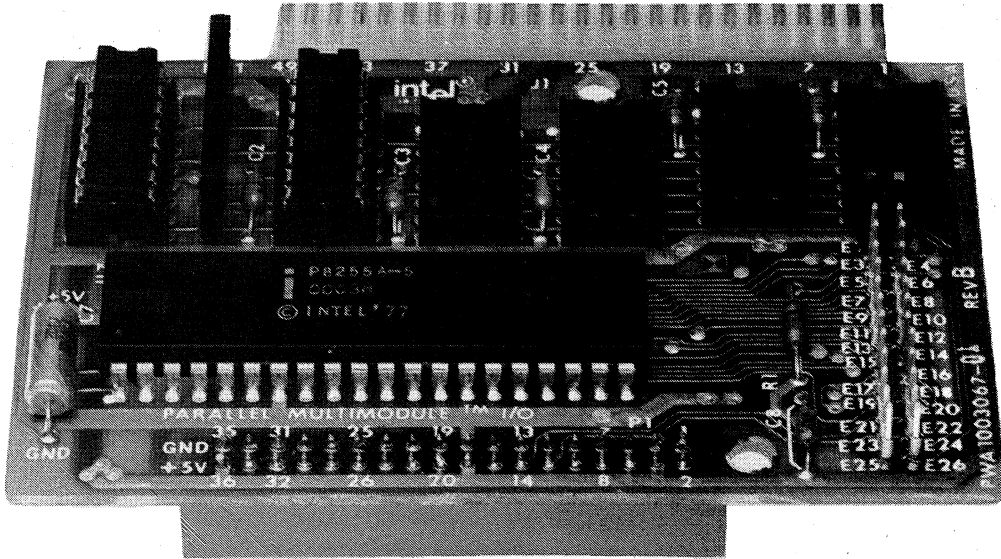# intel®

iSBX™ 350
PARALLEL I/O MULTIMODULE™ BOARD

- **iSBX™ Bus Compatible I/O Expansion**
- **24 Programmable I/O Lines with Sockets for Interchangeable Line Drivers and Terminators**
- **Three Jumper Selectable Interrupt Request Sources**

- **Accessed as I/O Port Locations**
- **Single +5V Low Power Requirement**
- **iSBX Bus On-Board Expansion Eliminates MULTIBUS® System Bus Latency and Increases System Throughput**

The Intel iSBX 350 Parallel I/O MULTIMODULE Board is a member of Intel's line of iSBX bus compatible MULTIMODULE products. The iSBX MULTIMODULE board plugs directly into any iSBX bus compatible host board offering incremental on-board expansion. The iSBX 350 module provides 24 programmable I/O lines with sockets for interchangeable line drivers and terminators. The iSBX board is closely coupled to the host board through the iSBX bus, and as such, offers maximum on-board performance and frees MULTIBUS system traffic for other system resources. In addition, incremental power dissipation is minimal requiring only 1.6 watts (not including optional driver/terminators).

280235–1

FUNCTIONAL DESCRIPTION

Programmable Interface

The iSBX 350 module uses an Intel 8255A-5 Programmable Peripheral Interface (PPI) providing 24 parallel I/O lines. The base-board system software is used to configure the I/O lines in any combination of unidirectional input/output and bidirectional ports 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 driver/termination characteristics for each application. In addition, inverting bidirectional bus drivers (8226) are provided on sockets to allow convenient optional replacement to non-inverting drivers (8216). The 24 programmable I/O lines, signal ground, and +5 volt power (jumper configurable)

are brought to a 50-pin edge connector that mates with flat, woven, or round cable.

Interrupt Request Generation

Interrupt requests may originate from three jumper selectable sources. Two interrupt requests can be automatically generated by the PPI when a byte of information is ready to be transferred to the base board 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). A third interrupt source may originate directly from the user I/O interface (J1 connector).

