

# Symbios<sup>®</sup> SYM20810 PCI to SCSI Host Adapter

## User's Guide

*Version 1.1*



Order Number S14037



## Electromagnetic Compatibility Notices

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded cables for SCSI connection external to the cabinet are used in the compliance testing of this Product. LSI Logic is not responsible for any radio or television interference caused by unauthorized modification of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by LSI Logic. The correction of interferences caused by such unauthorized modification, substitution, or attachment will be the responsibility of the user.

The LSI Logic Symbios<sup>®</sup> SYM20810 is tested to comply with FCC standards for home or office use.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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取扱説明書に従って正しい取り扱いをして下さい。

This is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

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This document describes Version 1.1 of LSI Logic Corporation's SYM20810 PCI to SCSI Host Adapter and will remain the official reference source for all revisions/releases of this product until rescinded by an update.

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# Preface

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This book is the primary reference and User's Guide for the LSI Logic Symbios<sup>®</sup> SYM20810 PCI to SCSI Host Adapter. It contains a complete functional description for the SYM20810 and includes complete physical and electrical specifications for the SYM20810.

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## Audience

This document assumes that you have some familiarity with microprocessors and related support devices. The people who benefit from this book are:

- Engineers and managers who are evaluating the processor for possible use in a system
  - Engineers who are designing the processor into a system
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## Related Publications

*Symbios<sup>®</sup> PCI SCSI Device Management System SDMS 4.0 User's Guide*, LSI Logic Corporation, Order Number S14007

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## Revision Record

Revision	Date	Remarks
1.0	9/97	First official release.
1.1	12/99	Miscellaneous cosmetic/format changes from Symbios to LSI Logic.





# Chapter 1

## What is Covered in this Guide

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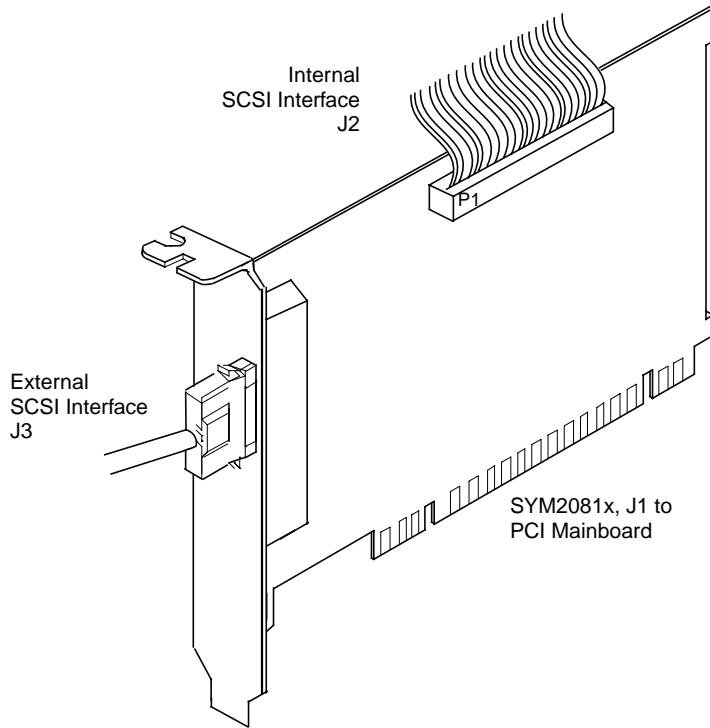
This installation guide provides instructions and illustrations to help you install a Symbios® SYM20810 PCI to SCSI host adapter. It covers the following topics:

- Section 1.1, "Installation"
- Section 1.2, "Connecting Internal SCSI Devices"
- Section 1.3, "Installing the Host Adapter Device Driver Software"
- Section 1.4, "Troubleshooting"

The SYM20810 provides a low-cost SCSI solution for attaching SCSI devices (disk drives, scanners, CD-ROM drives, tape drives, removable media drives, etc.) to PCI computer systems with an ISA/EISA bracket type. Figure 1.1 shows the major components and connections of the SYM20810 host adapter.

The Symbios SCSI Device Management System (SDMS™) software includes drivers and utilities for operating this host adapter in computers running DOS/Windows, Windows 95, Windows NT, and OS/2.

