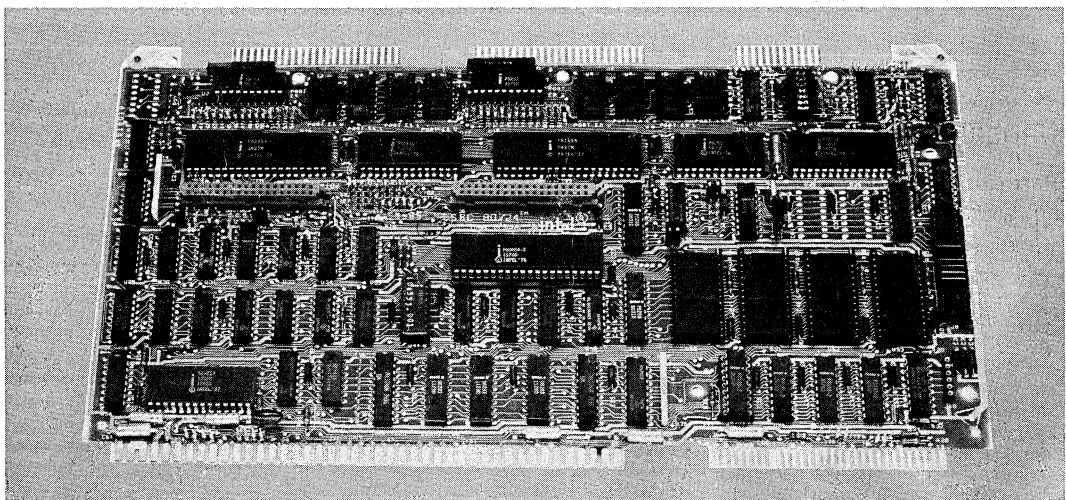




## iSBC™ 80/24 (or pSBC 80/24\*) SINGLE BOARD COMPUTER

- Upward compatible with iSBC 80/20-4 Single Board Computer
- 8085A-2 CPU operating at 4.8 or 2.4 MHz
- Two iSBX™ bus connectors for iSBX MULTIMODULE™ board expansion
- 4K bytes of static read/write memory expandable on-board to 8K bytes using the iSBC 301 MULTIMODULE Board
- Sockets for up to 32K bytes of read only memory
- 48 programmable parallel I/O lines with sockets for interchangeable line drivers and terminators
- Programmable synchronous/asynchronous RS232C compatible serial interface with software selectable baud rates
- Full MULTIBUS® control logic for multimaster configurations and system expansion
- Two programmable 16-bit BCD or binary timers/event counters
- 12 levels of programmable interrupt control
- Auxiliary power bus, memory protect, and power-fail interrupt control logic provided for battery backup RAM requirements

The Intel® iSBC 80/24 Single Board Computer is a member of Intel's complete line of OEM microcomputer systems which take full advantage of Intel's LSI technology to provide economical, self-contained computer-based solutions for OEM applications. The iSBC 80/24 board is a complete computer system on a single 6.75 x 12.00-inch printed circuit card. The CPU, system clock, iSBX bus interface, read/write memory, read only memory sockets, I/O ports and drivers, serial communications interface, priority interrupt logic, and programmable timers all reside on the board. Full MULTIBUS interface logic is included to offer compatibility with the Intel OEM Microcomputer Systems family of Single Board Computers, expansion memory options, digital and analog I/O expansion boards, and peripheral and communications controllers.



\*Same product, manufactured by Intel Puerto Rico, Inc.

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## FUNCTIONAL DESCRIPTION

### Central Processing Unit

Intel's powerful 8-bit N-channel 8085A-2 CPU fabricated on a single LSI chip, is the central processor for the iSBC 80/24 board operating at either 4.8 or 2.4 MHz (jumper selectable). The 8085A-2 CPU is directly software compatible with the Intel 8080A CPU. The 8085A-2 contains six 8-bit general purpose registers and an accumulator. The six general purpose registers may be addressed individually or in pairs, providing single and double precision operators. Minimum instruction execution time is 826 nanoseconds. A block diagram of the iSBC 80/24 functional components is shown in Figure 1.

