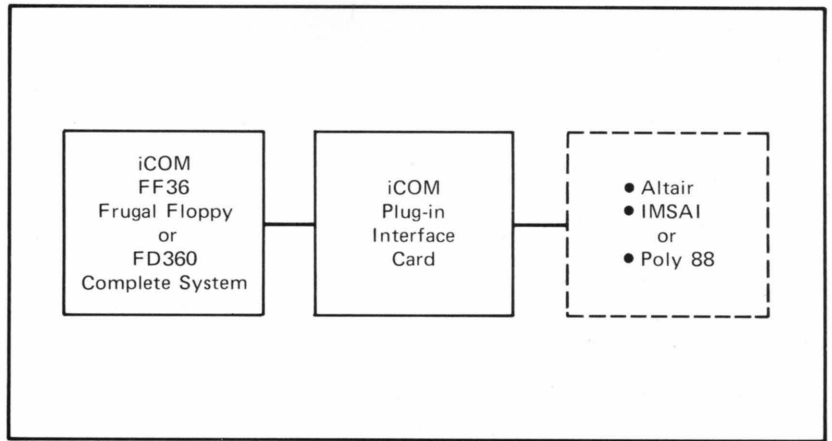
PROM Programmer for Intellec MDS-800 and Intel SBC80/10. Programs 2708's and 2704's. Install in one card slot in MDS chassis or SBC card cage. Includes 8 sockets for adding up to 8K PROM to your system. Software not included.

PP80MDS/SBC-R

Same as PP80MDS/SBC with addition of 1K ROM resident software. Listings and software instructions for operation with MDS or SBC monitor included.

**iCOM  
Floppy Disks  
for**

- Altair
- IMSAI
- Poly 88



iCOM offers plug-in floppy disk systems and subsystems, with powerful software, at attractive prices, for Altair 8800, IMSAI 8080, and Poly 88 microcomputers.

#### **SOME USER BENEFITS**

There are lots of them.

As an example, an 8K byte program can be loaded into memory from diskette in just seven seconds. With the text editor, your software programs can be quickly created, corrected, and stored on diskette. iCOM's 8080 mnemonic assembler generates object programs from previously stored mnemonic source programs.

Under iCOM's FDOS-II Disk Operating System, all programs stored on diskette are assigned 5 character names by the operator. Each diskette contains up to 256,000 bytes. Up to 256 named files (programs) can be stored on each diskette, each available within seconds. Each file can be as small as 128 bytes or as large as the entire diskette. And it takes only a few seconds to change a diskette.

Your efficiency is increased by an almost unbelievable amount. Program loading is 25 to 100 times faster! Tasks which previously would not have even been attempted can now be quickly accomplished. For example, correction of a source program of several thousand characters can be accomplished, and a new corrected file permanently stored on disk in less than one minute! Assembly of source programs takes minutes instead of hours.

#### **ADDITIONAL FDOS-II FEATURES**

**LIST** - Lists all files on the diskette by name, size, attribute (i.e. protected), and disk locations although this is not necessary since files are called by name.

**CREATE** - Used to manually establish a file of a given size under a given name (5 characters). The assembler and editor automatically create files of a given name at exactly the right size.

**MERGE** - Allows any number of files to be combined together as one new file, which is convenient for inserting subroutines, patches, partial assemblies, text editing, etc.

**PRINT** - Prints a given file on the print device.

**VIEW** - Lists a file on the CRT, "n" lines at a time, with the capability of scrolling up and down throughout the file. This is particularly handy for viewing assembly listings on CRT systems without hard copy, or for a quick look at any file.