**Figure 1.1    SYM20810 Board Outline**



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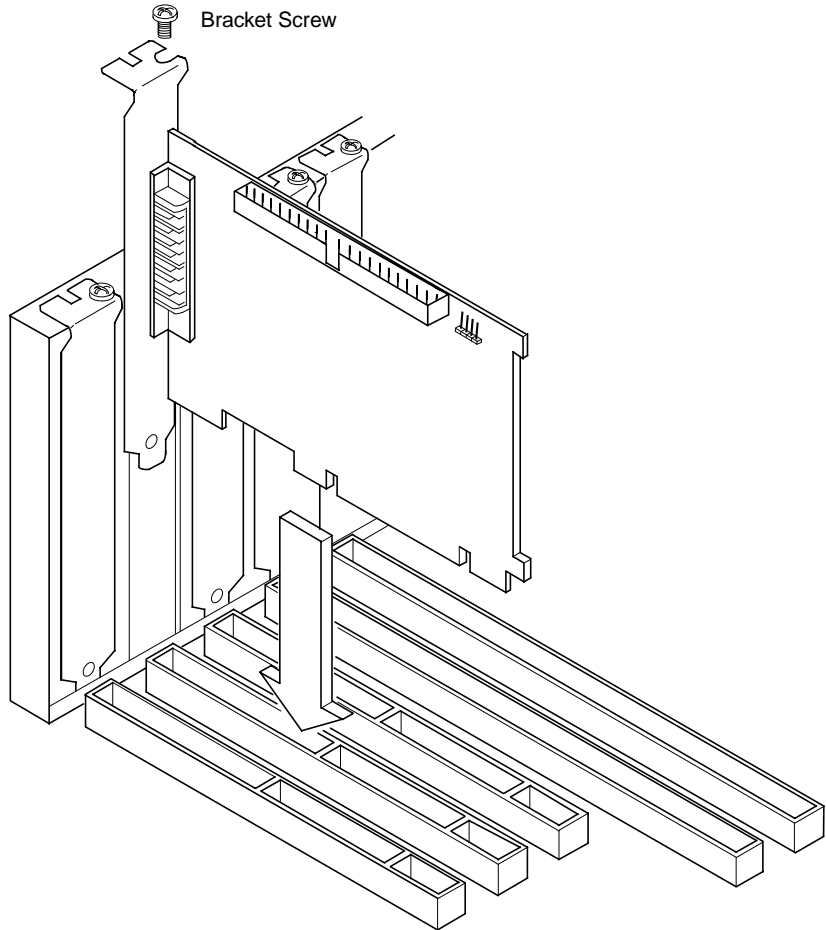
## 1.1 Installation

- Step 1. Before you begin the installation, switch off the power to the computer and any peripheral devices and disconnect all power cords.

Caution: Before handling the SYM20810 board, ground yourself using a ground strap attached to the computer metal frame. Static charges on your body can damage electronic components. Handle plug-in boards by the edge; do not touch board components or gold connector contacts.

- Step 2. Remove the cover on your computer to access the PCI slots. Refer to your computer documentation if necessary.
- Step 3. Locate an unused expansion slot for installing the PCI to SCSI host adapter. Refer to your computer documentation if necessary to locate the expansion slots.
- Step 4. Remove the blank bracket panel on the back of the computer that covers the slot you intend to use. Save the bracket screw.
- Step 5. Remove the SYM20810 host adapter board from the antistatic bag and insert the edge connector into the PCI slot, as pictured in Figure 1.2. Make sure the edge connector is properly aligned before pressing the board into place. Apply even pressure to both ends of the board while inserting it.