### MULTIMODULE Board Expansion

The new iSBX bus interface brings an entirely new dimension to system design offering incremental on-board expansion at minimal cost. Two iSBX bus MULTIMODULE connectors are provided for plug-in expansion of any iSBX MULTIMODULE board. The iSBX MULTIMODULE concept provides the ability to adapt quickly to new technology, the economy of buying only what is needed, and the ready availability of a spectrum of functions for greater application potential. iSBX boards are

available to provide expansion equivalent to the I/O available on the iSBC 80/24 board or the user may configure entirely new functionality, such as math, directly on board. The iSBX 350 Parallel I/O MULTIMODULE board provides 24 I/O lines using an 8255A Programmable Peripheral Interface. Therefore, two iSBX 350 modules together with the iSBC 80/24 board may offer 96 lines of programmable I/O. Alternately, a serial port may be added using the iSBX 351 Serial I/O MULTIMODULE board and math may be configured on-board with the iSBX 332 Floating Point Math or iSBX 331 Fixed/Floating Point Math MULTIMODULE board. Future iSBX products are also planned. The iSBX MULTIMODULE board is a logical extension of the on-board programmable I/O and is accessed by the iSBC 80/24 single board computer as common I/O port locations. The iSBX board is coupled directly to the 8085A-2 CPU and therefore becomes an integral element of the iSBC 80/24 single board computer providing optimum performance. In addition, RAM memory capacity may be expanded to 8K bytes using the iSBC 301 4K Byte RAM MULTIMODULE board. All MULTIMODULE boards ranging from the iSBC 301 module to the iSBX modules offer incremental expansion, optimum performance, and minimal cost.

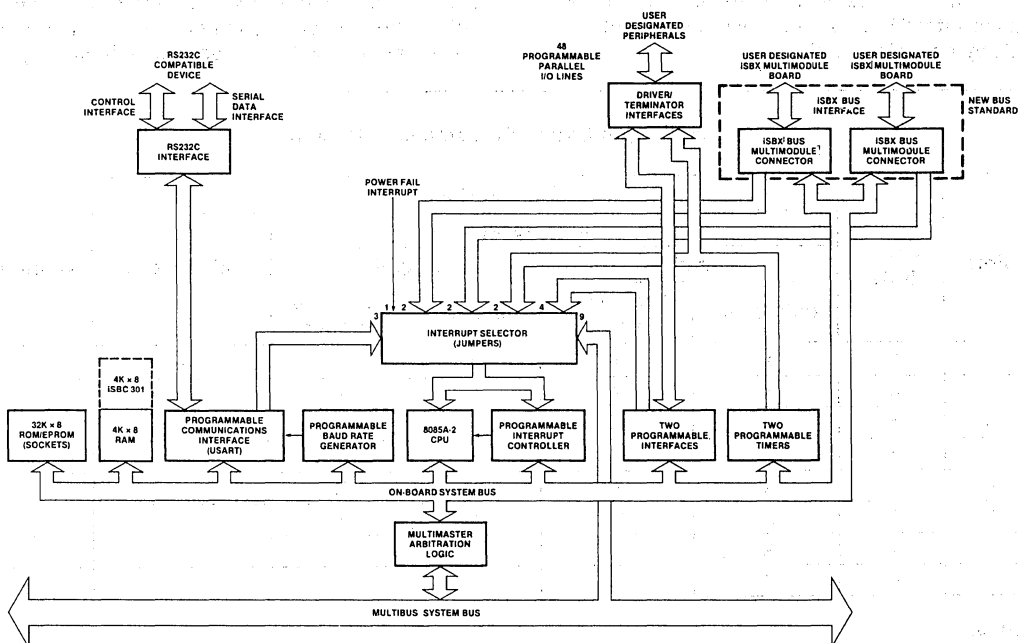


Figure 1. iSBC 80/24 Single Board Computer Block Diagram

## Memory Addressing

The 8085A-2 has a 16-bit program counter which allows direct addressing of up to 64K bytes of memory. An external stack, located within any portion of read/write memory, may be used as a last-in/first-out storage area for the contents of the program counter, flags, accumulator, and all of the six general purpose registers. A 16-bit stack pointer controls the addressing of this external stack. This stack provides subroutine nesting bounded only by memory size.

