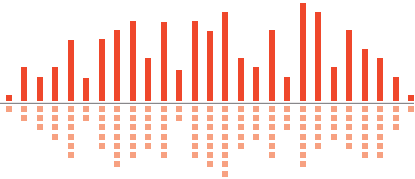


CobraLink

Quick Start Guide



Master the Audio Environment



Engineered by Symetrix

What Ships in the Box

- A CobraLink hardware device.
- SymNet Designer CD-ROM (Windows)
- A SymLink patch cable.
- A ferrite clamp
- One PS-4 switching power supply which provides 6 VDC @ 3.3 amperes. NOTE: The PS-4 will accept a 100-240 VAC input. A power cable for domestic use is supplied for the PS-4. Export customers should supply the appropriate substitute cable for their locale.
- This Quick Start Guide.

What You Need to Provide

- A Windows® PC with 300MHz or higher Pentium® and:
- WIN 98SE, ME, 2000 or XP®.
- 10-15 MB free storage space.
- 1024x768 graphics capability.
- 16-bit or higher colors.
- CD-ROM drive or Internet connection.
- 64MB RAM (WIN 98SE/ME), 128MB RAM (WIN 2000/XP).
- 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 SymNet's front panel RS-232 input. The SymNet RS-232 input is a female DB9 connector.

Getting Help

SymNet Designer, the Windows application that controls all SymNet hardware, includes a help module which acts as a complete User's Guide for both hardware (including the CobraLink device) and software.

If you have questions beyond the scope of the help module, contact our Customer Support Group in the following ways:

Tel: +1 (425) 778-7728
8:00 am to 4:30 pm
Monday through Friday,
Pacific Time

Web: <http://www.SymetrixAudio.com>

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.

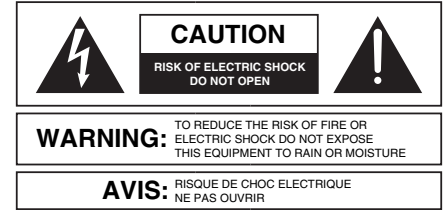
This Class B Digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations

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

Keep up-to-date with the latest version of SymNet Designer™, the Windows® application that controls all SymNet hardware, go to: <http://www.SymetrixAudio.com>

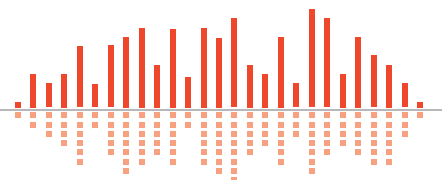
Important Safety Instructions

- 1 Read these instructions.
- 2 Keep these instructions.
- 3 Heed all warnings.
- 4 Follow all instructions.
- 5 Do not use this apparatus near water. This apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.
- 6 Clean only with dry cloth.
- 7 Do not block any ventilation openings. Install only in accordance with the manufacturer's instructions.
- 8 Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9 This apparatus shall be connected to a mains socket outlet with a protective earthing connection. Do not defeat the safety purpose of the polarized or grounding-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 or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10 Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11 Only use attachments/accessories specified by the manufacturer.
- 12 Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- 13 Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14 Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug cord is damaged, 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.



SEE OWNERS MANUAL. VOIR CAHIER D'INSTRUCTIONS.
 No user serviceable parts inside. Refer servicing to qualified service personnel.
 Il ne se trouve à l'intérieur aucune pièce pourvante entre réparée l'utilisateur.
 S'adresser à un réparateur 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).
- ◆ **CAUTION:** To prevent electric shock, do not use the polarized plug supplied with the unit with any extension cord, receptacle, or other outlet unless the prongs can be fully inserted.
- ◆ **Power Source:** This Symetrix hardware uses a switching power supply that automatically adjusts to the applied voltage. Ensure that your AC mains voltage is somewhere between 100-240 VAC, 50-60 Hz. Use only the power cord and connector specified for the product and your operating locale. A protective ground connection, by way of the grounding conductor in the power cord, is essential for safe operation. The appliance inlet and coupler shall remain readily operable once the apparatus has been installed.
- ◆ **User Serviceable Parts:** There are no user serviceable parts inside this Symetrix product. In case of failure, customers inside the U.S. should refer all servicing to the Symetrix factory. Customers outside the U.S. should refer all servicing to an authorized Symetrix distributor. Distributor contact information is available online at: <http://www.SymetrixAudio.com>.