**Figure 1.2 Inserting the Host Adapter**

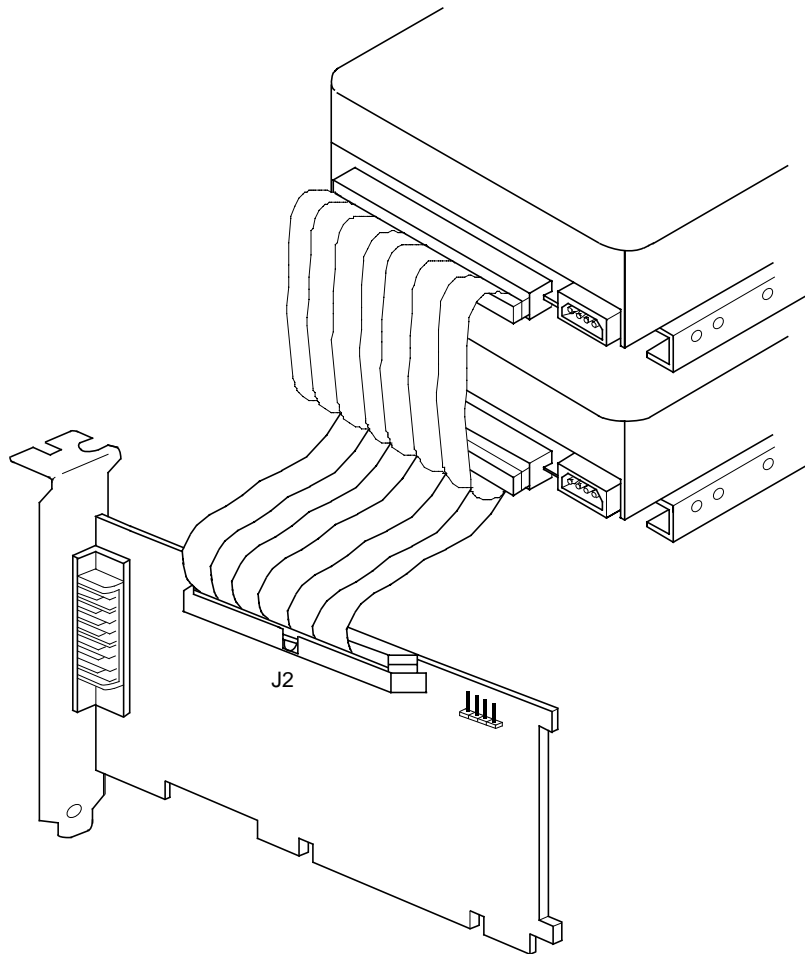


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## 1.2 Connecting Internal SCSI Devices

- Step 1. If you are connecting an internal SCSI device, plug the 50-pin connector cable on one end of the internal SCSI ribbon cable into the connector J2 (see Figure 1.3). The ribbon cable included in your SYM20810 host adapter kit is keyed to assure that it can be easily connected.
- Step 2. Plug the 50-pin connector on the other end of the ribbon cable into the SCSI connector on your internal SCSI device.
- Step 3. To attach more than one internal device, use a SCSI ribbon cable with the required number of 50-pin connectors attached along its length. Plug the cable connectors into the internal SCSI device connectors, as illustrated in Figure 1.3.
- Step 4. Terminate the SCSI bus as described in the Section 1.2.3, "SCSI Bus Termination," page 1-9.
- Step 5. Make any required power connections to your internal SCSI device(s).