## Memory Capacity

The ISBC 80/24 board contains 4K bytes of static read/write memory using Intel 8185-2 RAMs. In addition, the on-board RAM capacity may be expanded to 8K bytes with the ISBC 301 4K byte RAM MULTIMODULE board. All RAM read and write operations are performed at maximum processor speed. Power for the on-board RAM may be provided on an auxiliary power bus, and memory protect logic is included for RAM battery backup requirements.

Four sockets are provided for up to 32K bytes of nonvolatile read only memory on the ISBC 80/24 board. EPROM may be added in 1K byte increments up to 4K bytes (using Intel 2708 or 2758); in 2K byte increments up to 8K bytes (using Intel 2716); in 4K byte increments up to 16K bytes (using Intel 2732); or in 8K byte increments up to 32K bytes (using Intel 2764).

## Parallel I/O Interface

The ISBC 80/24 board contains 48 programmable parallel I/O lines implemented using two Intel 8255A Programmable Peripheral Interfaces. The system software is used to configure the I/O lines in any combination of unidirectional input/output and bidirectional ports as indicated in Table 1. Therefore, the I/O interface may be customized to meet specific peripheral requirements. In order to take full advantage of the large number of possible I/O configurations, sockets are provided for interchangeable I/O line drivers and terminators. Hence, the flexibility of the I/O interface is further enhanced by the capability of selecting the appropriate combination of optional line drivers and terminators to provide the required sink current, polarity, and drive/termination characteristics for each application. The 48 programmable I/O lines and signal ground lines are brought out to two 50-pin edge connectors that mate with flat, woven, or round cables.

## Serial I/O Interface

A programmable communications interface using the Intel 8251A Universal Synchronous/Asynchronous Receiver/Transmitter (USART) is contained on the ISBC 80/24 board. A software selectable baud rate generator provides the USART with all common communication frequencies. The USART can be programmed by the system software to select the desired asynchronous or synchronous serial data transmission technique (including IBM

Table 1. Input/Output Port Modes of Operation

Port	Lines (qty)	Mode of Operation				Control	
		Unidirectional					Bidirectional
		Input		Output			
		Unlatched	Latched & Strobed	Latched	Latched & Strobed		
1	8	X	X	X	X		
2	8	X	X	X	X		
3	4	X		X		X <sup>1</sup>	
	4	X		X		X <sup>1</sup>	
4	8	X	X	X	X	X	
5	8	X	X	X	X		
6	4	X		X		X <sup>2</sup>	
	4	X		X		X <sup>2</sup>	

### NOTES:

- Part of port 3 must be used as a control port when either port 1 or port 2 are used as a latched and strobed input or a latched and strobed output port or port 1 is used as a bidirectional port.
- Part of port 6 must be used as a control port when either port 4 or port 5 are used as a latched and strobed input or a latched and strobed output port or port 4 is used as a bidirectional port.

Bi-Sync). The mode of operation (i.e. synchronous or asynchronous), data format, control character format, parity, and baud rate are all under program control. The 8251A provides full duplex, double buffered transmit and receive capability. Parity, overrun, and framing error detection are all incorporated in the USART. The RS232C compatible interface, in conjunction with the USART, provides a direct interface to RS232C compatible terminals, cassettes, and asynchronous and synchronous modems. The RS232C command lines, serial data lines, and signal ground line are brought out to a 26-pin edge connector that mates with RS232C compatible flat or round cable.