## TECHNICAL SPECIFICATIONS

**Format:** IBM 3741, 128 bytes/sector,  
26 sectors/track, 77 tracks,  
256 byte capacity.

**Speed:** 250,000 bits/second.

**Interface:** Includes 1K ROM, 128 byte RAM,  
uses one slot, Altair bus compatible.

**Software:** FDOS-II disk operating system,  
assembler, editor, diskette, manuals.

## ORDERING INFORMATION

(Contact your local dealer for availability)

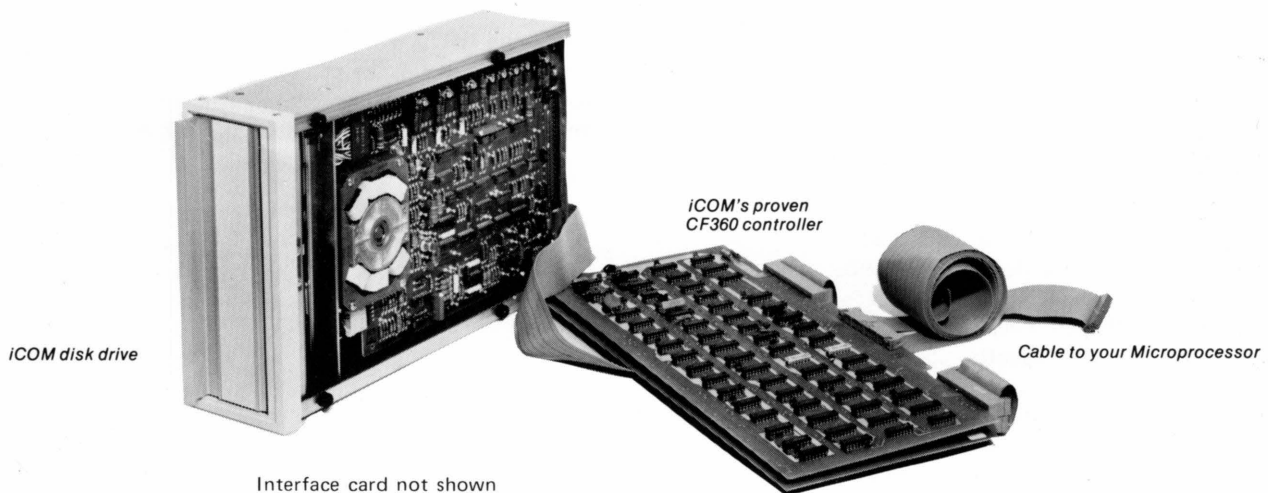
**FF36 -** Frugal Floppy Disk Subsystem, IBM compatible controller, formatter, all cables, and connectors. Does not include power supplies, cabinet, or cooling. (See FF36 Specification for full details.)

**FD360-** Completely packaged Floppy Disk Subsystem (as described above) including desk top cabinet with power supplies, cooling, cables, etc. (See FD360 specification for full details.)

To the above model number specify number of drives and interface/software from the information listed below:

- 1 Single drive.
- 2 Dual drive.
- 57 Altair 8800 interface and software.
- 58 IMSAI 8080 interface and software.
- 59 Poly 88 interface and software.
- 50 General purpose interface. Three 8 bit ports. TTL compatible. Negative true.

**Example: FF36-2-58** is a Frugal Floppy with a dual drive and a IMSAI 8080 interface and software.



CONTACT YOUR LOCAL DEALER

**MICROPERIPHERALS™**  
**iCOM**

6741 Variel Avenue, Canoga Park  
California 91303 • (213) 348-1391

## CF 360 FLOPPY DISK CONTROLLER

The iCOM Model CF360 Controller/Formatter is designed for use by OEM's in industrial, commercial, and development applications. It is the same controller used in the iCOM FD360 series Floppy Disk System.

The CF360 can accommodate from one to four floppy disk drives and includes a TTL compatible general purpose interface.

The CF360 offers many features which reduce computer service overhead. For example, the controller is fully IBM 3740 and 3540 compatible with all formatting and deformatting accomplished automatically within the controller. The controller also performs track seek/verify, and CRC (Cyclic Redundance Check) generation and verification automatically.

Independent 128 byte (full-sector) input and output buffers offer the possibility for DMA or programmed I/O operation. The ability to write-protect individual drives is also provided by the controller.

