# ENET Controller Board


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SYSTEM REFERENCE MANUAL

# ENET Controller Board

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The equipment described in this manual has been tested and found in compliance with the Federal Communications limits for Class A computing devices, (FCC Rules, Part 15, Subpart J) designed to provide reasonable protection against radio interference in commercial environments. When not correctly installed, this equipment can radiate radio frequency energy which may interfere with local radio and television communications.

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## ENET Controller Board

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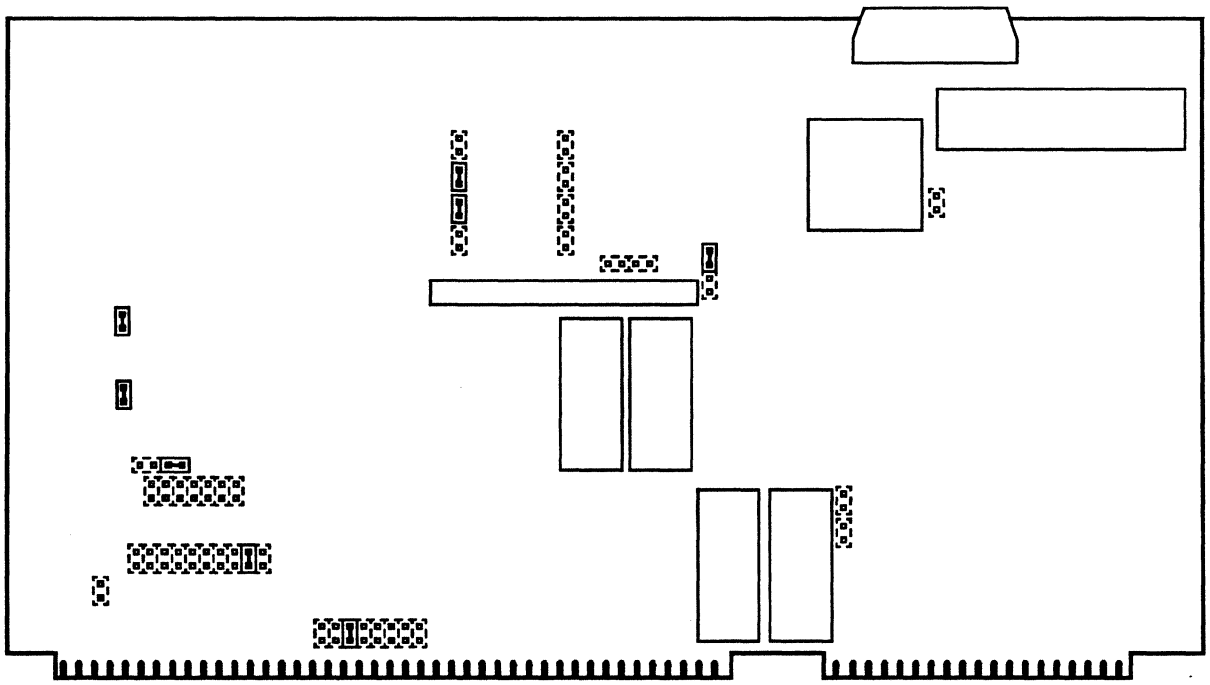
## ABOUT THIS MANUAL

This manual provides technical information on the *ENET Controller* board used in the Icon computer systems. The features, specifications, and settings are addressed.

## ENET CONTROLLER

The ENET Controller board is a high-performance, front-end communications processor board that connects an Icon computer system to an Ethernet® or IEEE 802.3 local area network. It implements the complete Ethernet Data Link Layer interface, with significant functional extensions, on a single Multibus board. The Icon ENET board provides Icon computer systems with Ethernet networking connections in which the TCP/IP protocol standard is used. The ENET Controller board interfaces to an Icon computer system via the Multibus® Adapter (MBA1) board. Figure 1 shows the ENET Controller Board.



*ENET Controller Board*
**Figure 1**

## FEATURES

The ENET Controller board is comprised of the following features:

- Fully compliant with the IEEE 802.3 standard as well as with Ethernet specifications Versions 1.0 and 2.0.
- Multibus compliance is Multibus/IEEE 796 D16 M24 I16 VO L.
- Uses an Intel 80186 CPU and an Intel 82586 LAN Coprocessor.
- Uses 128 Kbytes of dual-ported RAM.
- Dual-port memory allows concurrent, full-speed access by the on-board CPU and the on-board LAN coprocessor.
- Can receive successive frames with minimum interframe spacing (9.6 microseconds). Can receive immediately after transmitting, or vice versa, with minimum interframe spacing and without losing data.
- Hardware recognition of physical, broadcast, and multiple multicast addresses, in addition to promiscuous mode.
- Hardware supported buffer chaining allows buffering of an arbitrary number of received frames without any CPU intervention. Allocation of buffers, both location and size, is completely under software control.