## Multimaster Capability

The iSBC 80/24 board is a full computer on a single board with resources capable of supporting a large variety of OEM system requirements. For those applications requiring additional processing capacity and the benefits of multiprocessing (i.e. several CPUs and/or controllers logically sharing system tasks through communication over the system bus), the iSBC 80/24 board provides full MULTIBUS arbitration control logic. This control logic allows up to three iSBC 80/24 boards or other bus masters to share the system bus in serial (daisy chain) priority fashion, and up to 16 masters to share the MULTIBUS system bus with the addition of an external priority network. The MULTIBUS arbitration logic operates synchronously with a MULTIBUS clock (provided by the iSBC 80/24 board or optionally connected directly to the MULTIBUS clock) while data is transferred via a handshake between the master and slave modules. This allows different speed controllers to share resources on the same bus since transfers via the bus proceed asynchronously. Thus, transfer speed is dependent on transmitting and receiving devices only. This design provides slow master modules from being handicapped in their attempts to gain control of the bus, but does not restrict the speed at which faster modules can transfer data via the same bus. The most obvious applications for the master-slave capabilities of the bus are multiprocessor configurations, high speed direct memory access (DMA) operations, and high speed peripheral control, but are by no means limited to these three.

## Programmable Timers

The iSBC 80/24 board provides three independent, fully programmable 16-bit interval timers/event counters utilizing the Intel 8253 Programmable In-

terval Timer. Each counter is capable of operating in either BCD or binary modes. Two of these timers/counters are available to the systems designer to generate accurate time intervals under software control. Routing for the outputs and gate/trigger inputs of two of these counters is jumper selectable. The outputs may be independently routed to the 8259A Programmable Interrupt Controller, to the I/O line drivers associated with the 8255A Programmable Peripheral Interface, or may be routed as inputs to the 8255A chip. The gate/trigger inputs may be routed to I/O terminators associated with the 8255A or as output connections from the 8255A. The third interval timer in the 8253 provides the programmable baud rate generator for the RS232C USART serial port. In utilizing the iSBC 80/24 board, the systems designer simply configures, via software, each timer independently to meet system require-

**Table 2. Programmable Timer Functions**

Function	Operation
Interrupt on terminal count	When terminal count is reached, an interrupt request is generated. This function is extremely useful for generation of real-time clocks.
Programmable one-shot	Output goes low upon receipt of an external trigger edge or software command and returns high when terminal count is reached. This function is retriggerable.
Rate generator	Divide by N counter. The output will go low for one input clock cycle, and the period from one low-going pulse to the next is N times the input clock period.
Square-wave rate generator	Output will remain high until one-half the count has been completed, and go low for the other half of the count.
Software triggered strobe	Output remains high until software loads count (N). N counts after count is loaded, output goes low for one input clock period.
Hardware triggered strobe	Output goes low for one clock period N counts after rising edge on counter trigger input. The counter is retriggerable.
Event counter	On a jumper selectable basis, the clock input becomes an input from the external system. CPU may read the number of events occurring after the counting "window" has been enabled or an interrupt may be generated after N events occur in the system.

ments. Whenever a given time delay or count is needed, software commands to the programmable timers/event counters select the desired function. Seven functions are available, as shown in Table 2. The contents of each counter may be read at any time during system operation with simple read operations for event counting applications, and special commands are included so that the contents of each counter can be read "on the fly".

