Quick Start
SymNet™

Symetrix

What Ships in the Box

- ☑ A SymNet hardware device
- ☑ SymNet Designer CD-ROM (Windows)
- ☑ A detachable power cable
- ☑ This Quick Start Guide

NOTE - You may complete the warranty registration online at www.symetrixaudio.com.

What you'll need to run SymNet Designer software

- ☑ A Windows PC with 300MHz or higher Pentium **and**:
- ☑ WIN 98SE, WIN ME, or WIN 2000.
- ☑ 10MB -15MB free storage space
- ☑ 1024x768 graphics capability
- ☑ 16 bit or higher colors
- ☑ CD ROM drive or Internet connection
- ☑ 32MB RAM or more as required by your operating system
- ☑ An available serial port capable of operating at 57.6 or 115.2 kilobaud
- ☑ A cable to connect the RS-232 serial port of your PC to the SymNet's RS-232 input. The SymNet RS-232 input is a female DB9 connector.

Getting Help

SymNet Designer, the Windows application that controls SymNet hardware includes a help file which acts as a complete user's guide for both hardware and software.

If you have questions beyond the scope of the help file, contact our Technical Services Group in the following ways:

Tel (425) 787-3222
     8:00 am to 4:30 pm
     Pacific Time
Email tech@symetrixaudio.com
Web   www.symetrixaudio.com

Operator Safety Summary

- Read these instructions.
- Heed all warnings.
- Keep these instructions.

Power Source. SymNet™ Audio Matrix hardware uses a switching power supply that automatically adjusts to the applied voltage. Ensure that your AC mains voltage is somewhere between 100-240VAC, 50-60Hz.

Grounding. This product is intended to operate from a power source that does not apply more than 250V rms between the power supply conductors or between either power supply conductor and ground. A protective ground connection, by way of the grounding conductor in the power cord, is essential for safe operation.

Do not defeat the safety purpose of the polarized or gournding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade of the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Fuse. This product contains no user servicable fuse.

Danger from Loss of Ground. If the protective ground connection is lost, all accessible conductive parts, including knobs and controls that may appear to be insulated, can render an electric shock.

Proper Power Cord. Use only the power cord and connector specified for the product and your operating locale. Use only a cord that is in good condition. Protect the power cord from being walked on or pinched, particularly at the plug, convenience receptacle, and the point where the cord exits from the apparatus.
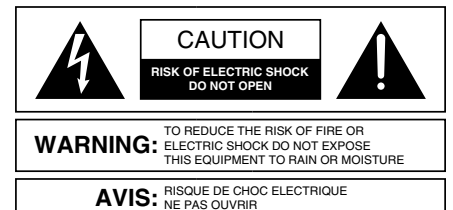
Operating Location. Do not operate this equipment under any of the following conditions: explosive atmospheres, in wet locations, in inclement weather, improper or unknown AC mains voltage, or if improperly fused. Do not install near any heat source such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat. Unplug this apparatus during lightning storms or when unused for long periods of time. Do not use this apparatus near water. Do not expose this apparatus to dripping or splashing. Place no objects filled with liquids, such as vases, upon this apparatus. Do not block any ventilation openings.

Stay Out of the Box. To avoid personal injury (or worse), do not remove the product covers or panels. Do not operate the product without the covers and panels properly installed. Only use accessories specified by the manufacturer. Clean only with dry cloth.

User-Serviceable Parts. There are no user serviceable parts inside the SymNet™ Audio Matrix. There are no adjustments or jumpers to set within the chassis. Settings are stored in non-volatile ram and no back-up battery is required. In case of failure, refer all servicing to the factory. Servicing is required when the SymNet™ Audio Matrix has been damaged in any way, such as when liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Equipment Markings

⚡	CAUTION **RISK OF ELECTRIC SHOCK DO NOT OPEN**	⚠
WARNING:	TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE	
AVIS:	RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR	

SEE OWNERS MANUAL. VOIR CAHIER D'INSTRUCTIONS.
No user serviceable parts inside. Refer servicing to qualified service personnel.
Il ne se trouve a l'interieur aucune piece pourvant entre reparée l'usager.
S'adresser a un reparateur compétent.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons. The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product (i.e., this quick start guide).