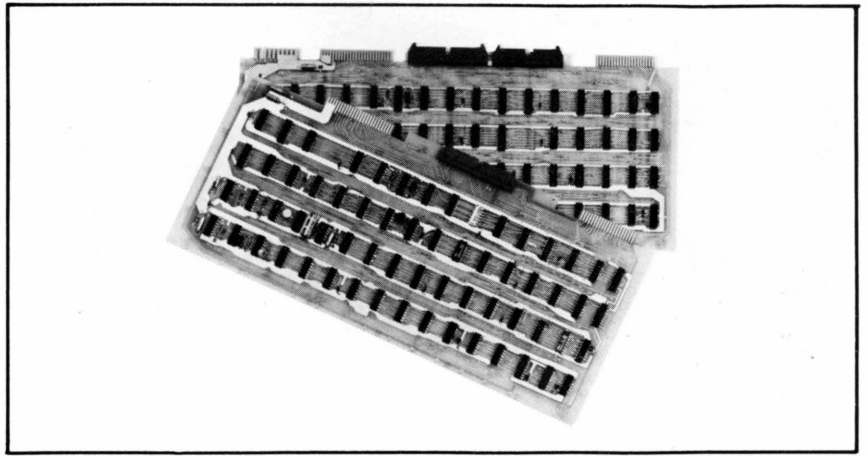
Interface signals to the CPU/MPU are TTL compatible and consist of independent input and output parallel data lines and an 8 bit parallel control port. Upon command, controller status data is presented to the CPU via the input data lines.

### DISKETTE FORMAT SPECIFICATIONS

- 2,050,048 bits/diskette
- 256,256 bytes/diskette
- 77 tracks/diskette
- 26 sectors/track
- 128 bytes/sector
- Uses IBM 3740 initialized type media available from many sources including iCOM
- Fully IBM 3740 Format & Media compatible

### CONTROLLER SPECIFICATIONS

- Housed on two 7.25 x 15 inch (18.4 x 38.1 cm) PCB's
- Interface connectors on one edge obviate need for card cage or back plane wiring
- Requires + 5 VDC  $\pm$  5% @ 6 amps and -12 VDC  $\pm$  5% @ 1 amp
- All signals are TTL, Grd True (Pos True optional)
- 16 Output Lines, 8 Input Lines



### STATUS FUNCTIONS

- Busy
- Selected Unit (2 Bits)
- CRC Error (data error on Read or Seek)
- Deleted Data Address Mark (found on Read)
- Drive Fail (selected unit not ready, e.g. door open, no diskette, or not up to speed)
- Write Protect (selected unit Write-Protected)
- Done (2 usec pulse)

### COMMAND FUNCTIONS

- *SEEK AND VERIFY* (Seeks selected track and verifies track address from ID field)
- *SEEK TRACK 0* (Seeks Track 0)
- *SECTOR AND UNIT SELECT* (specifies sector and unit number for Read/Write operation)
- *TRACK SELECT* (specifies track to be used by next seek)
- *WRITE* (Writes contents of Write Buffer to selected unit and sector on existing track)
- *READ* (Reads contents of selected sector into Read Buffer)
- *WRITE DELETED DATA ADDRESS MARK* (Same as Write but uses header in Data Field which can later be detected in Read operation)
- *READ CRC* (Same as Read but no data is transferred to the Read Buffer. Used to verify integrity of data previously written)
- *SHIFT WRITE BUFFER* (Loads data into Write Buffer)
- *SHIFT READ BUFFER* (Inputs data from Read Buffer)
- *GATE STATUS* (Gates status or data onto Input Data lines)

**MICROPERIPHERALS™**  
**iCOM**

## The Frugal Floppy™

**NEW!**

- Complete Low Cost Subsystem
- Ideal for OEM's or Hobbyists
- FDOS II and Power Supply Available



At last, a high performance, low cost Floppy Disk Subsystem is available for OEM or hobbyist microprocessor based systems. The system elements are the same ones used in iCOM's proven FD360 Floppy Disk Systems in use throughout the world.