## Interrupt Capability

The ISBC 80/24 board provides vectoring for 12 interrupt levels. Four of these levels are handled directly by the interrupt processing capability of the 8085A-2 CPU and represent the four highest priority interrupts of the ISBC 80/24 board. Requests are routed to the 8085A-2 interrupt inputs—TRAP, RST 7.5, RST 6.5, and RST 5.5 (in decreasing order of priority), each of which generates a call instruction to a unique address (TRAP: 24H; RST 7.5: 3CH; RST 6.5: 34H; and RST 5.5: 2CH). An 8085A-2 JMP instruction at each of these addresses then provides linkage to interrupt service routines located independently anywhere in memory. All interrupt inputs with the exception of the trap interrupt may be masked via software. The trap interrupt should be used for conditions such as power-down sequences which require immediate attention by the 8085A-2 CPU. The Intel 8259A Programmable Interrupt Controller (PIC) provides vectoring for the next eight interrupt levels. As shown in Table 3, a selection of four priority processing modes is available to the systems designer for use in designing request processing configurations to match system requirements. Operating mode and priority assignments may be reconfigured dynamically via software at any time during system operation. The PIC accepts interrupt requests from the programmable parallel and serial I/O interfaces, the programmable timers, the system bus, ISBX bus, or directly from peripheral equipment. The PIC then determines which of the incoming requests is of the highest priority, determines whether this request is of higher priority than the level currently being serviced, and, if appropriate, issues an interrupt to the CPU. Any combination of interrupt levels may be masked, via software, by storing a single byte in the interrupt mask register of the PIC. The PIC generates a unique memory address for each interrupt level. These addresses are equally spaced at intervals of 4 or 8 (software selectable) bytes. This 32 or 64-byte block may be located to begin at any 32 or 64-byte boundary in the 65,536-byte memory space. A single 8085A-2 JMP instruction at each of these addresses then provides linkage to locate each interrupt service routine independently anywhere in memory.

**Table 3. Programmable Interrupt Modes**

Mode	Operation
Fully nested	Interrupt request line priorities fixed at 0 as highest, 7 as lowest.
Autorotating	Equal priority. Each level, after receiving service, becomes the lowest priority level until next interrupt occurs.
Specific priority	System software assigns lowest priority level. Priority of all other levels based in sequence numerically on this assignment.
Polled	System software examines priority-encoded system interrupt status via interrupt status register.

## Interrupt Request Generation

Interrupt requests may originate from 23 sources. Two jumper selectable interrupt requests can be generated by each ISBX MULTIMODULE board. Two jumper selectable interrupt requests can be automatically generated by each programmable peripheral interface when a byte of information is ready to be transferred to the CPU (i.e., input buffer is full) or a byte of information has been transferred to a peripheral device (i.e., output buffer is empty). Three jumper selectable interrupt requests can be automatically generated by the USART when a character is ready to be transferred to the CPU (i.e., receiver channel buffer is full), a character is ready to be transmitted (i.e., the USART is ready to accept a character from the CPU), or when the transmitter is empty (i.e., the USART has no character to transmit). A jumper selectable request can be generated by each of the programmable timers. Nine interrupt request lines are available to the user for direct interface to user designated peripheral devices via the MULTIBUS system bus. A power-fail signal can also be selected as an interrupt source.

## Power-Fail Control

A power-fail interrupt may be detected through the AC-low signal generated by the power supply. This signal may be configured to interrupt the 8085A-2 CPU to initiate an orderly power down instruction sequence.

## MULTIBUS System Expansion Capabilities

Memory and I/O capacity may be expanded and additional functions added using Intel MULTIBUS system compatible expansion boards. Memory may be expanded to 65,536 bytes by adding user specified combinations of RAM boards, EPROM boards, or combination boards. Input/output capa-

city may be increased by adding digital I/O and analog I/O expansion boards. Mass storage capability may be achieved by adding single or double density diskette or hard disk controllers as subsystems. Expanded communication needs can be handled by communication controllers. Modular expandable backplanes and card cages are available to support multiboard systems.

### Real-Time Software

The iRMX™ 80 executive, which contains all major real-time facilities including priority-based system resource allocation, intertask communication and control, interrupt driven control for standard I/O devices, and interrupt handling, occupies 2K bytes of memory which can be stored on-board in EPROM. Optional linkable and relocatable modules for console control (CRT or TTY), disk file system, and analog subsystems are provided with the iRMX 80 package. These facilities eliminate the need for users to design and implement application specific executives, greatly simplifying application design and reducing development time and risk.

### System Development Capability

The development cycle of ISBC 80/24-based products may be significantly reduced using Intel's system development tools available today. The Intellec Series II family of compatible microcomputer development systems provides a range of capability from a low cost disk-based edit debug workstation to a high performance, fully compatible hard-disk-based software development system. Also, a unique in-circuit emulator (ICE-85A) option provides the capability of developing and debugging software directly on the iSBC 80/24 board.