Warning

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

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To download the latest version of SymNet designer, the Windows application that controls SymNet hardware go to www.symetrixaudio.com/Products/symnet.htm.

Symetrix

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SymNet™ Audio Matrix

The Symetrix SymNet™ Audio Matrix is a family of network linkable audio matrix processors intended for the installed sound market. SymNet is a mixing, routing, processing platform using Digital Signal Processing (DSP) to implement the following audio processing blocks:

- Dynamics: Compressors, Limiters, Gates, Duckers, Downward Expanders, AGC

- Parametric Equalizers

- Filters: Highpass, Lowpass, Shelf

- Crossovers: two to four-way

- Delays

- Mixers: Stereo, Mono, LCR, Matrix

- Signal Generators: Sine, Square, Triangle, Pink noise, White noise.

- Input Selector Switching

- Level Controls

- Meters and Oscilloscopes

- Comprehensive Remote Control Functions

- Realtime clock driven Event Scheduler

Audio processing takes place after 24-bit Sigma-Delta conversion using 40-bit floating point processing. Floating point processing eliminates internal dynamic range problems caused by overflow or attenuation during digital signal processing operations.

There are three processors in the Audio Matrix family:

- The **SymNet 8x8** processor. 8-inputs, 8-outputs, onboard DSP, SymLink linkable.

- The **SymNet 8in** processor: 8-inputs, onboard DSP, SymLink linkable

- The **SymNet 8out** processor: 8-outputs, onboard DSP, SymLink linkable
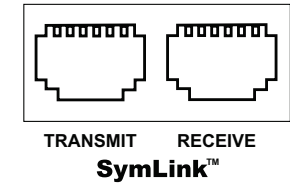
SymNet™ Designer

SymNet™ Designer is an easy to use graphical user interface (GUI) that uses drag-and-drop techniques to quickly and easily select and connect the processing blocks needed for a working system. You download the finished design into the SymNet™ hardware via an RS232 connection and you're off and running. Up to eight different configurations can be saved in one unit, and these can be recalled during use to change configuration, routing, settings, or to control an external device. Since the configuration files are stored in the hardware, you can walk up to a SymNet™ installation, plug your laptop computer into the RS232 port, and download that unit's configuration files.

Up to 8 SymNet™ can be linked using SymLink, an ultra-fast 64-channel audio/data backbone used to connect units in adjacent racks using CAT5 cabling. SymLink is a ring network; all hardware is self-contained and no hubs or interface cards are required.
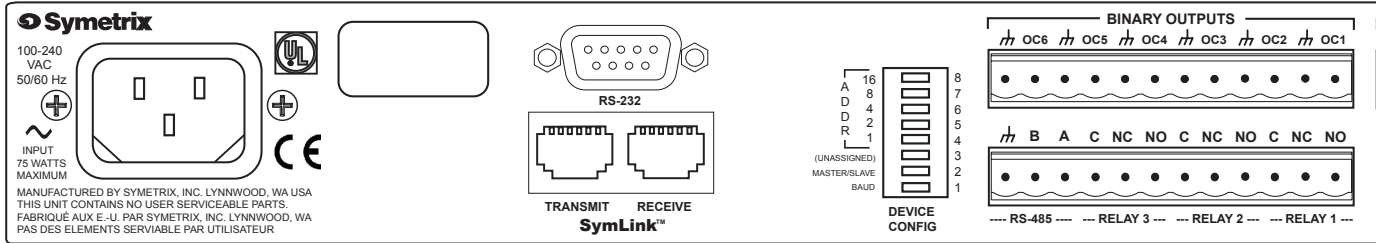
This Quick Reference Guide is intended for the installer's use during installation. Further details about SymNet Designer can be found in the program's help system. SymNet Designer can be found on the CD-ROM shipped with the hardware or downloaded from the Symetrix website: http://www.symetrixaudio.com.

