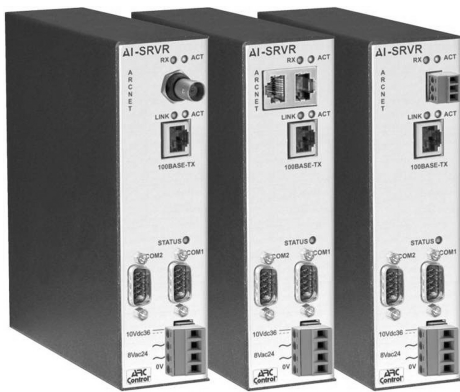


ARCNET Server to Ethernet Client



- Provides connectivity between ARCNET® baseband networks and Ethernet
- Sends/receives ARCNET packets to/from Ethernet clients
- Supports coaxial and twisted-pair ARCNET networks including AC- and DC-coupled EIA-485
- Provision for 10/100 Mbps Ethernet TCP/IP connection
- 256 separate ARCNET receive buffer mailboxes
- Allows for the monitoring of all ARCNET traffic including broadcasts
- A DLL for Windows® 2K/XP clients is provided to facilitate communication
- Resident web server provides status information
- Configurable through an EIA-232 console port
- Low-voltage AC- or DC-powered
- Provisions for redundant power connections
- Panel-mount or DIN-rail mount
- CE Mark
- RoHS compliant

PRODUCT OVERVIEW

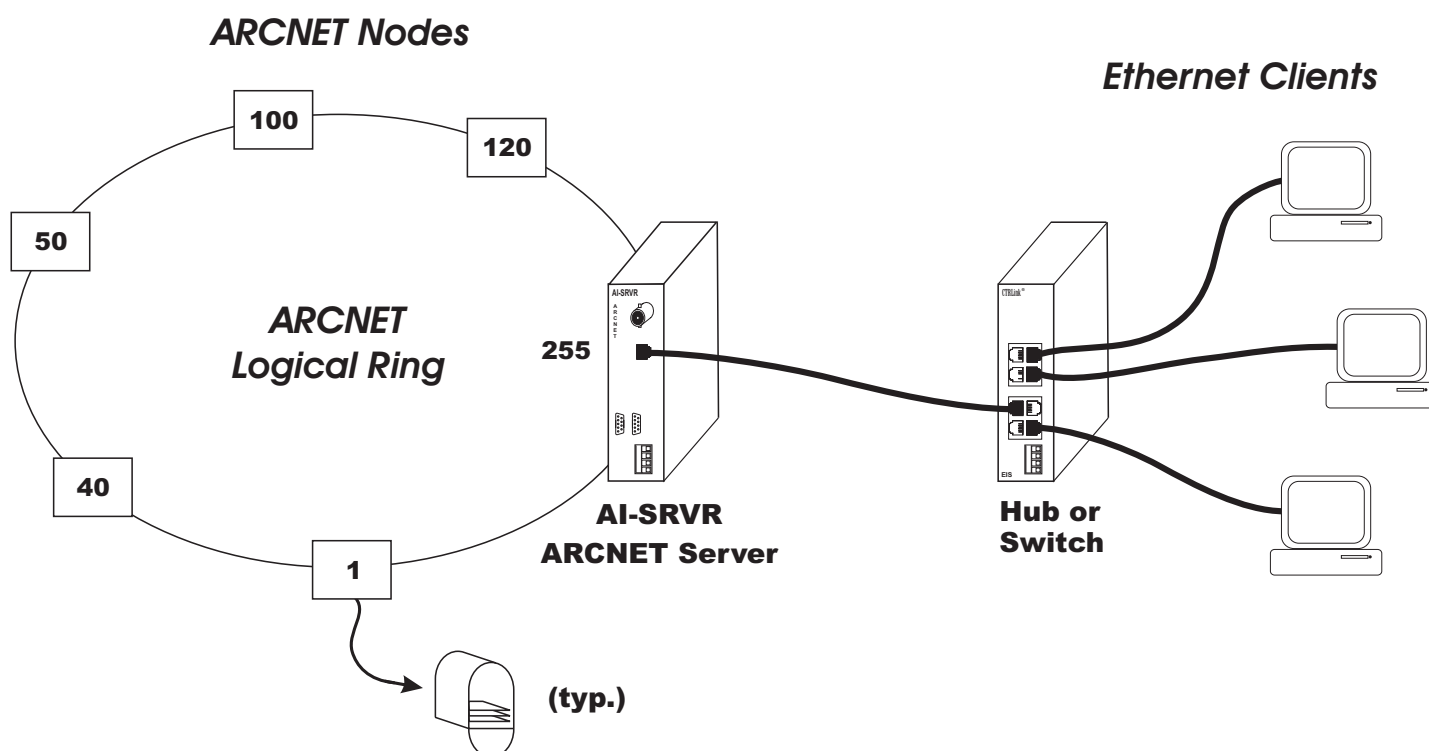
The AI-SRVR allows for connectivity between an ARCNET network and an Ethernet network giving a client on the Ethernet side access to nodes on the ARCNET side. The unit's role as an ARCNET server is to execute communication requests from an Ethernet client. Any number of Ethernet TCP/IP clients can initiate requests to any node on an ARCNET network. This device will receive ARCNET packets and send the data to Ethernet clients or reverse the process for packets received from Ethernet.