### Programming Capability

**PL/M-80**—Intel's high level system programming language, PL/M, is also available as a resident

Intellec microcomputer development system option. PL/M provides the capability to program in a natural, algorithmic language and eliminates the need to manage register usage or allocate memory. PL/M programs can be written in a much shorter time than assembly language programs.

**FORTRAN-80**—For applications requiring computational and formatted I/O capabilities, the ANSI 77 standard high level FORTRAN-80 programming language is available as a resident option of the Intellec system. The FORTRAN compiler produces relocatable object code that may be easily linked with PL/M or assembly language program modules. In addition, the iSBC 801 FORTRAN-80 Run-Time Package is a complete, ready-to-use set of linkable object modules which are fully compatible with iRMX 80 systems. The modules, when combined with the FORTRAN-80 coded application, provide the appropriate interfaces to the disk file and terminal I/O of iRMX 80, and to the iSBC 310A Math Unit for applications requiring high speed math.

**BASIC-80**—A high level language interpreter is available with extended disk capabilities which operates under the iRMX 80 Real-Time Multitasking Executive and translates BASIC-80 source programs into an internally executable form. This language interpreter, provided as a set of linkable object modules, is ideally suited to the OEM who requires a pass through programming language. The BASIC-80 programs may be created, stored, and interpreted on the iSBC 80-based systems using the iSBC 802 BASIC-80 Configurable iRMX 80 Disk-Based Interpreter. The iSBC 802 Interpreter has a complete ready-to-use set of linkable object modules which are fully compatible with Intel's iRMX 80 Real-Time Multitasking Executive Software. The modules provide interfaces to disk file and terminal I/O, software floating point, or interface to other routines provided by the user.

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## SPECIFICATIONS

### Word Size

**Instruction**—8, 16, or 24 bits

**Data**—8 bits

### Cycle Time

#### Basic Instruction Cycle

826 nsec (4.84 MHz operating frequency)

1.65  $\mu$ sec (2.42 MHz operating frequency)

#### NOTE:

Basic instruction cycle is defined as the fastest instruction (i.e., four clock cycles).

### Memory Addressing

#### On-Board EPROM

0-0FFF using 2708, 2758 (1 wait state)

0-1FFF using 2716 (1 wait state)

0-3FFF using 2732 (1 wait state)  
using 2732A (no wait states)

0-7FFF using 2764A (no wait states)

#### On-Board RAM

3000-3FFF with no RAM expansion

2000-3FFF with optional RAM (iSBC 301 board)

#### NOTE:

Default configuration—may be reconfigured to top end of any 16K boundary.

## Memory Capacity

### On-Board EPROM

32K bytes (sockets only)

May be added in 1K (using Intel 2708 or 2758), 2K (using Intel 2716), 4K (using Intel 2732), or 8K (using Intel 2764) byte increments.

### On-Board RAM

4K bytes (8K bytes using iSBC 301 4K byte RAM MULTIMODULE Board)

### Off-Board Expansion

Up to 64K bytes using user specified combinations of RAM, ROM, and EPROM.

Up to 128K bytes using bank select control via I/O port and 2 jumper options.

May be disabled using PROM ENABLE via I/O port and jumper option, resulting in off-board RAM overlay capability.

## I/O Addressing

### On-Board Programmable I/O

Device	I/O Address
8255A No. 1	
Port A	E4
Port B	E5
Port C	E6
Control	E7
8255A No. 2	
Port A	E8
Port B	E9
Port C	EA
Control	EB
8251A	
Data	EC, EE
Control	ED, EF
iSBX MULTIMODULE J5	
MCS0	C0-C7
MCS1	C8-CF
iSBX MULTIMODULE J6	
MCS0	F0-F7
MCS1	F8-FF