By eliminating expensive cabinetry, power supply, and system assembly labor, iCOM can offer the most cost effective Floppy Disk System available anywhere.

### HERE'S WHAT YOU GET

- Controller/formatter Model CF360, completely assembled and tested at iCOM factory.  
See CF-360 specification sheet (other side) for complete controller details.
- Brand new daisy chainable floppy disk drive
- Controller-to-computer connecting ribbon cable with connector
- Controller-to-disk drive interconnecting ribbon cable with connectors. Includes dual disk connectors ready to add second disk in the future.
- Mating connectors to connect the controller and disk drive to your power supply
- Controller inter-board cables
- Complete logic and schematic diagrams, maintenance manual, and interfacing manual including software command, data and status information
- Full parts and labor warranty for 90 days.

### SUMMARY SPECIFICATIONS

- Two independent 128 byte I/O buffers
- IBM compatible 256K bytes/diskette capacity. One drive included. Controller supports up to 4 drives
- Power requirements:  
(All  $\pm 5\%$ , 0.1% regulation)  
+ 24 V @ 2 amps average per drive  
- 12 V @ 1 amp  
+ 5v @ 6 amps
- Dimensions:  
Controller: 2 PCB's 7 x 15 inches each  
Disk Drive: 3.45" x 8.58" x 13.28"  
Cables: Disk to controller — 24"  
Controller to CPU — 48"

### QUICK DELIVERY

iCOM's Frugal Floppy is available for delivery in just 2 to 3 weeks. Get yours now!

### ORDERING INFORMATION

Model FF36-1: Single Drive Frugal Floppy

Model FF36-2: Dual Drive Frugal Floppy

Options:

- Model S171 power supply assembly with cables. For one or two drives. 115/220 VAC input. Size 11¼ x 8 x 3½.
- iCOM FDOS-II/8080 OEM software package for 8080 based systems. Ready to add your own assembler and editor if you desire.
- iCOM FDOS-II/6800 OEM software package for 6800 based systems. Ready to add your own assembler and editor if you desire.
- Model FD400-20 upgrade kit to convert single drive system to dual drive.