Installation

The iSBX 350 module plugs directly into the female iSBX connector on the host board. The module is then secured at one additional point with nylon hardware to insure the mechanical security of the assembly (see Figure 1 and Figure 2).
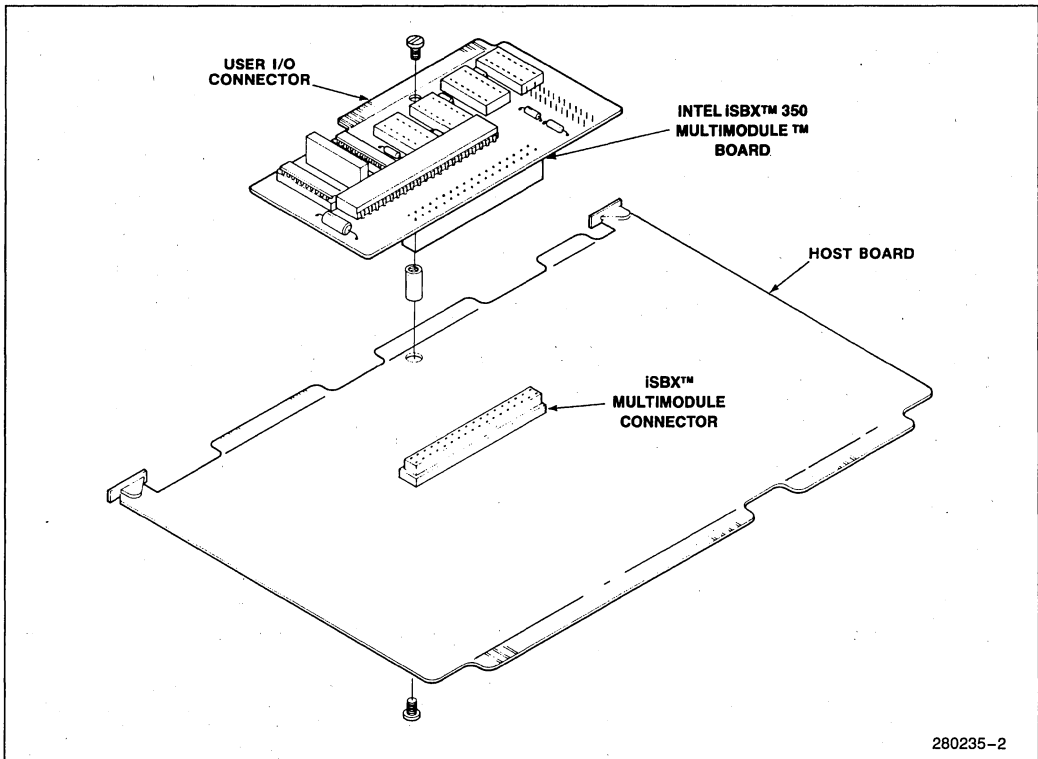

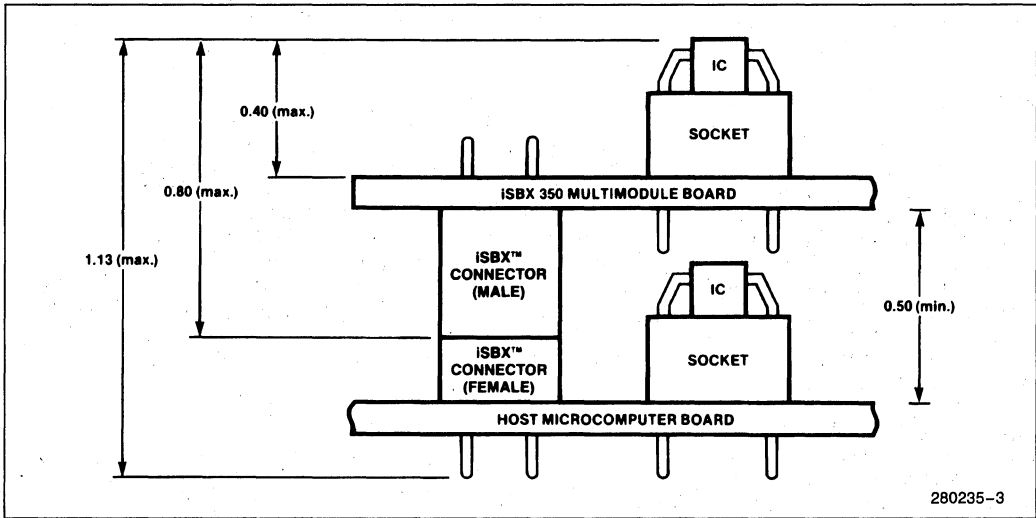Figure 1. Installation of iSBX™ 350 Module on a Host Board