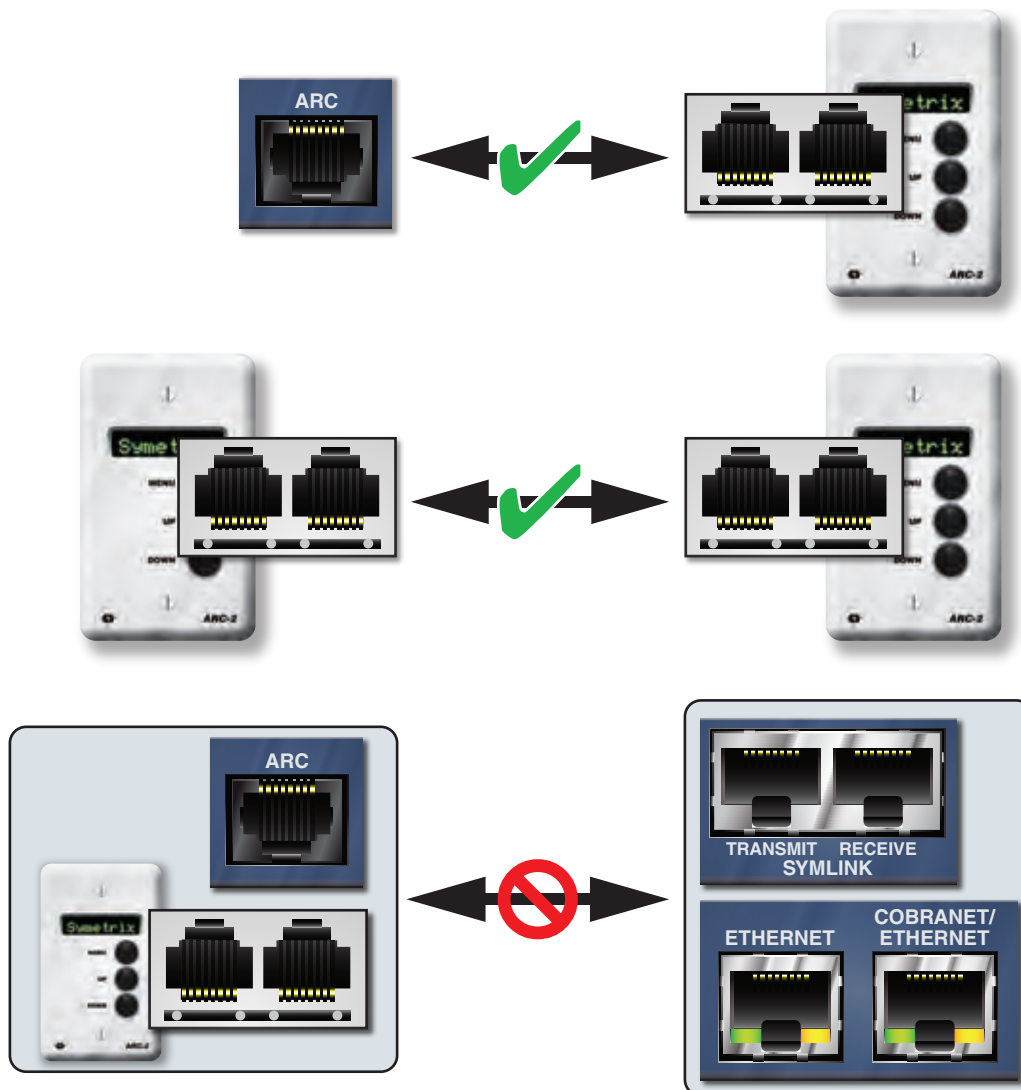


! WARNING! !

The RJ-45 connectors labeled “ARC” are only for use with the ARC series of remotes.

DO NOT plug the ARC connectors on Symetrix products into any RJ-45 connector labeled “SYMLINK”, “ETHERNET” or “COBRANET”.

The “ARC” RJ-45 connectors on Symetrix products can carry anywhere from 6 to 24 VDC which can damage SymLink, Ethernet and CobraNet circuitry.



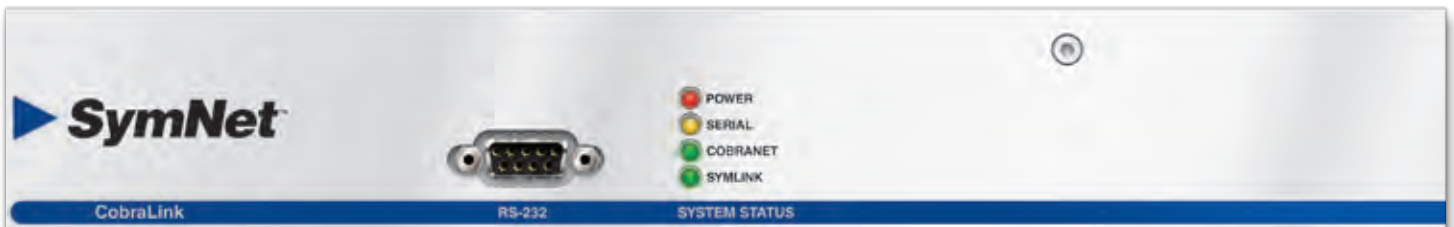
Introduction

SymNet™ is a scalable DSP platform configured by SymNet Designer software and made by Symetrix. Installed in Convention Centers, Sports Arenas, Houses of Worship and many other venues throughout the world, consultants, integrators and end-users rely on the robust stability of the SymNet platform.