## I/O Capacity

**Parallel**—48 programmable lines

**Serial**—1 transmit, 1 receive, 1 SID, 1 SOD

**iSBX MULTIMODULE** — 2 iSBX MULTIMODULE Boards

## Serial Communications Characteristics

**Synchronous**—5-8 bit characters; internal or external character synchronization; automatic sync insertion

**Asynchronous**—5-8 bit characters; break character generation; 1, 1½, or 2 stop bits; false start bit detectors

### Baud Rates

Output Frequency in kHz	Baud Rate (Hz)	
	Synchronous	Asynchronous
153.6	—	± 16 ± 64 9600 2400
76.8	—	4800 1200
38.4	38400	2400 600
19.2	19200	1200 300
9.6	9600	600 150
4.8	4800	300 75
2.4	2400	150 —
1.76	1760	110 —

#### NOTE:

Frequency selected by I/O write of appropriate 16-bit frequency factor to baud rate register.

**Register Address** (hex notation, I/O address space)

DE Baud rate register

#### NOTE:

Baud rate factor (16 bits) is loaded as two sequential output operations to same address (DE<sub>H</sub>).

## Interrupts

**Addresses for 8259A Registers** (hex notation, I/O address space)

DA or D8 Interrupt request register

DA or D8 In-service register

DB or D9 Mask register

DA or D8 Command register

DB or D9 Block address register

DA or D8 Status (polling register)

#### NOTE:

Several registers have the same physical address; sequence of access and one data bit of control word determine which register will respond.

Interrupt levels routed to 8085A-2 CPU automatically vector the processor to unique memory locations:

Interrupt Input	Memory Address	Priority	Type
TRAP	24	Highest	Non-maskable
RST 7.5	3C	↓ Lowest	Maskable
RST 6.5	34		Maskable
RST 5.5	2C		Maskable

## Timers

**Register Addresses** (hex notation, I/O address space)

DF Control register  
 DC Timer 0  
 DD Timer 1  
 DE Timer 2

**NOTE:**

Timer counts loaded as two sequential output operations to same address as given.

## Input Frequencies

Reference: 1.0752 MHz  $\pm$  0.1% (0.930  $\mu$ sec period, nominal)

Event Rate: 1.1 MHz max.

## Output Frequencies/Timing Intervals

Function	Single Timer/Counter		Dual Timer/Counter (Two Timers Cascaded)	
	Min.	Max.	Min.	Max.
Real-Time Interrupt	1.86 $\mu$ sec	60.948 msec	3.72 $\mu$ sec	1.109 hrs
Programmable One-Shot	1.86 $\mu$ sec	60.948 msec	3.72 $\mu$ sec	1.109 hrs
Rate Generator	16.407 Hz	537.61 kHz	0.00025 Hz	268.81 kHz
Square-Wave Rate Generator	16.407 Hz	537.61 kHz	0.00025 Hz	268.81 kHz
Software Triggered Strobe	1.86 $\mu$ sec	60.948 msec	3.72 $\mu$ sec	1.109 hrs
Hardware Triggered Strobe	1.86 $\mu$ sec	60.948 msec	3.72 $\mu$ sec	1.109 hrs

**NOTE:**

Input frequency to timers is 1.0752 MHz (default configuration).

## Interfaces

**MULTIBUS**—All signals TTL compatible

**iSBX Bus**—All signals TTL compatible

**Parallel I/O**—All signals TTL compatible

**Serial I/O**—RS232C compatible, configurable as a data set or data terminal

**Timer**—All signals TTL compatible

**Interrupt Requests**—All TTL compatible

## System Clock (8085A-2 CPU)

4.84 or 2.42 MHz  $\pm$  0.1% (jumper selectable)

## Auxiliary Power

An auxiliary power bus is provided to allow separate power to RAM for systems requiring battery

backup of read/write memory. Selection of this auxiliary RAM power bus is made via jumpers on the board.

