

iSBC 300 32K-BYTE RAM EXPANSION MODULE iSBC 340 16K-BYTE EPROM/ROM EXPANSION MODULE

On-board memory expansion for iSBC 86/12A Single Board Computer

iSBC 300 module provides 32K bytes of dual port dynamic RAM and plugs directly into the iSBC 86/12A board

iSBC 340 module provides sockets for up to 16K bytes of additional EPROM/ROM and plugs directly into the iSBC 86/12A board

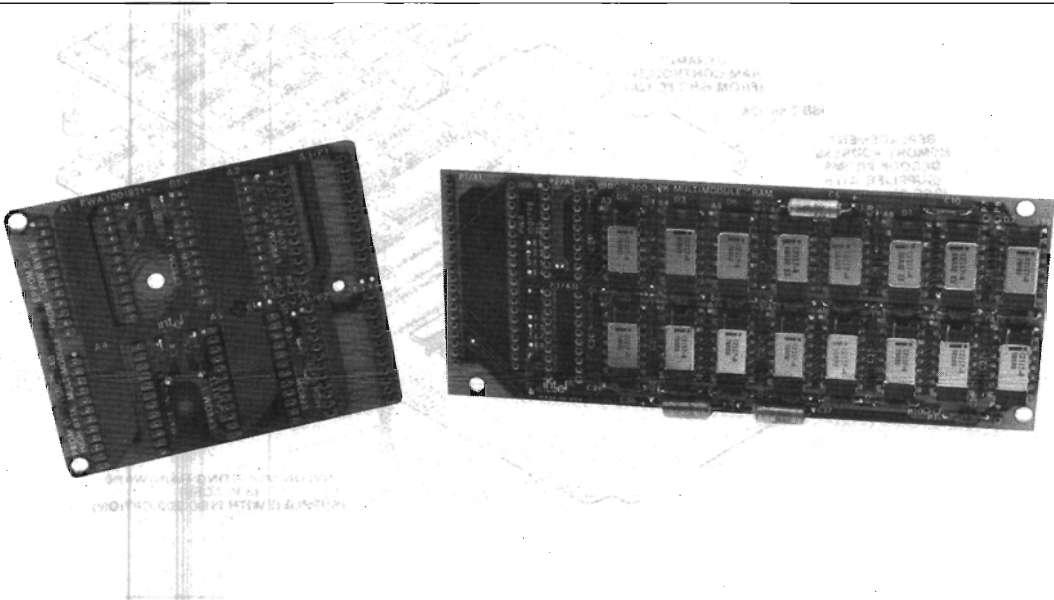
On-board memory expansion eliminates MULTIBUS system bus latency and increases system throughput

Low power requirements

Simple, reliable mechanical and electrical interconnection

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The iSBC 300 32K-byte RAM expansion module and the iSBC 340 16K-byte EPROM/ROM expansion module provide simple, low cost expansion of the memory complement available on the iSBC 86/12A single board computer. Each module utilized individually or together can double the iSBC 86/12A board's on-board RAM and EPROM memory capacity. The iSBC 300 32K-byte RAM expansion module and the iSBC 340 16K-byte EPROM/ROM expansion module options for the iSBC 86/12A board offer system designers a new level of flexibility in defining and implementing Intel® single board computer systems. These options allow the systems designer to double the memory complement of an iSBC 86/12A board with a minimum of system implications. Because they expand the memory configuration on-board, they can be accessed as quickly as the existing iSBC 86/12A memory by eliminating the need for accessing the additional memory via the MULTIBUS system bus. With the iSBC 86/12A board mounted in the top slot of an iSBC 604 or iSBC 614 cardcage, sufficient clearance exists for mounting both the iSBC 300 and/or the iSBC 340 expansion module option(s). If the iSBC 86/12A board is inserted into some other slot, the combination of boards will physically (but not electrically) occupy two cardcage slots. Incremental power required by the options is minimal; for instance, only 305 mW is needed for the iSBC 300 RAM expansion module.



FUNCTIONAL DESCRIPTION

iSBC 300 32K-Byte Expansion Module

The iSBC 300 board measures 7.75" by 2.35" and mounts above the RAM area on the iSBC 86/12A single board computer. It expands the iSBC 86/12A board's on-board dual port RAM capacity from 32K bytes to 64K bytes. The iSBC 300 module contains sixteen 16K-byte dynamic RAM devices, sockets for the Intel® 8202 Dynamic RAM Controller and memory interface latching. To install the iSBC 300 module, the latches and controller from the iSBC 86/12A board are removed and inserted into the sockets on the iSBC 300 module. The add-on board is then mounted onto the iSBC 86/12A board. Pins extending from the controller's and latches' sockets mate with the devices' sockets underneath (see Figure 1). Additional pins mate to supply power and other signals to complete the electrical interface. The module is then secured at three additional points with nylon hardware to insure the mechanical security of the assembly.