SymNet is an open architecture system. This means DSP modules (EQ, compression, etc.) are placed into the design and connected using standard drag-and-drop methods. Various SymNet hardware can be chained together to provide a custom audio solution for the client. SymNet's main advantage can be summed up in one word: "Options". Options for DSP processing, options for audio routing and options for control.

Performance Data	
Item	Specifications
Dynamic range	144 dB
Maximum audio input channels	32
Maximum audio output channels	32

Mechanical Data		
Item	Specifications	Remarks
Space Required	1U (WDH: 48.3 cm x 21.6 cm x 4.37 cm / 19 in x 8.5 in x 1.72 in). Depth does not include connector allowance.	Allow at least 1 inch additional clearance for rear panel connections. Additional depth may be required depending upon your specific wiring and connections.
Electrical	100 to 240 VAC, 50-60 Hz, 6 VDC output, 20W maximum.	No line voltage switching required.
Ventilation	Maximum recommended ambient operating temperature is 30 C / 86 F.	The ventilation should not be impeded by covering the ventilation openings with items such as newspapers, tablecloths, curtains, etc.
Shipping Weight	6 kg (12 lbs.)	

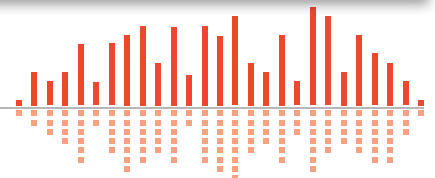


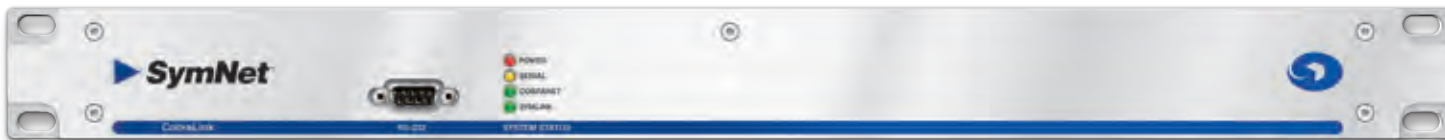
Overview

The **CobraLink device** functions as a translator between **SymLink™** and **CobraNet®** bus technologies. It has no onboard DSP. It allows the sharing of digital audio between SymLink rings, Express devices, and third-party CobraNet-compatible hardware including amplifiers and powered speaker systems. A maximum of thirty-one (31) CobraLink devices, with associated SymLink rings, can be configured as a single SymNet system.

The device includes 64 channels (32 transmit and 32 receive) of Cirrus Logic's industry-standard CobraNet protocol for audio over Ethernet. CobraNet-to-SymLink routing is configured entirely by SymNet Designer software.

This software-controlled-hardware scheme allows system designers an enormous amount of flexibility by supporting broadcast or multicast bussing in incremental send or return bundles, up to eight channel groups, with selectable latency options, selectable bit-depth options, and direct network addressability from SymNet Designer over Ethernet. When incorporated in a SymLink Ring, CobraLink hardware occupies the number 1 (Ring Master) position.





Front Panel		
Connection	Description	What It Does
RS-232	DB9 Female	Default serial communications interface for SymNet Designer on the host PC. Wired straight-through, only pins 2, 3 and 5 are required. Port Settings: 115 or 57.6 kbaud, 8 data bits, 1 stop bit, no parity, no flow control. Baud rate determined by DIP switch #1 which must match SymNet Designer's communications preferences.
POWER	Red LED	Indicates the power is on.
SERIAL	Yellow LED	Indicates current host communications.
COBRANET	Green LED	Indicates a valid COBRALINK connection. The LED should be lit solid when there is a valid CobraLink connection. If flashing or off, check connections, cables and DIP switches.
SYMLINK	Green LED	Indicates a valid SYMLINK connection. The LED should be lit solid when there is a valid SymLink connection. If flashing or off, check connections, cables and DIP switches.