Both ARCNET and Ethernet are data link technologies with varied medium access methods, frame sizes and link layer protocols. With Ethernet, the most popular transport layer protocol is TCP/IP, but ARCNET is more commonly found in embedded applications that do not use TCP/IP. ARCNET also does not employ a universal application layer so it is best to query ARCNET by examining raw packets. It is up to the Ethernet client to interpret the meaning of the raw packets.

This approach enables any ARCNET network to be queried by an Ethernet client regardless of the application layer protocol being used with ARCNET.

Configuration of the AI-SRVR is achieved through an EIA-232 serial port. The Ethernet IP address and ARCNET node address are set in this fashion. Once configured, a resident web server can be accessed to determine the operational status of the AI-SRVR.

It's possible for an ARCNET network to consist of 255 nodes. Node address "0" is reserved for broadcast messages. The AI-SRVR will consume one address and will participate in the token-passing protocol on this technology's network. This product can operate in promiscuous mode and, therefore, can monitor all ARCNET traffic. It reserves 256 mailboxes for the maximum number of nodes plus one for broadcast messages. Each mailbox has a first in-first out (FIFO) memory whose depth can be set. A mailbox captures the packet data originating from a source node. Depending upon its configuration, it will capture all packets originating from those nodes of interest.



The AI-SRVR facilitates communication between any number of ARCNET nodes and Ethernet clients. ARCNET nodes are represented by node addresses each with their own mailbox.

The packets will be stored in mailboxes corresponding to source node addresses. The two methods of receiving are the polling and the automatic forwarding modes. The polling mode enables the Ethernet client to continually check mailboxes for data. If not polled in time, data will be lost. The automatic forwarding mode allows packets in mailboxes to be automatically forwarded to the requesting Ethernet clients.

The Ethernet side of the AI-SRVR acts as any other 10/100 Mbps Ethernet TCP/IP station requiring an IP address assignment. An Ethernet client can write data to the ARCNET network by simply specifying the ARCNET destination address and appending the data to be sent.

The AI-SRVR can also operate in the "AI-PROXY" mode. When used in AI-PROXY manner, the unit allows ARCNET devices on separate networks to communicate directly over an Ethernet network.

One AI-SRVR node is needed for each ARCNET device because each AI-SRVR node functions as a "proxy" for one ARCNET device. Basically, it sends received ARCNET packets over the Ethernet network to an appropriate AI-SRVR for re-transmission on its ARCNET network. This allows ARCNET nodes on separate ARCNET systems to communicate over an Ethernet network.