**Figure 1.3 Internal SCSI Devices Chained Together**



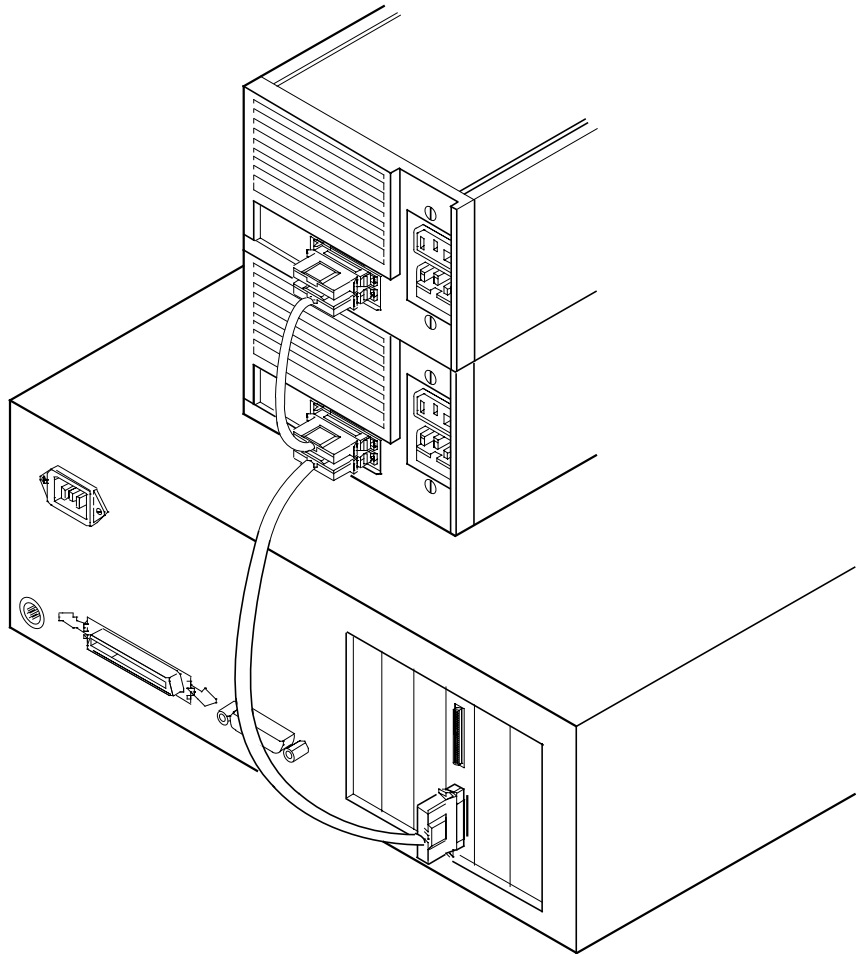
## 1.2.1 Completing the Installation

- Step 1. The bracket around the end connector (J3) should fit where the blank bracket panel was removed. Secure the bracket with the bracket screw.
- Step 2. Replace the cover as described in your computer documentation.

## 1.2.2 Connecting External SCSI Devices

- Step 1. If you need to connect external SCSI devices to the SYM20810 host adapter, plug the 50-pin connector on one end of a shielded external SCSI cable into the host adapter SCSI connector J3. This connector is now bracketed to the back panel of your computer. Figure 1.4 shows how this connection is made.
- Step 2. Plug the 50-pin connector on the other end of the SCSI cable into the SCSI connector on the peripheral device. This connection is shown in Figure 1.4.
- Step 3. If you wish to connect more than one device to the host adapter, use shielded cables to chain them together as illustrated in Figure 1.4.
- Step 4. Terminate the SCSI bus as described in the section Section 1.2.3, "SCSI Bus Termination," page 1-9.