**MICROPERIPHERALS®**  
**iCOM**

# Your Single Bored Computer can be the life of the party.

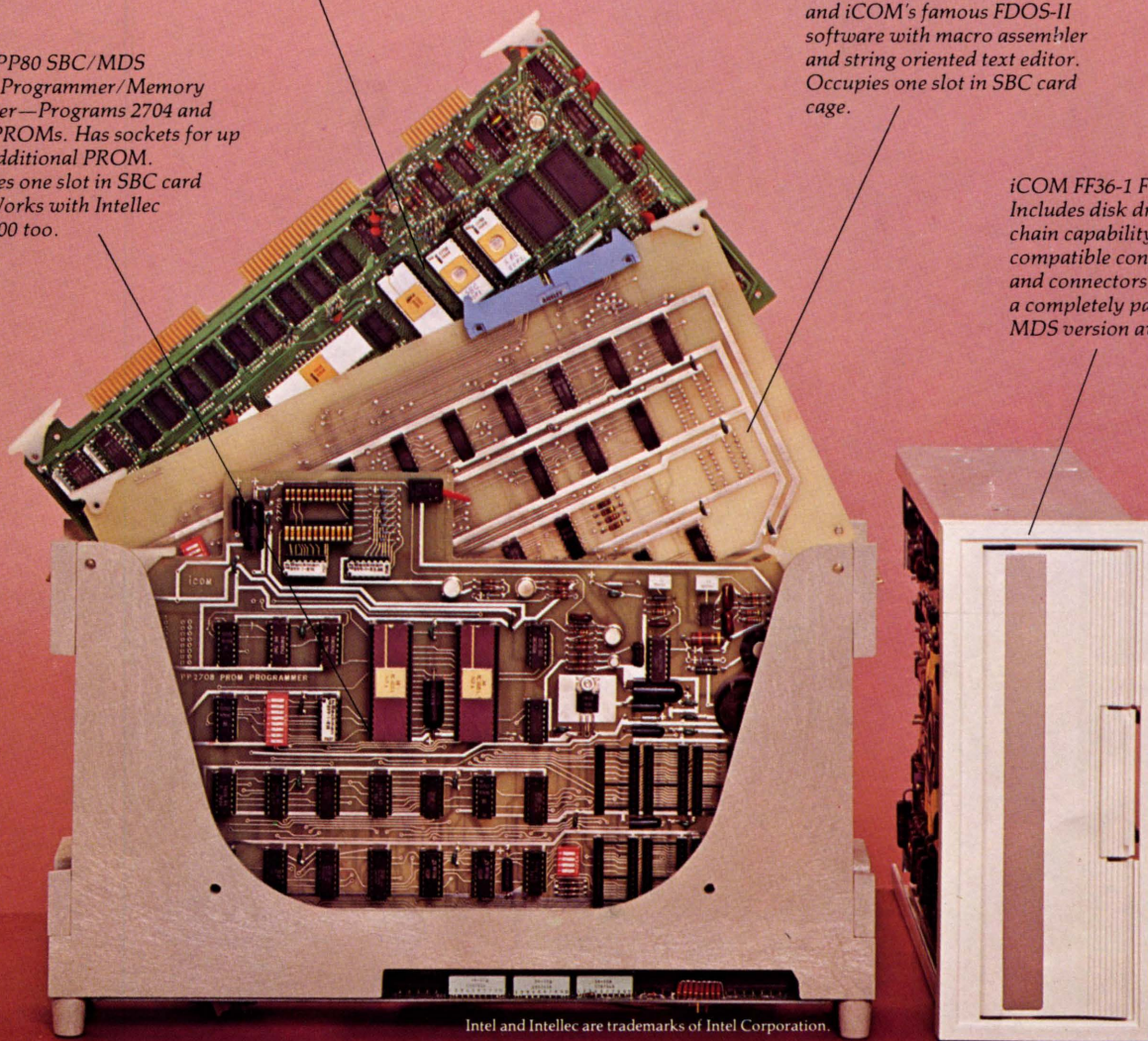
## Just introduce it to these swinging **iCOM Microperipherals.**<sup>TM</sup>

Intel's SBC80/10 Single Board  
Computer and Card Cage

iCOM PP80 SBC/MDS  
PROM Programmer/Memory  
Expander—Programs 2704 and  
2708 EPROMs. Has sockets for up  
to 8K additional PROM.  
Occupies one slot in SBC card  
cage. Works with Intellec  
MDS-800 too.

iCOM 360-56 SBC80/10 Interface  
card—Interfaces iCOM Frugal  
Floppy<sup>TM</sup> to the Intel SBC80/10.  
Includes software driver PROM  
and iCOM's famous FDOS-II  
software with macro assembler  
and string oriented text editor.  
Occupies one slot in SBC card  
cage.

iCOM FF36-1 Frugal Floppy<sup>TM</sup>—  
Includes disk drive with daisy  
chain capability, proven IBM  
compatible controller, all cables  
and connectors. Also available as  
a completely packaged system.  
MDS version available, too.



Intel and Intellec are trademarks of Intel Corporation.

So you have a computer on a board.  
Now what? iCOM has the answers with  
two essential Microperipherals.

First, our Frugal Floppy<sup>TM</sup> with disk  
drive, controller and SBC80/10 interface,  
for just \$1495 complete. Includes our  
famous FDOS-II software with super  
features, such as named variable length

files, autofile create open and close,  
multiple merge and delete—and more.

Second, our PROM Programmer/  
Memory Expander for 2704 and 2708  
EPROMs. Just \$395 including 1K ROM  
resident programming firmware.  
Room for 8K of additional PROM, too.

So call iCOM today.

**MICROPERIPHERALS<sup>TM</sup>**  
**iCOM**

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