## TECHNICAL SUMMARY

The specifications for the ENET Controller board are as follows:

| | | |
|---|---|---|
| • Mechanical Specifications | Width: | 6.75 inch (15 cm) |
| | Length: | 12 inch (19 cm) |
| | PCB: | 6-layer single PCB |
| • Power Requirements | | +5 VDC @ 4.5 A Max<br>+12 VDC @ 0.5 A Max<br>(for transceiver and iSBX connector)<br>-12 VDC @ 0.05 A Max<br>(for iSBX connector only) |
| • Environment | Temperature: | 40°F to 120°F (5°C to 50°C) |
| | Humidity: | 0% to 90% non-condensing |
| • Interrupt | Vector Address: | Software programmable |
| | Priority Level: | One of 8 Jumper Selectable Levels (INT0-INT7) |
| • Multibus Timeout | | 30 milliseconds (jumper selectable) |
| • I/O Register Addresses | | Jumper-selectable (from 0 to FFFF) |

# ETHERNET COMPONENTS

The following components are required to connect an Icon computer to standard Ethernet networks:

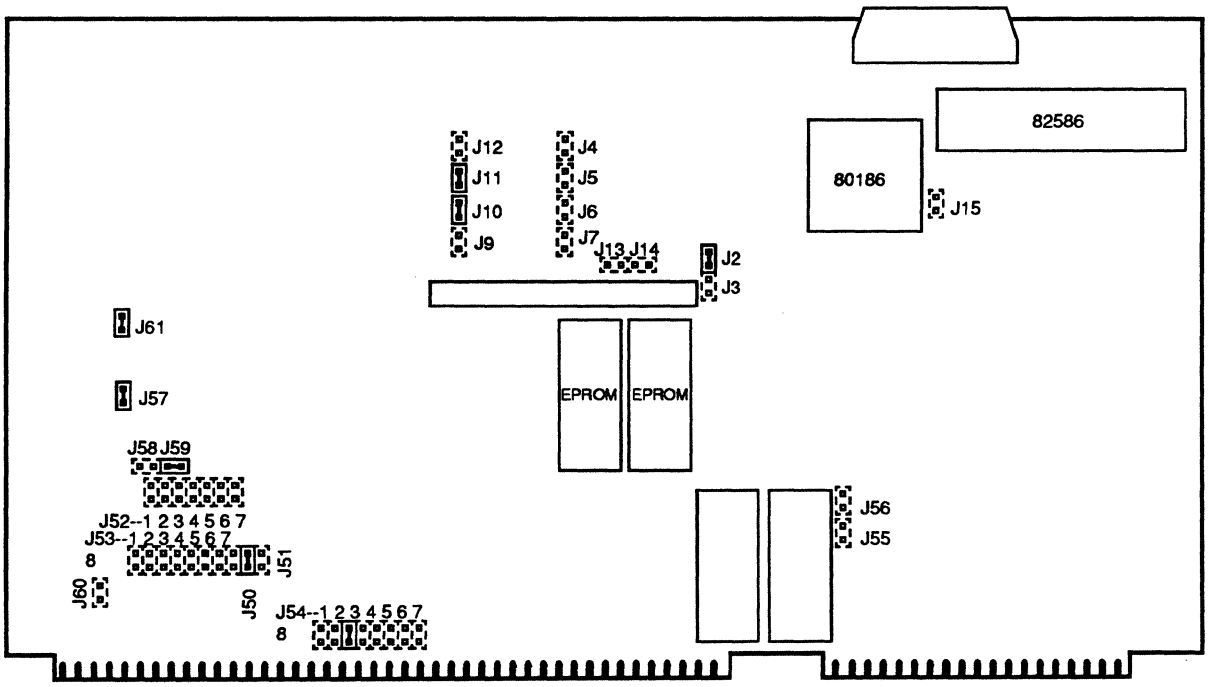
- MBA1 board.
- ENET Controller board with 128K Memory.
- ENET Controller Cable.
- ENET Transceiver Cable.
- ENET Transceiver or ENET Fan-Out Unit.
- ENET Coaxial Cables as required to connect transceivers.

# ETHERNET CONFIGURATION

Two boards are used for the Ethernet connections, the ENET Controller and the Icon MBA1. A controller cable attaches to the ENET Controller which in turn provides a connector to an ENET transceiver cable.

## ENET CONTROLLER SETTINGS

The ENET Controller jumpers are configured as shown in Figure 2 and Table 1.