**Figure 1.4 Multiple External Devices Chained Together**

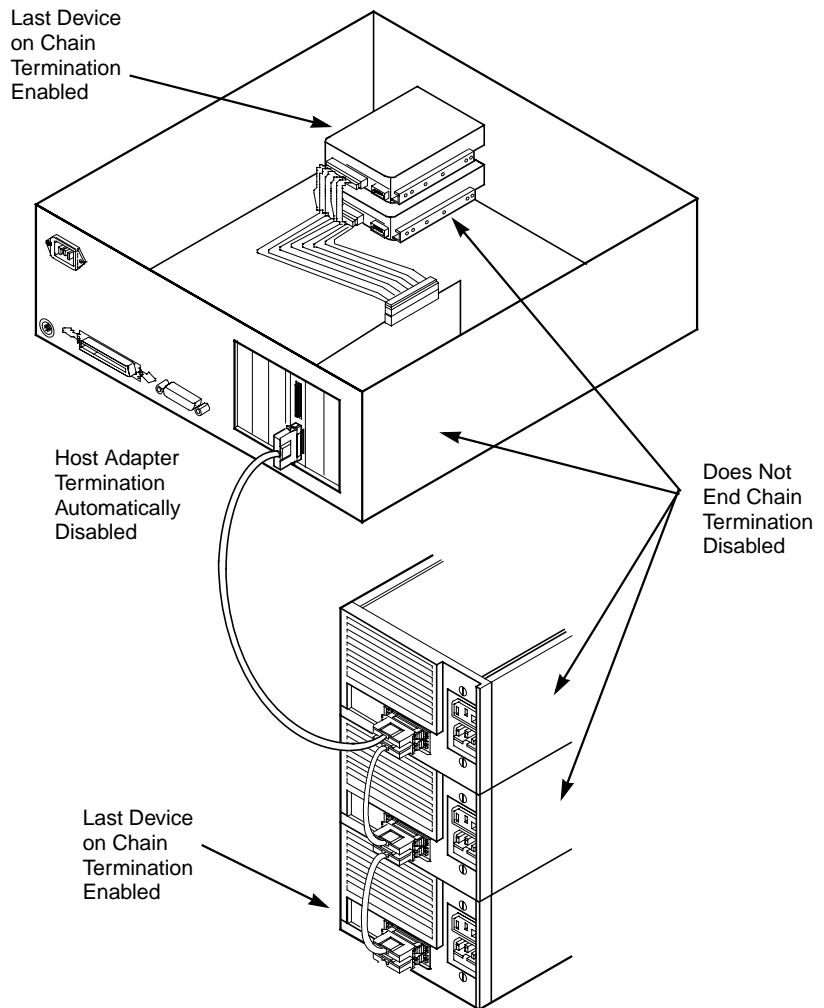




### **1.2.3 SCSI Bus Termination**

All SCSI devices have a set of resistors called terminators to assure reliable operation of the SCSI bus. The first and last physical devices on the SCSI bus must have these terminators enabled; all other SCSI devices on the bus must have their terminators removed or disabled. Termination on the SYM20810 host adapter is automatically enabled when it is connected to the end of the bus. Refer to the SCSI device documentation for information on how to identify and change the terminator setting on each SCSI peripheral device.

**Figure 1.5 SCSI Bus Termination**



## 1.2.4 Setting SCSI IDs

Each device on the SCSI bus, including the host adapter, must have a unique SCSI ID from 0 through 7. Refer to your peripheral device documentation for instructions on how to determine and change the ID of each peripheral device. The SCSI ID on the SYM20810 is 7.

Caution: The SYM20810 host adapter supports only Single-Ended (SE) SCSI devices. Differential SCSI devices may be damaged if you connect them to this host adapter. Refer to your SCSI device documentation to make sure you are connecting a SE device.

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## 1.3 Installing the Host Adapter Device Driver Software

The SYM20810 is supported by Symbios SDMS drivers for DOS/Windows 3.x, Windows 95, Windows NT, and OS/2. Consult the software documentation for complete installation instructions. The Symbios SDMS driver/utility software and documentation for your operating system can be downloaded from the LSI Logic web site ([www.lsillogic.com](http://www.lsillogic.com)).

### 1.3.1 DOS/Windows

The Symbios SDMS driver for DOS runs under DOS 5.0 and above and all versions of Windows 3.x. Consult the software documentation (`dos.txt`) for specific installation instructions and descriptions of the DOS/Windows 3.x drivers and utilities. Symbios SDMS software also includes the following DOS/Windows utilities:

- DOS Installation Utility
- SCSI Low Level Format Utility
- Verify Utility
- SCSI Configuration Utility

### 1.3.2 Windows 95/Windows NT

Windows 95 and Windows NT (versions 3.51 and newer) have embedded support for the SYM20810, so the driver is installed automatically during setup. To add the SYM20810 to an existing system, install the board according to the instructions in this guide, then restart the computer. The operating system will automatically launch the “Add New Hardware” wizard to install the driver. Follow these steps to make sure that the driver software has been properly installed:

- Step 1. From the Windows 95 Start menu, select Settings, then Control Panel.
- Step 2. From the Control Panel window, click the System icon. The System Properties menu displays.
- Step 3. Select the Device Manager.
- Step 4. Click on the SCSI Controllers icon.

- Step 5. The name of the driver for the SYM20810 is "Symbios 8100ASP, 2081x PCI SCSI Adapter; 53C810A Device." If this driver is not listed, follow the instructions in the Symbios SDMS Windows 95 or Windows NT driver documentation. This documentation can be found on the LSI Logic web site at [www.lsillogic.com](http://www.lsillogic.com).
- Step 6. If there are no red X's or yellow question mark icons next to the listing for the SYM20810, the driver is loaded and ready to use. Please keep in mind that Windows NT only displays the driver information, not every controller found by the driver.