To complete the installation, two socketed PROMs are replaced on the iSBC 86/12A board with those supplied with the iSBC 300 kit. These are the on-board memory and MULTIBUS address decode PROMs which allow the iSBC 86/12A board logic to recognize its expanded on-board memory complement.

iSBC 340 16K-Byte Expansion Module

The iSBC 340 module expands the iSBC 86/12A Single Board Computer's on-board EPROM capacity from 16K bytes to 32K bytes. It measures 3.3" by 2.8" and consists of a PC board with six 24-pin special sockets. Two of the sockets have extended pins which mate with two of the EPROM sockets on the iSBC 86/12A board. Two of the EPROMs which would have been inserted on the iSBC 86/12A board are then reinserted in the iSBC 340 module. Additional pins also mate for bringing chip selects for the remaining EPROM devices (see Figure 2). The mechanical interface is similar to that used on the iSBC 300 RAM module and consists of two additional mounting holes and the necessary mounting hardware.

The iSBC 340 module supports Intel® 2732 EPROM or 2332A ROMs as supplied by Intel. One section of the iSBC 86/12A on-board memory and MULTIBUS address decode PROMs (the same decode PROMs mentioned for the iSBC 300 module) is already preprogrammed to support the iSBC 340 module with Intel® 2732 EPROMs. This section is selected through the EPROM configuration switches on the iSBC 86/12A board. The iSBC 340 board can optionally be configured by the user to support Intel® 2758 or 2716 EPROMs or 2316E ROMs by programming new iSBC 86/12A decode PROMs to support these devices. Necessary documentation and PROM map listings are in the iSBC 86/12A Hardware Reference Manual (order number 9803074-01).

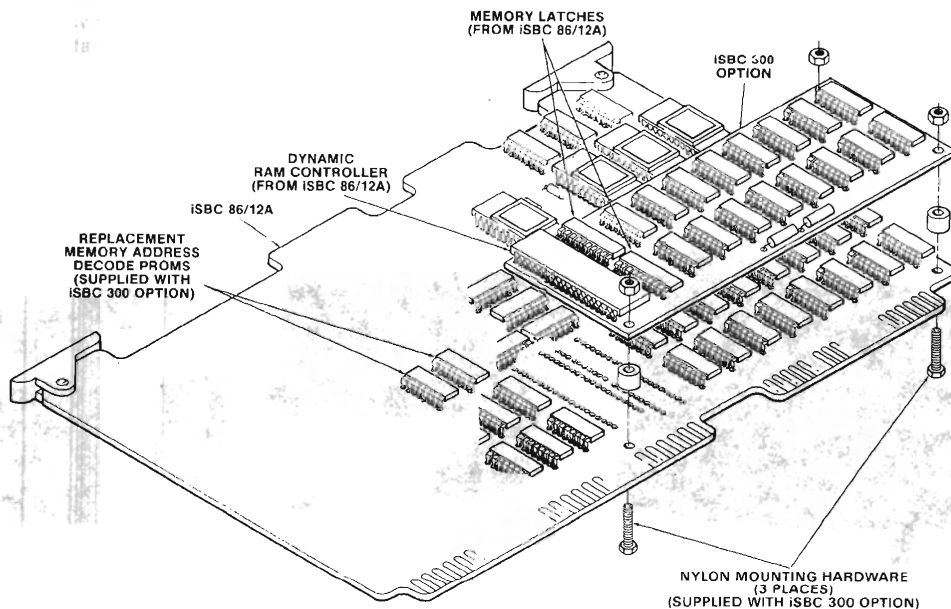


Figure 1. Installation of iSBC 300 RAM Expansion Module on iSBC 86/12A Single Board Computer

SPECIFICATIONS

Word Size

8 or 16 bits (16-bit data paths)

Memory Size

iSBC 300 Module — 32,768 bytes of RAM

iSBC 340 Module — 16,384 bytes (max) of EPROM/ROM

Access Time

iSBC 300 Module — Read: 1 μ sec, write: 1.2 μ sec

iSBC 340 Module — Standard EPROMs (450 nsec): 1 μ sec, fast EPROMs (350 or 390 nsec): 800 nsec

Interface

The interface for the iSBC 300 and iSBC 340 module options is designed only for Intel's iSBC 86/12A Single Board Computer.

Memory Addressing

On-board RAM

CPU Access

iSBC 86/12A board only (32K bytes) — 00000-07FFFH.

iSBC 86/12A board + iSBC 300 module (64K bytes) — 00000-0FFFFH.

MULTIBUS Access — Jumper selectable for any 8K-byte boundary, but not crossing a 128K-byte boundary.