Because the AI-SRVR-1 can perform as a proxy for only one ARCNET node, the AI-SRVR-8 has eight internal nodes so that it can act as a proxy for up to eight ARCNET nodes. The AI-SRVR-1 and the AI-SRVR-8 can also be used together — for example, to add one remote ARCNET node to an eight node ARCNET network. Multiple AI-SRVR-8 units are used when more than eight ARCNET nodes are represented.

This product has the same power connections as the AI Series of hubs. It can be powered from a wide range of low-voltage AC- or DC-power sources and provisions exist for redundant power connections.

AI-PROXY Sample Implementations

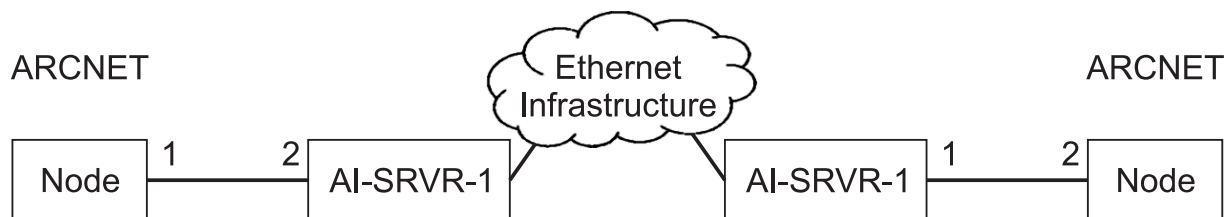


Figure 1. Two AI-SRVR-1 devices interconnecting two ARCNET nodes.

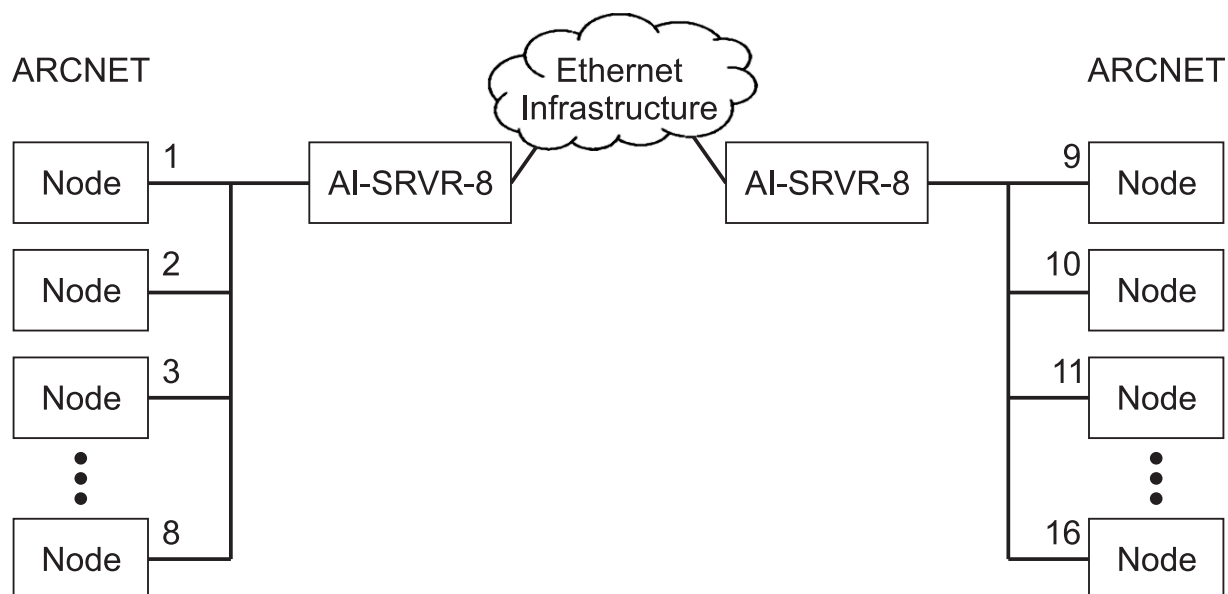


Figure 2. Two AI-SRVR-8 devices interconnecting 16 ARCNET nodes.