For information on how to change the Symbios driver in your system or to add a driver to a Windows 95 or Windows NT system that is set up with a different SCSI driver, refer to the LSI Logic *Symbios PCI SCSI Device Management System SDMS 4.0 User's Guide* or the software documentation that accompanies the driver on your diskette or on the LSI Logic web site. The file names are `95.txt` for Windows 95 and `8xmnt.txt` for Windows NT.

### 1.3.3 OS/2

The Symbios SYM8XX.ADD device driver complies with the IBM OS/2 Adapter Device Driver specification, and works with third party applications that comply with the same specification. For complete installation instructions, refer to the `OS2.txt` file supplied with your Symbios OS/2 SCSI driver software. The latest version of this driver and the text file may also be found on the LSI Logic web site at [www.lsillogic.com](http://www.lsillogic.com).

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## 1.4 Troubleshooting

During installation, no SCSI devices are found:

- Check the cable connections and the host bus adapter installation.
- Ensure that all devices are powered on and terminated correctly.
- Check that no devices have duplicate SCSI IDs.
- Make sure INT A is assigned for the PCI slot(s) where your SCSI host adapter(s) are installed.
- Make sure the SCSI device driver is installed properly.

The computer hangs or locks up when booting and the SCSI devices attached are not seen by the computer system:

- Make sure that all the SCSI devices are configured at different ID numbers (the boot drive should have the lowest ID).
- Make sure both ends, but only the ends, of the SCSI bus are terminated.
- (DOS, OS/2) Make sure the device driver is listed in `CONFIG.SYS` (and loaded when booting).

The device driver does not see one of the SCSI devices:

- Reboot the computer.
- Make sure the SCSI devices have different ID numbers (the boot drive should have the lowest ID).
- Make sure both ends, but only the ends, of the SCSI bus are terminated.
- Check the cable and power connections.

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W. E. Tel: 800.365.9953  
Dallas  
A. E. Tel: 214.553.4300  
B. M. Tel: 972.783.4191  
W. E. Tel: 800.955.9953  
El Paso  
A. E. Tel: 800.526.9238  
Houston  
A. E. Tel: 713.781.6100  
B. M. Tel: 713.917.0663  
W. E. Tel: 800.888.9953  
Richardson  
I. E. Tel: 972.783.0800  
Rio Grande Valley  
A. E. Tel: 210.412.2047  
Stafford  
I. E. Tel: 281.277.8200

#### Utah

Centerville  
B. M. Tel: 801.295.3900  
Murray  
I. E. Tel: 801.288.9001  
Salt Lake City  
A. E. Tel: 801.365.3800  
W. E. Tel: 800.477.9953

#### Vermont

A. E. Tel: 800.272.9255  
W. E. Tel: 716.334.5970

#### Virginia

A. E. Tel: 800.638.5988  
W. E. Tel: 301.604.8488

#### Washington

Kirkland  
I. E. Tel: 425.820.8100  
Seattle  
A. E. Tel: 425.882.7000  
W. E. Tel: 800.248.9953

#### West Virginia

A. E. Tel: 800.638.5988

#### Wisconsin

Milwaukee  
A. E. Tel: 414.513.1500  
W. E. Tel: 800.867.9953  
Wauwatosa  
I. E. Tel: 414.258.5338

#### Wyoming

A. E. Tel: 800.332.9326  
W. E. Tel: 801.974.9953

## Direct Sales Representatives by State (Component and HAB)

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E. A. Earle Associates  
E. L. Electrodyne - UT  
GRP Group 2000  
I. S. Infinity Sales, Inc.  
ION ION Associates, Inc.  
R. A. Rathsburg Associates, Inc.  
SGY Synergy Associates, Inc.

### Arizona

Tempe  
E. A. Tel: 480.921.3305

### California

Calabasas  
I. S. Tel: 818.880.6480  
Irvine  
I. S. Tel: 714.833.0300  
San Diego  
E. A. Tel: 619.278.5441

### Illinois

Elmhurst  
R. A. Tel: 630.516.8400

### Indiana

Cicero  
R. A. Tel: 317.984.8608  
Ligonier  
R. A. Tel: 219.894.3184  
Plainfield  
R. A. Tel: 317.838.0360

### Massachusetts

Burlington  
SGY Tel: 781.238.0870

### Michigan

Byron Center  
R. A. Tel: 616.554.1460  
Good Rich  
R. A. Tel: 810.636.6060  
Novi  
R. A. Tel: 810.615.4000