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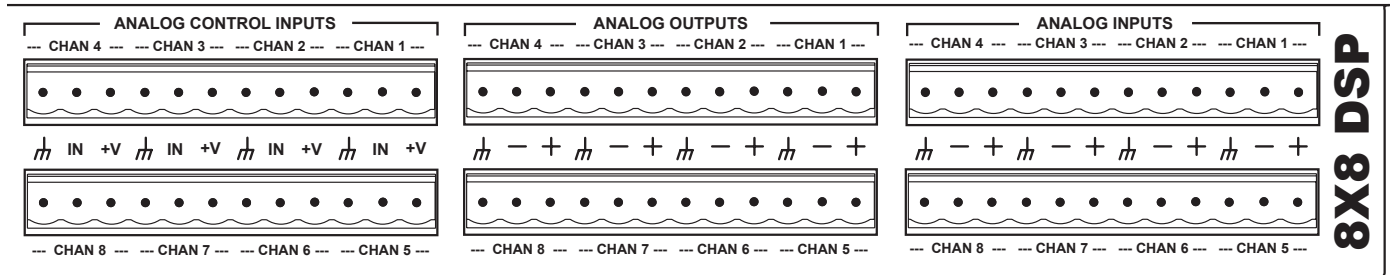| Mechanical		
Item	*Discussion*	*Remarks*
Space Required	1U (WDH: 48.26 cm x 21.59cm x 4.369cm / 19 in x 8.5 in x 1.72 in) Depth measurement does not include connector allowance.	Allow 1-inch additional depth for Euroblock connectors. Additional depth may be required depending on your particular DB9 connector. Allow 1U (1.72 in, 4.369cm) free space above <u>and</u> below unit for proper ventilation.
Electrical	100-24VAC, 50-60Hz, 100W maximum.	No line voltage switching is required.
Ventilation	Fan located at equipment right, pulls cold air into unit. Air exit at equipment left.	Ensure that the left and right equipment sides are unobstructed (2", 5.08cm minimum clearance). The ventilation should not be impeded by covering the ventilation openings with items such as newspapers, tablecloths, curtains, etc.
Weight	3.0kg / 6.6 lbs net.	

Connections		
Item	*Discussion*	*Remarks*
Binary outputs (relay and open collector) and analog control inputs	All use Euroblock connectors. Symetrix part number 039003	Connectors come in 3-pin modules. Connectors included with unit.
SymLink	RJ45 CAT5 shielded network cabling required.	Uses standard RJ45 'straight-through' wiring. 10 meter length limit.
RS-232	DB9 female d-sub connector on unit	Same connector used on front panel.You need pins: 2, 3, 5, 7, 8, (wired 'straight-through').
AC mains		Opposite end as required for your locale. Cable included with unit.

Interconnecting Multiple Units via SymLink

This is relatively straightforward, however the following points are important to keep in mind:

• SymLink is a ring network unlike EtherNet which uses a hub and spoke topology making a single connection to each device from the hub. Each device on a SymNet network has two connections: TRANSMIT and RECEIVE. With SymNet the last unit's TRANSMIT connector must connect to the first unit's RECEIVE connector.

• SymLink cables must be shielded, and are limited to 10 meters length (each).

• It is not necessary to follow any particular numeric order when interconnecting units. This may be helpful when units are located in adjacent racks.

• Each unit must have a different Unit ID number. The master unit must be Unit ID #1. Remember where this unit is, because the PC running SymNet Designer must be connected there.

TRANSMIT   RECEIVE
SymLink™

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SymNet Rear Panel (left)

SymNet Rear Panel (right)

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DIP Switch Settings		
An eight-position DIP switch is located in the middle of the rear panel of the SymNet™ hardware. It determines serial port speed, master/slave mode, unit address, and factory firmware enable. The ON setting is to the left as you face the rear of the unit.		**Note: after changing any DIP switch setting, reboot the hardware by disconnecting it from AC power and then reconnecting it.**
Switch Number, bottom to top	*What does it do?*	*Remarks*
1 - BAUD	Sets baud rate of front panel RS232 Serial Port.	Off=115200 baud, On=57600 baud. Must match setting in SymNet Designer.
2 - MASTER / SLAVE	Off = MASTER, On = SLAVE	Unit with ADDR = 1 must be the MASTER. All other units must be SLAVES.
3-7 - ADDR (Device Address)	Each unit must have a unique address. These switches set that number, in binary form, using the bit values labeled on the equipment. On = 1, Off = 0.The device address equals the number programmed via SW3-7.	SW3 - 1 SW4 - 2 SW5 - 4 SW6 - 8 SW7 - 16 All switches OFF = device address 0 (zero). All switches are ON = device address 31.
8 - Use Factory Firmware	On = Use Factory OS Off = Use upgraded OS	Set to OFF unless instructed otherwise by tech support.