Rear Panel		
Connection	Description	What It Does
POWER INPUT	2.0 mm jack	Accepts power from Symetrix PS-4 (or equivalent) power supply only.
DEVICE CONFIG	8 DIP switch block	Sets ring number of the SymNet ring. In a system with more than one CobraLink unit, each unit must be given a unique ring number. Exactly one unit must be assigned to ring number 1.
RS-232	DB9 Female	Default serial communications interface for a 3rd party accessory controller. Wired straight-through, only pins 2, 3 and 5 are required. Port Settings: 38.4 kbaud (default), 8 data bits, 1 stop bit, no parity, no flow control.
SYMLINK TRANSMIT/RECEIVE	RJ-45	Low-latency 64-channel audio and data bus. Use shielded CAT5 cables less than 10 meters in length, standard straight through wiring.
RS-485	Detachable Euroblock	Connects to a Control I/O, ARC-PS, ARC or other Symetrix SymNet family RS-485 controller, wired in parallel (A to A, B to B and GND to GND) using shielded twisted pair. Port Settings: 38.4 kbaud (default), 8 data bits, 1 stop bit, no parity, no flow control.
COBRANET PRIMARY/SECONDARY	RJ-45	Connects the SymNet ring to a CobraNet network. Use the connector labelled PRIMARY. The connector labelled SECONDARY is redundant and can be used if the CobraNet device you are connecting to has a SECONDARY port.

SymNet System Connections

Host Communications (RS-232)

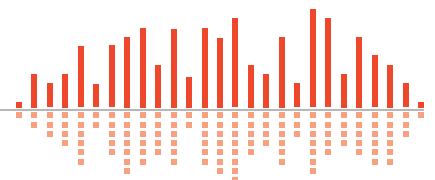
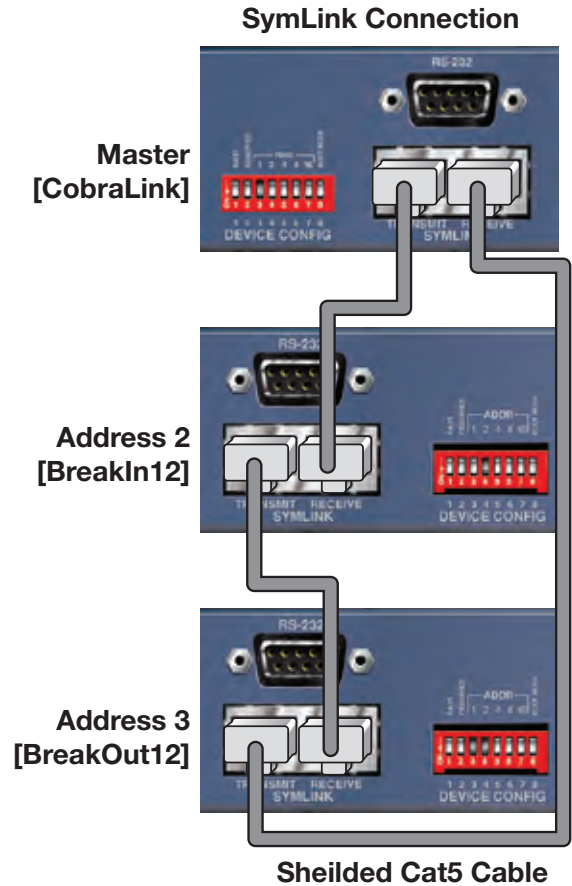
The CobraLink has two RS-232 ports, one on the front and one on the rear. By default, the front port is reserved for host (SymNet Designer) communications and the rear is reserved for a 3rd party RS-232 accessory controller. Both ports are active simultaneously. The host port's baud rate is set by DIP switch #1 labeled "BAUD" and this baud rate must match the baud rate chosen in SymNet Designer's Preferences dialog.

SymLink Connection

The CobraLink connects to the rest of the SymNet system by SymLink. SymLink is a ring network, unlike Ethernet which uses a hub and spoke topology making a single connection to each device from a hub. Each SymNet hardware device on a SymLink ring has two connections: TRANSMIT and RECEIVE. TRANSMIT connects to the RECEIVE port on the next device in the ring. TRANSMIT from the last device in the ring connects to the RECEIVE port on the first device in the ring. This completes the "SymLink Ring". When the ring is complete and all connections and device addresses are valid, the SYMLINK ACTIVE LEDs on the fronts of all units will be lit solid green. If any unit's SYMLINK ACTIVE LED is flashing or unlit, it means that the unit is not receiving a valid SymLink connection from the upstream unit. Check the connection, cabling and DIP switches.

Note: Shielded CAT5 cables are recommended for SymLink connections and length must be limited to 10 meters each. One shielded SymLink patch cable is included with each hardware device featuring SymLink connections. Included in the SymNet packaging is a ferrite clamp. In order to maintain CE compliance, this clamp should be installed on the TRANSMIT side of each SymLink cable.