### North Carolina

Cary  
GRP Tel: 919.481.1530

### Ohio

Columbus  
R. A. Tel: 614.457.2242  
Dayton  
R. A. Tel: 513.291.4001  
Independence  
R. A. Tel: 216.447.8825

### Pennsylvania

Somerset  
R. A. Tel: 814.445.6976

### Texas

Austin  
ION Tel: 512.794.9006  
Arlington  
ION Tel: 817.695.8000  
Houston  
ION Tel: 281.376.2000

### Utah

Salt Lake City  
E. L. Tel: 801.264.8050

### Wisconsin

Muskego  
R. A. Tel: 414.679.8250  
Saukville  
R. A. Tel: 414.268.1152

## Sales Offices and Design Resource Centers

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**LSI Logic Corporation**  
**Corporate Headquarters**  
Tel: 408.433.8000  
Fax: 408.433.8989

### **NORTH AMERICA**

**California**  
Costa Mesa - Mint Technology  
Tel: 949.752.6468  
Fax: 949.752.6868

Irvine  
◆ Tel: 949.809.4600  
Fax: 949.809.4444

Pleasanton Design Center  
Tel: 925.730.8800  
Fax: 925.730.8700

San Diego  
Tel: 858.467.6981  
Fax: 858.496.0548

Silicon Valley  
◆ Tel: 408.433.8000  
Fax: 408.954.3353

Wireless Design Center  
Tel: 858.350.5560  
Fax: 858.350.0171

**Colorado**  
Boulder  
◆ Tel: 303.447.3800  
Fax: 303.541.0641

Colorado Springs  
Tel: 719.533.7000  
Fax: 719.533.7020

Fort Collins  
Tel: 970.223.5100  
Fax: 970.206.5549

**Florida**  
Boca Raton  
Tel: 561.989.3236  
Fax: 561.989.3237

**Georgia**  
Alpharetta  
Tel: 770.753.6146  
Fax: 770.753.6147

**Illinois**  
Oakbrook Terrace  
Tel: 630.954.2234  
Fax: 630.954.2235

**Kentucky**  
Bowling Green  
Tel: 270.793.0010  
Fax: 270.793.0040

**Maryland**  
Bethesda  
Tel: 301.897.5800  
Fax: 301.897.8389

**Massachusetts**  
Waltham  
◆ Tel: 781.890.0180  
Fax: 781.890.6158

Burlington - Mint Technology  
Tel: 781.685.3800  
Fax: 781.685.3801

**Minnesota**  
Minneapolis  
◆ Tel: 612.921.8300  
Fax: 612.921.8399

**New Jersey**  
Red Bank  
Tel: 732.933.2656  
Fax: 732.933.2643

Cherry Hill - Mint Technology  
Tel: 609.489.5530  
Fax: 609.489.5531

**New York**  
Fairport  
Tel: 716.218.0020  
Fax: 716.218.9010

**North Carolina**  
Raleigh  
Tel: 919.785.4520  
Fax: 919.783.8909

**Oregon**  
Beaverton  
Tel: 503.645.0589  
Fax: 503.645.6612

**Texas**  
Austin  
Tel: 512.388.7294  
Fax: 512.388.4171

Plano  
◆ Tel: 972.244.5000  
Fax: 972.244.5001

Houston  
Tel: 281.379.7800  
Fax: 281.379.7818

**Canada**  
**Ontario**  
Ottawa  
◆ Tel: 613.592.1263  
Fax: 613.592.3253

### **INTERNATIONAL**

**France**  
Paris  
◆ **LSI Logic S.A.**  
**Immeuble Europa**  
◆ Tel: 33.1.34.63.13.13  
Fax: 33.1.34.63.13.19

**Germany**  
Munich  
◆ **LSI Logic GmbH**  
◆ Tel: 49.89.4.58.33.0  
Fax: 49.89.4.58.33.108

Stuttgart  
Tel: 49.711.13.96.90  
Fax: 49.711.86.61.428

**Italy**  
Milano  
◆ **LSI Logic S.P.A.**  
◆ Tel: 39.039.687371  
Fax: 39.039.6057867

**Japan**  
Tokyo  
◆ **LSI Logic K.K.**  
◆ Tel: 81.3.5463.7821  