RS-232 Settings	
The rear panel DIP switch determines the baud rate (speed) of the front panel RS-232 connector. After changing the setting of the DIP switch, you must reboot the hardware by removing and restoring AC power to the unit. The cable connecting to the host PC is a simple DB-9 extension cable, with like pins wired to like pins, with male and female connectors at the ends. You can purchase this at any computer store. Generally all pins are wired, which is permissible. At a minimum, you need pins 2, 3, 7, and 8 wired. Pin 5 (ground) is optional.	You may connect your host PC to either the front or rear panel RS-232 port. Test your RS-232 connection by trying to download to the hardware. You should see the yellow RS-232 LED on the front panel blink.

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Analog Input / Output Connections

Item	Description	Details	Remarks
Analog Inputs	Balanced-bridging input accepts signal levels from mic (-50dBu nominal) through line (+4dBu nominal). 48V phantom power available.There is 20 dB headroom past the signal level selected. At unity gain (+4dBu setting), the maximum input level is +24dBu.	Input impedance: >6.66k balanced, >3.3k unbalanced. The input topology uses a balanced instrumentation amplifier. Both inputs are identical and symmetrical in terms of impedance and shunt capacitance. Set input level capability, phantom power, and gain via control software.	For unbalanced use, either reference the minus input terminal to the signal source ground (preferred) or ground the minus input to the adjacent ground terminal. Using the second method deprives you of the common mode rejection inherent in a balanced input, even when coming from an unbalanced source.
Analog Outputs	Balanced line output delivers +24dBu maximum level. Nominal level can be software adjusted for professional or consumer line levels or mic level.	Output source impedance: 204-ohms balanced, 102-ohms unbalanced.The output topology is a chain of inverters, emulating a grounded center-tap transformer secondary.	For unbalanced use float (do not connect) the minus output terminal. Note that unbalanced usage results in 6dB lower output level.
Analog Control Inputs	High-impedance input accepts 0-10V positive DC signals.10V reference voltage available at rear panel interface.	Use with external potentiometer (10k linear taper) or external voltage source (0-10V). See Rear Panel for connections.	

Binary, Relay and RS485 Outputs

Item	Discussion	Remarks
Binary Outputs	Six NPN transistor outputs, cleverly wired to allow operation as open collector output for relay coil driving or for sourcing LED drive current. Collector and ground connections furnished. These outputs can also drive an LED directly. Current limit resistor not needed.	2N4401 transistors. Current must be < 50mA, 24V maximum. Control software determines how these are used. If you're driving a relay, be sure to include a reversed biased diode connected across the relay coil. Connect the LED from the output to ground.
Relay Outputs	Three SPDT relay contacts. Contact rating: 3A, 24VDC, resistive0.3A, 60VDC, resistive	SymNet Designer determines how these are used. Do not use at 120VAC.
RS-485 I/O	Connect to RS-485 system.	2-signal lines and ground provided. See SymNet Designer Help Module or www.symetrixaudio.com for complete protocol.

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Software Installation

The Symetrix SymNet Designer software provides real-time control over multiple audio functions from a Windows 95/98/2000 PC environment.

Use one of the following procedures to install the SymNet Designer on your computer.

From the SymNet Designer CD-ROM:

1. The software should autorun after inserting the CD-ROM into your computer's CD-ROM drive.

2. If the software does not autorun, then Click on the Start button, Run d:\setup

(if your CD-ROM drive isn't d:, then substitute its drive letter)

From the Symetrix Website (http:// www.symetrixaudio.com):

1. Download the SymNet™ Designer program file.

2. From the Start button, Run the file/program that you just downloaded to start the Setup program.

The software always starts up in offline mode. Regardless, you can explore the software, experiment to your heart's content, and perhaps even get useful work done. You can save any configurations that you create to a file that can be downloaded later into an operating SymNet system.

