Quick Start Guide
ARC™ (Adaptive Remote Control)

SymNet ™
Symetrix **Audio Matrix**

What Ships in the Box
☑ An ARC hardware device with white wall plate.

☑ A black wall plate.

☑ One PS-6 (domestic) or PS-6E (export) power supply which provides 9 volts DC @ 500 milliamperes.

☑ A single-gang new construction outlet box.

☑ This Quick Start Guide.

☑ An RJ-45 Incompatibility Warning sheet.

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).

☑ One or more of the following connection materials:
- Shielded twisted pair wire to connect the ARC RS-485 terminal blocks to the RS-485 port of a master SymNet DSP or CobraLink (Ring x, Address 1) hardware device.
- CAT-5 cables to connect the ARC to an ARC-PS, Control I/O or other ARC's.

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 ARC) and software. A printable copy is also available at www.symetrixaudio.com.

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

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

Email   tech@symetrixaudio.com

Web   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 numerique de la classe B respecte toutes les Exigences du Reglement sur le materiel brouilleur du Canada.

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.

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. 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.

⚡	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.
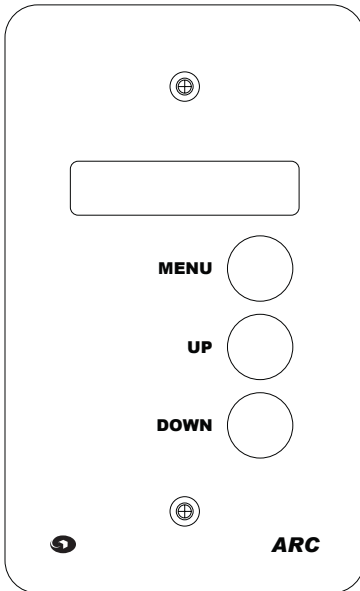
The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons. The exclamation point within 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).

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.
The ARC hardware uses a separate external power supply for domestic and export markets. Ensure that your AC mains voltage matches that of your power supply. Refer to rating on the power supply. Use only the power cord and connector specified for the product and your operating locale.

User Serviceable Parts.
There are no user serviceable parts inside the SymNet™ ARC. 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 www.symetrixaudio.com.

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Overview
The ARC is an RS-485 device used to remotely control configuration changes or module parameters within a SymNet system. It is designed to be mounted in a single-gang wall outlet (provided), and comes with two plastic wall plates, one black and one white. An optional brushed aluminum wall plate is available. A SymNet ring may have a maximum of 32 ARCs, each ARC containing up to 12 menus. Each menu may be continuous (as in volume controls) or enumerated (as in source selection) with up to 16 enumerations.

The ARC uses a 3 button interface, and has an 8 character digital alphanumeric LED display with adjustable brightness for feedback. It is fully programmed from the SymNet Designer software and its programming is contained, saved and downloaded along with the Site File. For more information on programming the ARC, please refer to the SymNet Designer on-line Help Module within the SymNet Designer application.

ARC Network Design
The ARC can be powered two ways: (1) over CAT-5 via the ARC-PS or Control I/O, or (2) by local 6 to 15 VDC power supplied to the ARC's terminal block connections.

Warning! The RJ-45 connectors on the ARC are only for use with the ARC, ARC-PS and Control I/O. DO NOT plug the RJ-45 connectors on the ARC into any RJ-45 connector labeled "SYMLINK", "HOMERLINK" or "ETHERNET". The RJ-45 connectors on the ARC, ARC-PS and Control I/O can carry anywhere from 6 to 15 VDC which can damage SymLink, HomerLink and Ethernet circuitry.

The ARC's power requirements vary depending on the voltage supplied to it. At 15 VDC, it uses approximately 115 mA, while at 6 VDC it uses approximately 300 mA maximum. As the voltage goes from 15 to 6 VDC, the current requirement increases accordingly.