Fax: 81.3.5463.7820

Osaka  
◆ Tel: 81.6.947.5281  
Fax: 81.6.947.5287

**Korea**  
Seoul  
◆ **LSI Logic Corporation of Korea Ltd**  
Tel: 82.2.528.3400  
Fax: 82.2.528.2250

**The Netherlands**  
Eindhoven  
◆ **LSI Logic Europe Ltd**  
Tel: 31.40.265.3580  
Fax: 31.40.296.2109

**Singapore**  
Singapore  
◆ **LSI Logic Pte Ltd**  
Tel: 65.334.9061  
Fax: 65.334.4749

Tel: 65.835.5040  
Fax: 65.732.5047

**Sweden**  
Stockholm  
◆ **LSI Logic AB**  
◆ Tel: 46.8.444.15.00  
Fax: 46.8.750.66.47

**Taiwan**  
Taipei  
◆ **LSI Logic Asia, Inc.**  
**Taiwan Branch**  
Tel: 886.2.2718.7828  
Fax: 886.2.2718.8869

**United Kingdom**  
Bracknell  
◆ **LSI Logic Europe Ltd**  
◆ Tel: 44.1344.426544  
Fax: 44.1344.481039

◆ Sales Offices with  
Design Resource Centers

# International Distributors

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## Australia

New South Wales  
◆ **Reptechnic Pty Ltd**  
Tel: 612.9953.9844  
Fax: 612.9953.9683

## Belgium

**Acal nv/sa**  
Tel: 32.2.7205983  
Fax: 32.2.7251014

## China

Beijing  
**LSI Logic International Services Inc.**  
Tel: 86.10.6804.2534  
Fax: 86.10.6804.2521

## France

Rungis Cedex  
**Azzurri Technology France**  
Tel: 33.1.41806310  
Fax: 33.1.41730340

## Germany

Haar  
**EBV Elektronik**  
Tel: 49.89.4600980  
Fax: 49.89.46009840

## Munich

**Avnet Emg GmbH**  
Tel: 49.89.45110102  
Fax: 49.89.42.27.75

## Wuennenberg-Haaren

**Peacock AG**  
Tel: 49.2957.79.1692  
Fax: 49.2957.79.9341

## Hong Kong

Hong Kong  
**AVT Industrial Ltd**  
Tel: 852.2428.0008  
Fax: 852.2401.2105

## EastEle

Tel: 852.2798.8860  
Fax: 852.2305.0640

## India

Bangalore  
**Spike Technologies India Private Ltd**  
◆ Tel: 91.80.664.5530  
Fax: 91.80.664.9748

## Israel

Tel Aviv  
**Eastronics Ltd**  
Tel: 972.3.6458777  
Fax: 972.3.6458666

## Japan

Tokyo  
**Global Electronics Corporation**  
Tel: 81.3.3260.1411  
Fax: 81.3.3260.7100  
Technical Center  
Tel: 81.471.43.8200

## Yokohama-City

**Macnica Corporation**  
Tel: 81.45.939.6140  
Fax: 81.45.939.6141

## The Netherlands

Eindhoven  
**Acal Nederland b.v.**  
Tel: 31.40.2.502602  
Fax: 31.40.2.510255

## Switzerland

Brugg  
**LSI Logic Sulzer AG**  
Tel: 41.32.3743232  
Fax: 41.32.3743233

## Taiwan

Taipei  
**Avnet-Mercuries Corporation, Ltd**  
Tel: 886.2.2516.7303  
Fax: 886.2.2505.7391

## Lumax International

**Corporation, Ltd**  
Tel: 886.2.2788.3656  
Fax: 886.2.2788.3568

## Prospect Technology

**Corporation, Ltd**  
Tel: 886.2.2721.9533  
Fax: 886.2.2773.3756

## Serial Semiconductor

**Corporation, Ltd**  
Tel: 886.2.2579.5858  
Fax: 886.2.2570.3123

## United Kingdom

Maidenhead  
**Azzurri Technology Ltd**  
Tel: 44.1628.826826  
Fax: 44.1628.829730

## Swindon

**EBV Elektronik**  
Tel: 44.1793.849933  
Fax: 44.1793.859555

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