Warning! The RJ-45 connectors labeled "SYMLINK" should ONLY be connected to other RJ-45 connectors labeled "SYMLINK". NEVER connect "SYMLINK" connectors to any other RJ-45 connectors.



CobraNet

Developed by Cirrus Logic, CobraNet™ is the industry’s leading technology for distributing uncompressed real-time digital audio over a Fast Ethernet network. It is the standard technology for the transport of multi-channel audio and control data. CobraNet uses a Fast Ethernet (100 Base-T) network. The CobraNet implementation in allows for 32 transmit channels and 32 receive channels.

Note: Bundles are a means of grouping channels. Bundles may be multicast (one to many) or unicast (one to one). Only one device may transmit on a particular bundle.

The limitations of Fast Ethernet also apply to CobraNet. This means that when using standard copper CAT5 cabling, the total network diameter is limited to 200 meters (100 meters between devices (nodes) and their common hub; switch, router, etc.).

If greater distance between devices is necessary, you can convert to fiber using media converters or network hardware with fiber bridging/conversion built-in. In all cases, the networking hardware used for CobraNet should be on Cirrus Logic’s recommended hardware list. For further information on designing CobraNet networks, or to obtain a list of recommended network hardware, see Cirrus Logic’s web site: <http://www.cobranet.info>.

CobraNet Examples

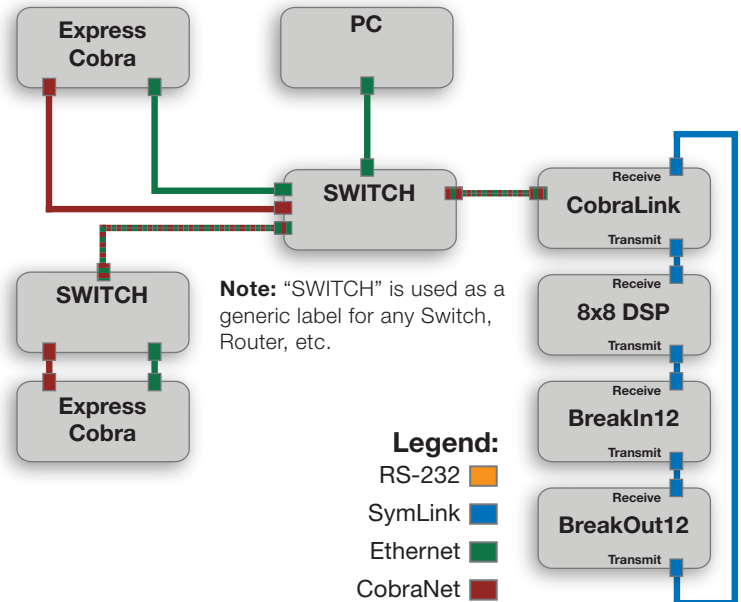
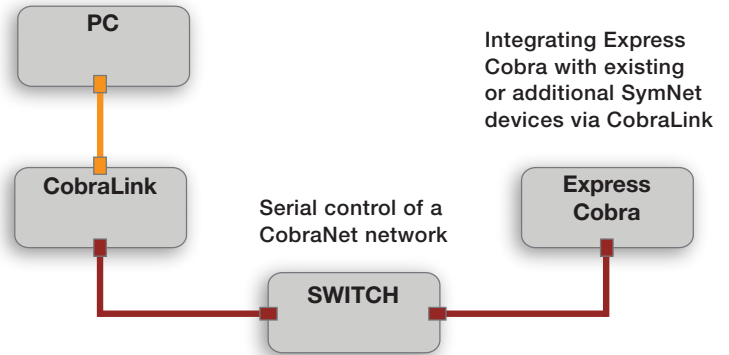
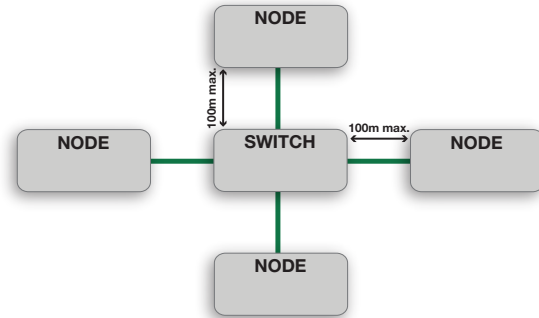
The following diagrams depict some typical CobraNet networks and what can be accomplished with each particular network.

Serial control of a CobraNet network:

Two or more CobraNet devices on a common private CobraNet audio network controlled from a PC via a serial (RS-232) connection. The PC may connect to any CobraNet-networked Express or CobraLink. This most basic setup allows the sharing of audio and control data between CobraNet devices while minimizing setup, security and network traffic issues.