ARCs can be daisy-chained and fed power over this daisy-chain from an ARC-PS or Control I/O. However, as the length of the cable increases, so does the resistive line loss, which lowers the voltage available at each subsequent ARC. The actual power drain on each output from the ARC-PS or Control I/O can vary substantially depending on the number of ARCs and the distance each of them is separated by. In order to assist with system design, Symetrix has available a Microsoft Excel spreadsheet that can help a system designer determine power requirements based upon cable length, number of ARCs and the power supply to be used. This spreadsheet can be downloaded from the SymNet Technical Support pages at: http://www.symetrixaudio.com/SymNet_Web/index.htm

The following table gives some indication of cabling limitations, based on DC power only (the table is not relevant if only RS-485 is distributed via the ARC-PS or Control I/O): minimum stated distances assume 28 gauge CAT-5 cabling, maximum stated distances assume 24 gauge CAT-5 cabling.

CABLE LENGTH LIMITATIONS FOR ARC DC POWER OVER CAT-5 CABLE	
Total cable length (to end of chain)	Number of ARCs in 1 daisy chain
224-640 ft.	4
276-792 ft.	3
350-1028 ft.	2
486-1396 ft.	1

If power is not distributed over CAT-5, the ARC's RS-485 will be limited to 1000 ft in a star network configuration and 4000 ft in a daisy-chain network configuration. Longer distances may be possible using third party RS-485 extender products.

Disclaimer: From time to time we test the compatibility of our own products with those of third parties. While we are happy to share with our customers the results of our own studies as well as other possibly unsubstantiated information regarding these third party products, it is the policy of Symetrix, Inc. to neither endorse, recommend nor support products manufactured and/or supplied by third parties. The responsibility of choosing third party products which are compatible with Symetrix products rests solely with the qualified contractor, consultant or system designer.

System Connection
The biggest decision to make regarding ARC installation is how to distribute both RS-485 data and power to the ARC(s). The ARC has two RJ-45 jacks which can accept or relay RS-485 and power. Using the RJ-45 connections can be a very convenient way to get both data and power to all ARCs. They can be easily daisy chained or fed in a star configuration from an ARC-PS or Control I/O. The ARC also has a terminal block type connector to which the PS-6 power supply can be connected to supply power. In this case, the ARC's RS-485 terminal block connections connects to any Ring Master SymNet hardware device at ADDR #1. The ARC connects to the RS-485 port of the SymNet hardware device using shielded twisted pair cable wired in parallel.

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System Connection... continued, RS-485 Termination   **3/4**

CAT-5 CABLE PINOUT FOR POWER AND RS-485 DISTRIBUTION	
Pin #	Function
1	Ground
2	Ground
3	Ground
4	RS-485 "A"
5	RS-485 "B"
6	Ground
7	Power
8	Power

WARNING: When designing a system, one must be careful not to double power any ARCs. If all pins on the CAT-5 connections are used, power can travel over the CAT-5 cable and reach any ARC on that particular chain. So, power over CAT-5 could potentially come from the ARC or from an ARC that is powered locally and then daisy chained via CAT-5 to other ARCs. In general, it is recommended to use only one type of connector on the ARCs, either the RJ-45s (with CAT-5 cable) or the terminal blocks.

Up to 32 RS-485 devices can be attached to any SymNet ring. Every RS-485 device (including all ARCs and Control I/Os) connected to the same SymNet ring must be uniquely identified. This is accomplished through the use of 5 DIP switches on the side of the ARC. The DIP switches are set in a binary fashion. For example, if switches 1 and 3 are on, then the address is 5. If switches 2 and 5 are on, the address is 18. Any time the DIP switches are changed, the unit must be power cycled for the changed to take effect.

RS-485 Termination

The ARC features an RS-485 termination jumper. Jumper J7 on the upper right corner of the ARC by the RS-485 terminal block connections enables and disables termination. Terminated and open positions are labeled on the PCB silkscreen. For maximum signal integrity, follow the termination guidelines below:

RS-485 TERMINATION GUIDELINES	
Daisy chain length	Termination
0 - 200 ft.	No termination required
200 - 1000 ft. (if powering over CAT-5)	Terminate at ARC
> 1000 ft. (or if not powering over CAT-5)	Terminate at ARC-PS (or Control I/O) and at the last ARC in each chain

For star configurations, terminate at the ARC-PS or Control I/O.

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Warranty and Service   4/4

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 the ARC

If you have determined that your ARC 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 (425) 778-7728. Additionally support is available via E-mail through tech@symetrixaudio.com or via the web site http://www.symetrixaudio.com.

In-warranty repairs

To get your ARC 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.