Figure 2. Mounting Clearances (inches)

Table 1. Input/Output Port Modes of Operation

Port	Lines (qty)	Mode of Operation					
		Unidirectional				Bidirectional	Control
		Input		Output			
		Unlatched	Latched & Strobed	Latched	Latched & Strobed		
A	8	X	X	X	X	X	
B	8	X	X	X	X		
C	4	X		X			X(1)
	4	X		X			X(1)

NOTE:
1. Part of Port C must be used as a control port when either Port A or Port B are used as a latched and strobed input or a latched and strobed output port or Port A is used as a bidirectional port.

SPECIFICATIONS

Word Size

Data: 8 Bits

I/O Addressing

8255A-5 Ports	iSBX 350 Address
Port A	X0 or X4
Port B	X1 or X5
Port C	X2 or X6
Control	X3 or X7
Reserved	X8 to XF

NOTE:
The first digit of each port I/O address is listed as "X" since it will change dependent on the type of host iSBC microcomputer used. Refer to the Hardware Reference Manual for your host iSBC microcomputer to determine the first digit of the port address.

I/O Capacity

24 programmable lines (see Table 1)

Access Time

Read: 250 ns max.

Write: 300 ns max.

NOTE:
Actual transfer speed is dependent upon the cycle time of the host microcomputer.

Interrupts

Interrupt requests may originate from the programmable peripheral interface (2) or the user specified I/O (1).

Interfaces

iSBX™ Bus—All signals TTL compatible

Parallel I/O—All signals TTL compatible

Parallel Interface Connectors

Interface	No. of Pairs/ Pins	Centers (in.)	Connector Type	Vendor	Vendor Part No.
Parallel I/O Connector	25/50	0.1	Female	3M	3415-0001 with Ears
Parallel I/O Connector	25/50	0.1	Female Soldered	GTE Sylvania	6AD01251A1DD

NOTE:
Connector compatible with those listed may also be used.

Line Drivers and Teminators

I/O Drivers—The following line drivers and terminators are all compatible with the I/O driver sockets on the iSBX 350.

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

Port 1 has 25 mA totem pole drivers and 1 kΩ terminators.

I/O Terminators—220Ω/330Ω divider or 1 kΩ pull up.
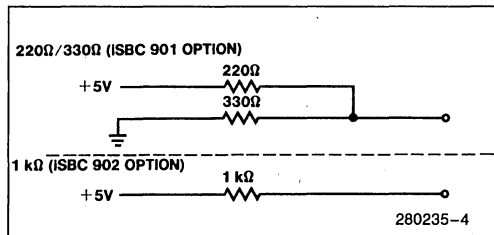
Physical Characteristics

Width: 7.24 cm (2.85 in.)

Length: 9.40 cm (3.70 in.)

Height*: 2.04 cm (0.80 in.) iSBX 350 Board

2.86 cm (1.13 in.) iSBX 350 Board + Host Board

Weight: 51 gm (1.79 oz)

*See Figure 2

Electrical Characteristics

DC Power Requirements

Power Requirements	Configuration
+5 @ 320 mA	Sockets XU3, XU4, XU5, and XU6 empty (as shipped).
+5V @ 500 mA	Sockets XU3, XU4, XU5, and XU6 contain 7438 buffers.
+5V @ 620 mA	Sockets XU3, XU4, XU5, and XU6 contain iSBC 901 termination devices.

Environmental

Operating Temperature: 0°C to +55°C

Reference Manual

9803191-01—iSBX 350 Parallel I/O MULTIMODULE Manual (NOT SUPPLIED)

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

ORDERING INFORMATION
Part Number   Description

SBX 350   Parallel I/O MULTIMODULE Board