Integrating Express Cobra with existing or additional SymNet devices via CobraLink:

Express Cobra can share audio and control data with a traditional SymNet ring if that ring contains a CobraLink device. CobraLink has only one RJ-45 connector which carries both CobraNet and data traffic. Therefore, it is necessary to combine the dedicated Ethernet and CobraNet RJ-45 connectors on an Express Cobra using a hub, switch or router. Remember to use Cirrus Logic approved networking hardware.



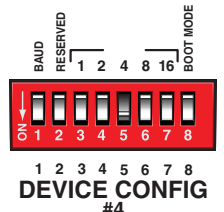
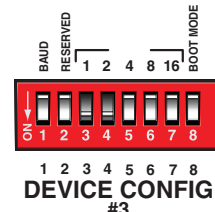
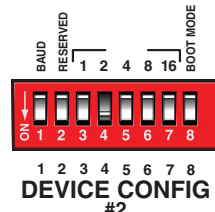
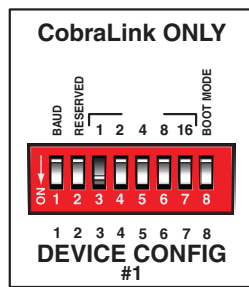
SymNet Family DIP Switch Settings

As of SymNet Designer software version 2.0, a maximum of 32 Rings, each having 16 Addresses, are possible. For the sake of space, only switch settings for the first 8 Rings or Addresses are pictured.



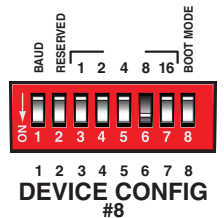
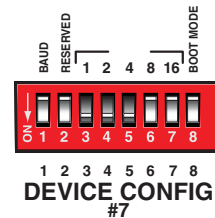
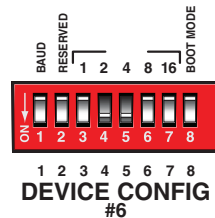
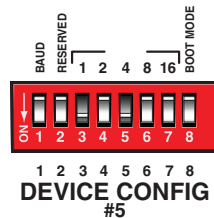
SymNet CobraLink

NOTE: The DIP switches on a CobraLink device configure its **Ring number**. A CobraLink device is always at Address 1 and is the Master of its ring.



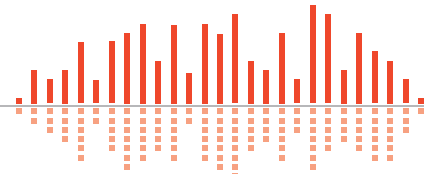
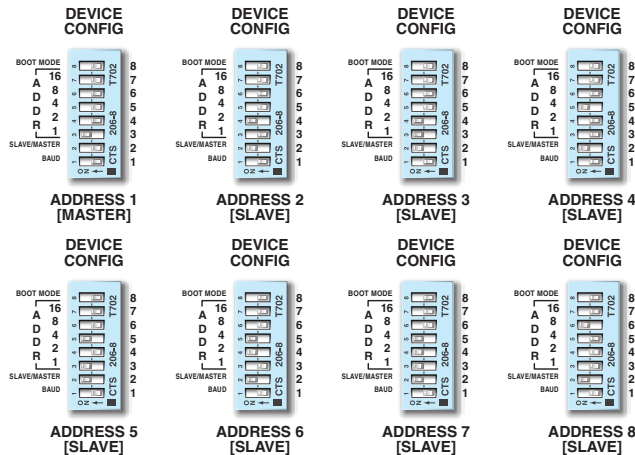
SymNet BreakIn12 and BreakOut12

NOTE: On the Break I/Os, switches configure **address**. An Address of 1 is not valid on the BreakIn12 or BreakOut12 since these devices can not be the Master on a Ring.



SymNet 8x8 DSP

NOTE: Only one Master is allowed on the Ring and it should be Address 1.



Dancing Lights.

If any of your SymNet units power on and seem to suffer from Dancing Lights Syndrome, never fear. This simply means that there is no active Site File loaded. Download your Site File to the hardware (F4) in order for the settings to be stored.