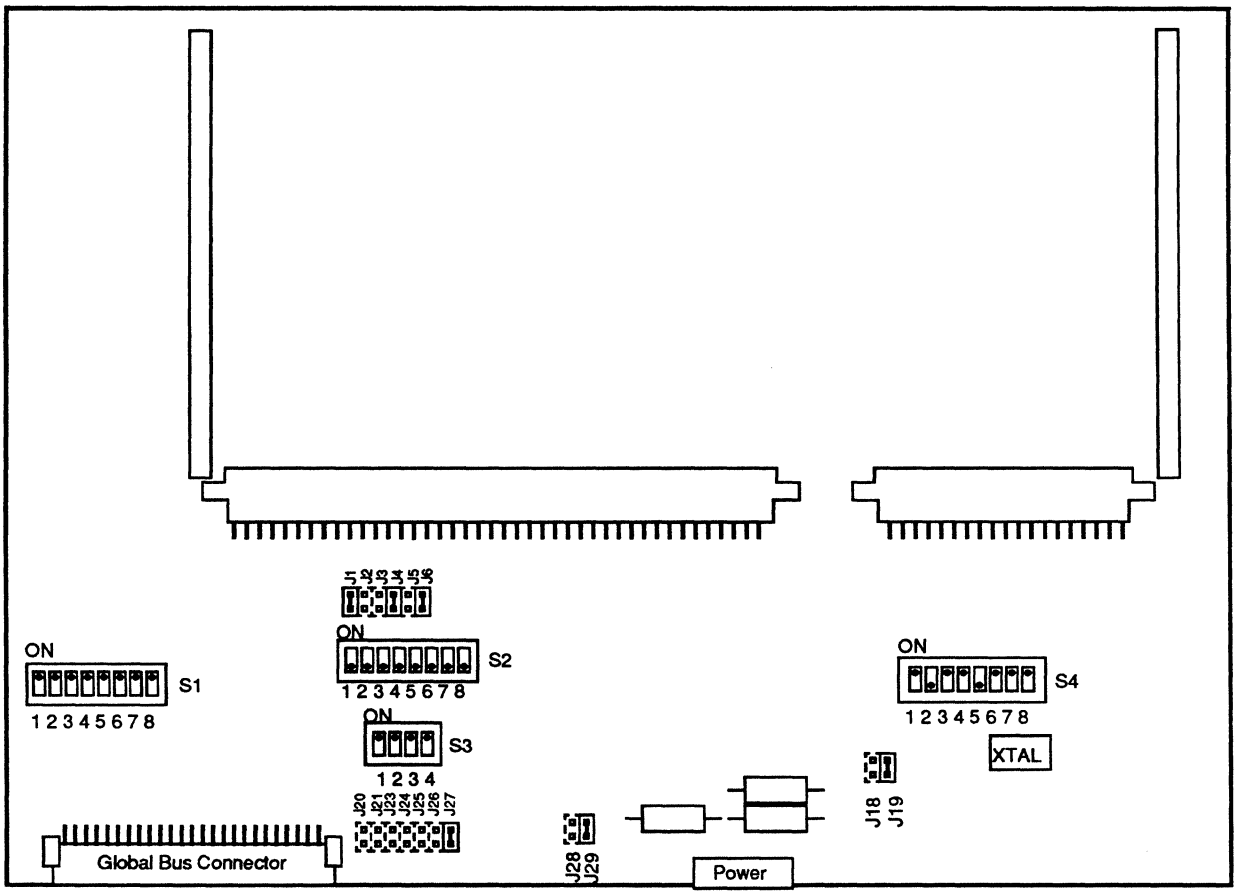

*ENET Controller Settings*
**Figure 2**

**Table 1**
*ENET Controller Settings*

| Jumper | Setting | Jumper | Setting |
|---|---|---|---|
| J2 | *On* | J50 | *On* |
| J3 | *Off* | J51 | *Off* |
| J4 | *Off* | J52 | (7 Position) ALL *Off* |
| J5 | *Off* | J53 | (8 Position) ALL *Off* |
| J6 | *Off* | J54 | (8 Position) Position |
| J7 | *Off* | | 3 *On*, OTHERS *Off* |
| J9 | *Off* | J55 | *Off* |
| J10 | *On* | J56 | *Off* |
| J11 | *On* | J57 | *On* |
| J12 | *Off* | J58 | *Off* |
| J13 | *Off* | J59 | *On* |
| J14 | *Off* | J60 | *Off* |
| J15 | *Off* | J61 | *On* |

## MULTIBUS ADAPTER SETTINGS

The Multibus Adapter jumpers and switches for the MBA1 810-012-001A assembly or greater are configured as shown in Figure 3 and Table 2.




*MBA1 810-012-001A Assembly*
**Figure 3**

**Table 2**
*MBA1 810-012-001A Settings*

| Jumper | Setting | Jumper | Setting |
|---|---|---|---|
| J1 | *On* | J24 | *Off* |
| J2 | *Off* | J25 | *Off* |
| J3 | *Off* | J26 | *Off* |
| J4 | *On* | J27 | *On* |
| J5 | *Off* | | |
| J6 | *On* | J28 | *Off* |
| | | J29 | *On* |
| J18 | *Off* | | |
| J19 | *On* | S1 | (8 Position) ALL *On* |
| | | S2 | (8 Position) ALL *Off* |
| J20 | *Off* | S3 | (4 Position) ALL *On* |
| J21 | *Off* | S4 | (8 Position) 1,3,4,6-8 *On*; |
| J23 | *Off* | | 2,5 *Off* |