On-board EPROM/ROM

iSBC 86/12A board only (16K-bytes max.) — FF000-FFFFFH (using 2758 EPROMs); FE000-FFFFFH (using 2316E ROMs or 2716 EPROMs); and FC000-FFFFFH (using 2332A ROMs or 2732 EPROMs).

iSBC 86/12A board + iSBC 340 module (32K-bytes max.) — FE000-FFFFFH (using 2758 EPROMs); FC000-FFFFFH (using 2316E ROMs or 2716 EPROMs); F8000-FFFFFH (using 2332A ROMs or 2732 EPROMs).

On-board EPROM/ROM is not accessible via the MULTIBUS interface.

Auxiliary Power/Memory Protection

The low power memory protection option included on the iSBC 86/12A boards supports the iSBC 300 RAM module.

"Local Only" Memory Protection

The iSBC 86/12A Single Board Computer supports dedication of on-board RAM for on-board CPU access only in 8K, 16K, 24K, or 32K-byte segments. Installation of the iSBC 300 option allows protection of 16K, 32K, 48K, or 64K-byte segments.

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Physical Characteristics

	iSBC 300	iSBC 340
Width	5.75"	3.3"
Length	2.35"	2.8"
Height of iSBC 86/12A plus mounted option	.718	.718*
Weight	13 oz.	5 oz.

*Includes EPROM/ROM's

All necessary mounting hardware (nylon, screws, spacers, nuts) are supplied with each kit.

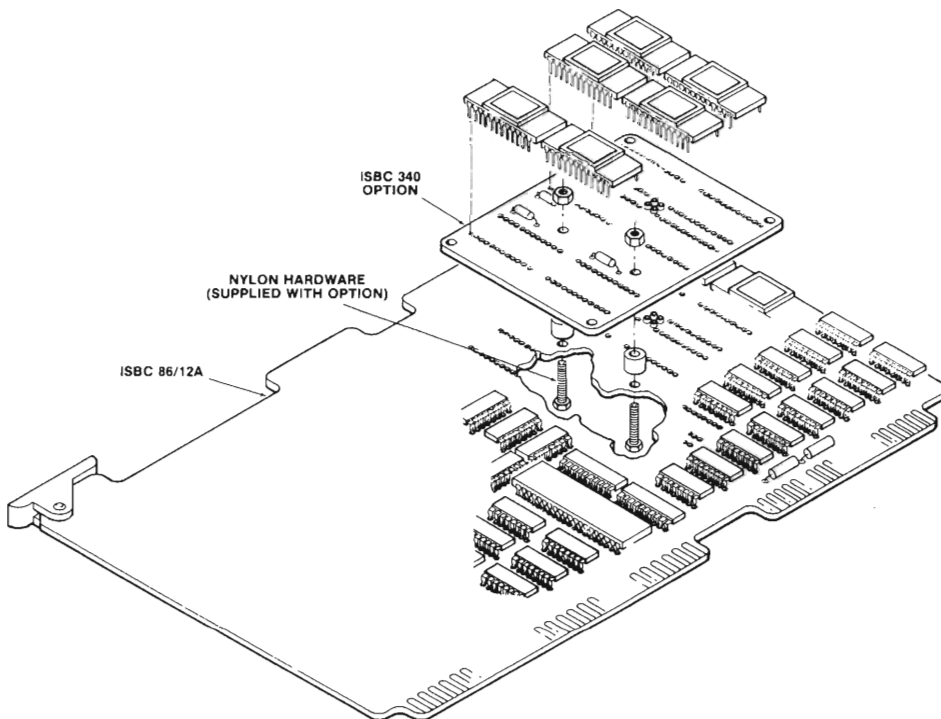


Figure 2. Installation of iSBC 340 EPROM/ROM Option on iSBC 86/12A Single Board Computer

Electrical Characteristics

DC power requirements:

Voltage	iSBC 300	iSBC 340
+5 ±5%	1 mA	120 mA ¹
+12 ±5%	24 mA	—
-12 ±5%	1 mA	—

Note:

1. Loaded with Intel 2732 EPROMs.

Environmental Characteristics

Operating Temperature — 0° to +55°C

Relative Humidity — to 90% (without condensation)

Reference Manuals

All necessary documentation for the iSBC 300 module and iSBC 340 module is included in the iSBC 86/12A Hardware Reference Manual; order #9803074-01. (NOT SUPPLIED)

Manuals may be ordered from any Intel sales representative distributor office or from Intel Literature Department, 3065 Bowers Avenue, Santa Clara, CA 95051.

ORDERING INFORMATION

Part Number	Description
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SBC 300	32K-byte RAM Expansion Module
SBC 340	16K-byte EPROM Expansion Module