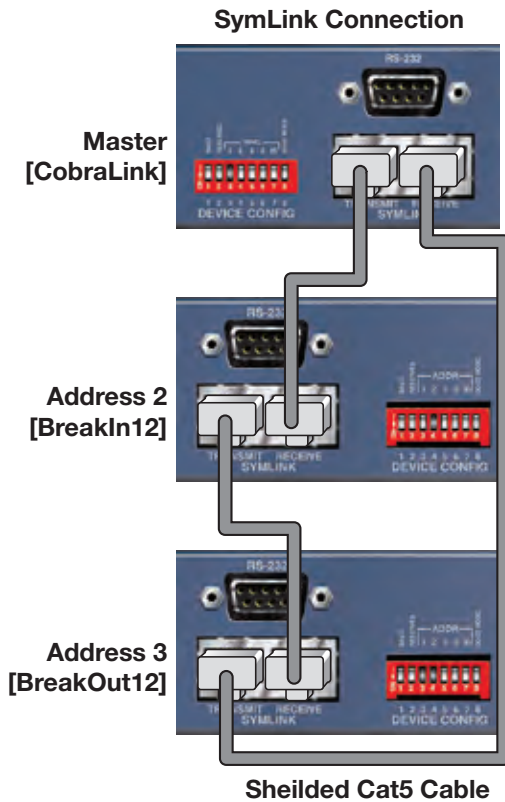
Serial Communications.

Be sure that you use a straight-through RS-232 cable connected to the DB9 port labeled RS-232. You must connect to whichever unit is master for a given ring. It is permissible to connect to any ring provided that you connect to the master unit (the unit with an Address of 1). By default, SymNet Designer communicates with the hardware units at a baud rate of 115,200 bps. This is how the baud DIP switch (number 1) is configured in the examples on page 7. However, if you have a PC that is incapable of operating at this speed, a setting of 57,600 bps is available. DIP switch 1 will be opposite of the examples on page 7 and the speed of 57,600 bps must be selected in SymNet Designer's Preferences dialog accessible from the File menu.

SymLink Communications.

The SymLink bus uses industry standard CAT5 shielded Ethernet cable. The SymNet units are interconnected in a ring network fashion. The TRANSMIT of the first unit is connected to the RECEIVE of the second unit and so on. The last unit in the chain should then have its TRANSMIT connected to the first units RECEIVE to complete the ring. All SYMLINK ACTIVE green LEDs should be lit on the front of each SymNet device.

Example:



Firmware.

IMPORTANT: To run SymNet Designer, the firmware in your hardware devices must match the firmware versions included with the software. If you receive SymNet Designer with a new SymNet device from the factory, then the firmware versions should already match. However, if you are connecting to an older SymNet system, the firmware versions in hardware must match those included with the version of SymNet Designer you are using. The correct firmware files are always included with each software release.

When downloading a Site File to SymNet hardware, the firmware versions will be checked and you will be prompted to upgrade firmware if necessary.

CobraLink and Express Only: For CobraLink and Express Cobra units, there is also CobraNet firmware from Cirrus Logic. You may need to upgrade this firmware as well. See Upgrading CobraNet Firmware using CobraNet Discovery in the SymNet Designer release notes for instructions.

Upgrading Firmware using Auto Upgrade

1. Install SymNet Designer. This will copy the necessary firmware files to your computer.
2. Launch SymNet Designer.
3. Connect your hardware devices as they would be for normal operation. It is highly recommended to power down or disconnect power amplifiers and speakers.
4. In SymNet Designer, choose Hardware->Upgrade Firmware.
5. Press the Auto Upgrade button. This will upgrade all connected devices.
6. When finished, click 'Close'.

If you encounter problems with this procedure, use the **Manual Upgrade** procedure below.

Upgrading Firmware - Manual Upgrade

1. Install SymNet Designer. This will copy the necessary firmware files to your computer.
2. Launch SymNet Designer.
3. Connect your hardware devices as they would be for normal operation. It is highly recommended to power down or disconnect power amplifiers and speakers.
4. In SymNet Designer, choose Hardware->Upgrade Firmware.
5. Click the 'Upgrade' button under SymNet Microprocessor file. An 'open' file dialog will appear allowing navigation to the firmware files. The default location is: C:\Program Files\Symetrix\SymNet Designer X.X\Upgrade.
6. Select the file SymNet_MicroProc_VXXXX.bin and click 'Open'.
7. When finished, click the 'Upgrade' button under SymNet FPGA file. Select the SymNet_FPGA_VXXXX.bit file and click 'Open'.
8. If you have more than one SymNet device, select each device using the Address dropdown at the top of the dialog box and repeat steps 4-6.
9. If you are using CobraLink or Express Cobra and have more than one ring, repeat for all devices on all rings using the Ring dropdown at the top of the dialog box.
10. When finished, click 'Close'.