If there is a SymNet unit connected, you can go to online, and upload the configuration file from the SymNet unit(s). Once you have a unit connected, you can also work in real time, which allows you to hear adjustments and settings as you make them.

Using SymNet Desginer

Once the installation process is complete, you should have an icon on your desktop, and a program item on the Start menu. Click on the SymNet icon and you're ready to begin.

SymNet™ Designer is mostly self explanatory. The Configuration Screen represents all SymNet units in a system. Each unit can store up to eight configurations. Using the insert tab of the tool kit (left-hand) window, you select the SymNet unit that you wish to configure and drag it to the configuration page. Double clicking on the unit opens it, and causes the tool kit to display all the different signal processors available. The tool kit window is context sensitive. It always displays the items that can be placed in the current window. You can switch to the Browser tab of the tool kit to navigate to all of the relevant windows opened.

Drag and drop signal processors into the configuration page. Connect them together by clicking on a connection point and moving the mouse in the direction you want the wire to run. Make corners by clicking at the corner and moving off in a new direction. Terminate a wire by clicking on the terminating connection point or by hitting the ESC key or right mouse button. Right click on an existing wire to make a tee connection.

Once you've completed your design, download it to the SymNet unit by clicking the Download! item in the menu bar located at the top of the screen. Double click on processors on the configuration page to see and change their settings.

Note: There are a lot of useful functions available in the mouse right-click. Explore! That's the ultra-condensed version. You'll find more complete information in SymNet Designer's help system.

Internal Hardware Memory

SymNet™ saves its settings in internal Flash Memory, allowing it to recall settings through a power-down/up cycle. Unlike static ram, the flash memory does not require batteries, and is designed to retain its memory for the life of the product.

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Product Registration   Revision A.04   8 of 9

To register your product, complete the information below and mail or fax copies of both this page and your sales receipt to:

Symetrix, Inc.
ATTN: Product Registration
14926 35th Ave West
Lynnwood, WA 98037 USA

(425) 787-3211

Or ... register online at **www.symetrixaudio.com**

Model #	Serial #
Dealer	Dealer City
Your Name	Date of Purchase
Your Company	Your Telephone Number
Title / Department	
Your Email Address	
Mailing Address	Country
City	
State	
Postal Code	

Where is this product being used? (check all that apply)		What was the deciding factor in choosing this Symetrix product?
❑ Hotel	❑ Auditorium	❑ Feature set
❑ Paging System	❑ Casino	❑ Price
❑ School	❑ Church	❑ Specifications
❑ Stadium / Arena	❑ Transportation Terminal	❑ Reliability
❑ Conference Center	❑ Other _____	❑ Reputation
		❑ Availability
		❑ Warranty
		❑ Other _____

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Declaration of Conformity

We, Symetrix, Incorporated, 14926 35th Ave West, Lynnwood, WA, 98037, USA, delcare under our sole responsibility that the products:

- **SymNet 8x8 DSP**
- **SymNet 8in DSP**
- **SymNet 8out DSP**

to which this declaration relates, are in conformity with the following standards:

EN 60065
Safety requirements for mains operated electronic and related apparatus for household and similar general use.

EN 50081-1
Electromagnetic compatibility - Generic emission standard
Part 1: Residential, commercial, and light industry.

EN 50082-1
Electromagnetic compatibility - Generic immunity standard
Part 1: Residential, commercial, and light industry.

EN 55022
Limits and methods of mesurement of radio interference characteristics of information technology equipment.

The technical construction file is maintained at:
Symetrix, Inc.
14926 35th Ave. West
Lynnwood, WA, 98037-2303
USA

The authorized representative located within the European Community is:
World Marketing Associates
P.O. Box 100
St. Austell, Cornwall, PL26 6YU, England

Date of issue: 15 March, 2002
Place of issue: Lynnwood, Washington, USA
Authorized signature:

Dane Butcher, President, Symetrix Incorporated.