## Connectors

Interface	Double-Sided Pins (qty)	Centers (In.)	Mating Connectors*
MULTIBUS System Bus	86	0.156	ELFAB BS1562043PBB Viking 2KH43/9AMK12 Soldered PCB Mount EDAC 337086540201 ELFAB BW1562D43PBB EDAC 337086540202 ELFAB BW1562A43PBB Wire Wrap
Auxiliary Bus	60	0.100	EDAC 345060524802 ELFAB BS1020A30PBB EDAC 345060540201 ELFAB BW1020D30PBB Wire Wrap
iSBX Bus (2)	36	0.100	iSBX 960-5
Parallel I/O (2)	50	0.100	3M 3415-001 Flat Crimp GTE Sylvania 6AD01251A1DD Soldered
Serial I/O	26	0.100	AMP 15837151 EDAC 345026520202 PCB Soldered 3M 3462-0001 AMP 88373-5 Flat Crimp

\*Note: Connectors compatible with those listed may also be used.

## Memory Protect

An active-low TTL compatible memory protect signal is brought out on the auxiliary connector which, when asserted, disables read/write access to RAM memory on the board. This input is provided for the protection of RAM contents during system power-down sequences.

## Line Drivers and Terminators

**I/O Drivers**—The following line drivers and terminators are all compatible with the I/O driver sockets on the iSBC 80/24 Board:

Driver	Characteristic	Sink Current (mA)
7438	I, OC	48
7437	I	48
7432	NI	16
7426	I, OC	16
7409	NI, OC	16
7408	NI	16
7403	I, OC	16
7400	I	16

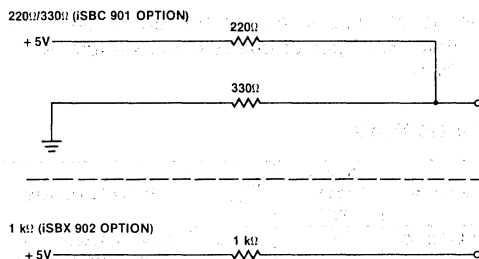
**NOTE:**

I = inverting; NI = non-inverting; OC = open collector.

Ports E4 and E8 have 32 mA totem-pole drivers and 1K terminators.

**I/O Terminators**—220 $\Omega$ /330 $\Omega$  divider or 1 k $\Omega$  pullup





## Bus Drivers

Function	Characteristic	Sink Current (mA)
Data	Tri-State	32
Address	Tri-State	32
Commands	Tri-State	32

## Physical Characteristics

**Width**—12.00 in. (30.48 cm)

**Height**—6.75 in. (17.15 cm)

**Depth**—0.50 in. (1.27 cm)

**Weight**—12.64 oz. (354 gm)

## Electrical Characteristics

### DC Power Requirements

Configuration	Current Requirements			
	V <sub>CC</sub> = +5V ±5% (max)	V <sub>DD</sub> = +12V ±5% (max)	V <sub>BB</sub> = -5V ±5% (max)	V <sub>AA</sub> = -12V ±5% (max)
Without EPROM <sup>1</sup>	3.34A	40 mA	—	20 mA
RAM Only <sup>2</sup>	0.14A	—	—	—
With iSBC 530 <sup>3</sup>	3.34A	140 mA	—	120 mA
With 4K EPROM <sup>4</sup> (using 2708)	3.74A	300 mA	180 mA	20 mA
With 4K EPROM <sup>4</sup> (using 2758)	4.43A	40 mA	—	20 mA
With 8K EPROM <sup>4</sup> (using 2716)	4.43A	40 mA	—	20 mA
With 16K EPROM <sup>4</sup> (using 2732)	4.71A	40 mA	—	20 mA
With 32K EPROM <sup>4</sup> (using 2764)	4.71A	40 mA	—	20 mA

#### NOTES:

- Does not include power for optional EPROM, I/O drivers, and I/O terminators.
- RAM chips powered via auxiliary power bus.

- Does not include power for optional EPROM, I/O drivers, and I/O terminators. Power for iSBC 530 Adapter is supplied via serial port connector.
- Includes power required for four EPROM chips, and I/O terminators installed for 16 I/O lines; all terminator inputs low.

## Environmental Characteristics

**Operating Temperature**—0°C to 55°C

## Reference Manual

**142648-001**—iSBC 80/24 Single Board Computer Hardware Reference Manual (NOT SUPPLIED)

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

## ORDERING INFORMATION

Part Number	Description
SBC 80/24	Single Board Computer