The Symetrix Limited Warranty

Symetrix, Inc. expressly warrants that the product will be free from defects in material and workmanship for eighteen (18) months from the date the product is shipped from the factory. Symetrix's obligations under this warranty will be limited to repairing or replacing, at Symetrix's option, the part or parts of the product which prove defective in material or workmanship within eighteen (18) months from the date the product is shipped from the factory, provided that the Buyer gives Symetrix prompt notice of any defect or failure and satisfactory proof thereof. Products may be returned by Buyer only after a Return Authorization number (RA) has been obtained from Symetrix. Buyer will prepay all freight charges to return the product to the Symetrix factory. Symetrix reserves the right to inspect any products which may be the subject of any warranty claim before repair or replacement is carried out. Symetrix may, at its option, require proof of the original date of purchase (dated copy of original retail dealer's invoice). Final determination of warranty coverage lies solely with Symetrix. Products repaired under warranty will be returned freight prepaid via United Parcel Service by Symetrix, to any location within the Continental United States. Outside the Continental United States, products will be returned freight collect.

The foregoing warranties are in lieu of all other warranties, whether oral, written, express, implied or statutory. Symetrix, Inc. expressly disclaims any IMPLIED warranties, including fitness for a particular purpose or merchantability. Symetrix's warranty obligation and buyer's remedies hereunder are SOLELY and exclusively as stated herein.

This Symetrix product is designed and manufactured for use in professional and studio audio systems and is not intended for other usage. With respect to products purchased by consumers for personal, family, or household use, **Symetrix expressly disclaims all implied warranties, including but not limited to warranties of merchantability and fitness for a particular purpose.**

This limited warranty, with all terms, conditions and disclaimers set forth herein, shall extend to the original purchaser and anyone who purchases the product within the specified warranty period.

Symetrix does not authorize any third party, including any dealer or sales representative, to assume any liability or make any additional warranties or representation regarding this product information on behalf of Symetrix.

This limited warranty gives the buyer certain rights. You may have additional rights provided by applicable law.

Note: Some Symetrix products contain embedded software and may also be accompanied by control software intended to be run on a personal computer. Said software is specifically excluded from this warranty.

Limitation of Liability

The total liability of Symetrix on any claim, whether in contract, tort (including negligence) or otherwise arising out of, connected with, or resulting from the manufacture, sale, delivery, resale, repair, replacement or use of any product will not exceed the price allocatable to the product or any part thereof which gives rise to the claim. In no event will Symetrix be liable for any incidental or consequential damages including but not limited to damage for loss of revenue, cost of capital, claims of customers for service interruptions or failure to supply, and costs and expenses incurred in connection with labor, overhead, transportation, installation or removal of products, substitute facilities or supply houses.

Servicing Your Symetrix Product

If you have determined that your Symetrix product requires repair services and you live outside of the United States please contact your local Symetrix dealer or distributor for instructions on how to obtain service. If you reside in the U.S. then proceed as follows:

Return Authorization

At the Symetrix factory, Symetrix will perform in-warranty or out-of-warranty service on any product it has manufactured for a period of three (3) years from date of discontinued manufacture.

Before sending anything to Symetrix, please contact our Customer Service Department for a Return Authorization (RA) number. The telephone number is +1 (425) 778-7728. Additionally, support is available via the web site: <http://support.SymetrixAudio.com>.

In-warranty Repairs

To get your Symetrix product repaired under the terms of the warranty:

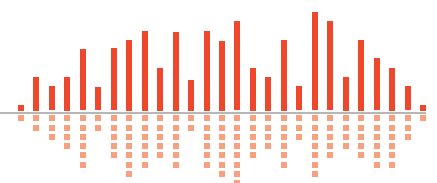
1. Call us for an RA number (have the serial number, shipping and contact information and description of the problem ready).
2. Pack the unit in its original packaging materials.
3. Include your name, address, daytime telephone number, and a brief statement of the problem.
4. Write the RA number on the **outside** of the box.
5. Ship the unit to Symetrix, freight prepaid. We do not accept freight collect shipments.

Just do these five things, and repairs made in-warranty will cost you only one way freight charges. We'll pay the return freight.

If you don't have the factory packaging materials, we recommend using an oversize box. Wrap the unit in a plastic bag, surround it with bubble-wrap, and place it in the box surrounded by Styrofoam peanuts. Be sure there is enough clearance in the box to protect the rack ears. We won't return the unit in anything but Symetrix packaging for which we will have to charge you. If the problem is due to operator misuse or error, you will have to pay for both parts and labor. In any event, if there are charges for the repair, you will pay for the return freight. All charges will be COD unless you have made other arrangements (prepaid, Visa or Mastercard).

Out-of-warranty Repairs

If the warranty period has passed, you'll be billed for all necessary parts, labor, packaging materials, and freight charges. Please remember, you must call for an RA number before sending the unit to Symetrix.





Master the Audio Environment

Engineered by **Symetrix**

Item No. 53-0022

CobraLink **Quick Start Guide**

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