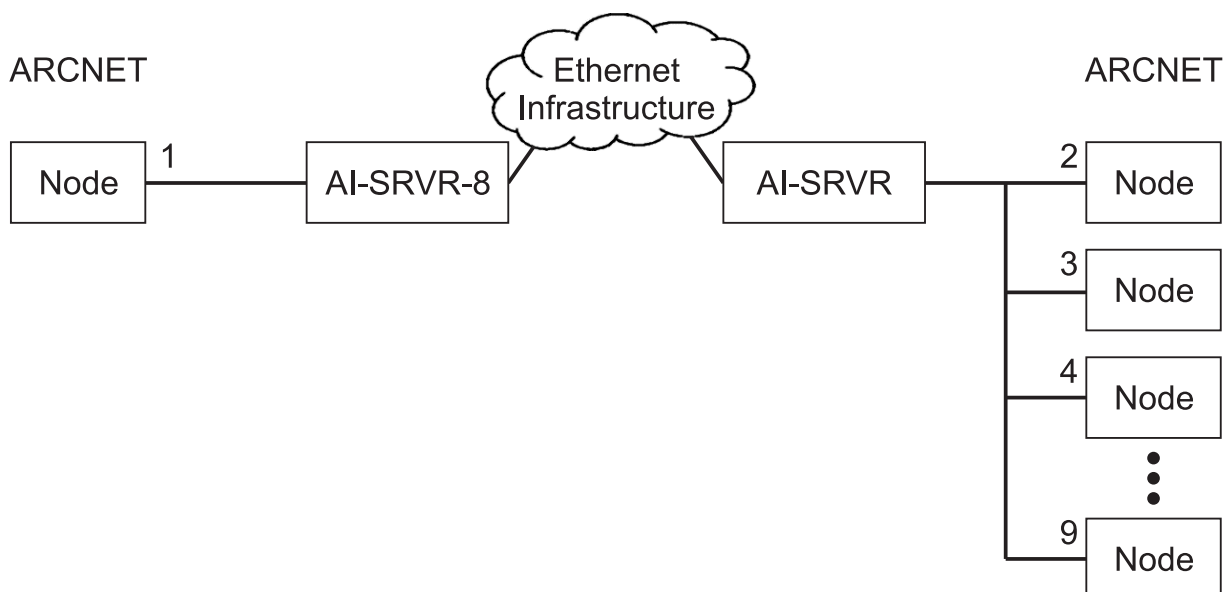
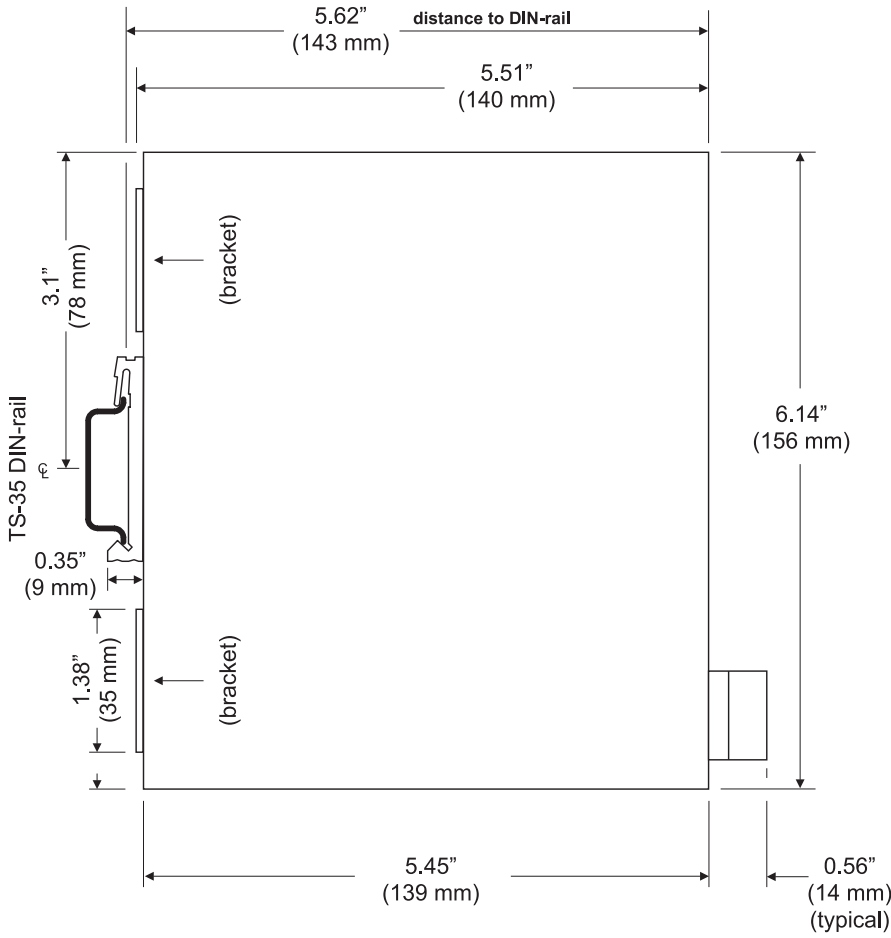
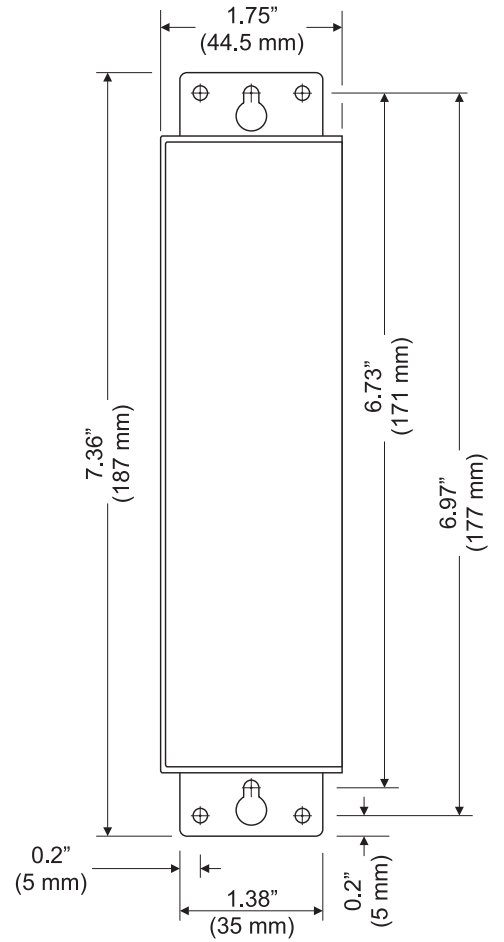


Figure 3. One AI-SRVR-8 and one AI-SRVR-1 interconnecting nine ARCNET nodes.

Mechanical

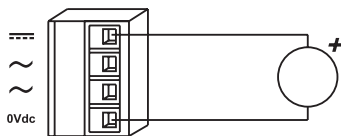


Side View showing DIN-rail Clip (Mounting Brackets Retracted)

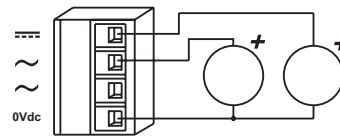


Front View with Mounting Brackets Extended

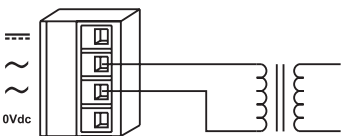
Power Diagrams



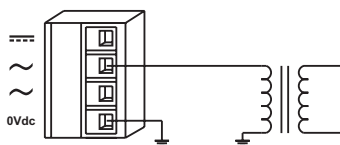
DC Powered



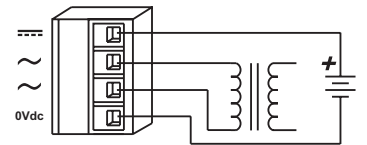
Redundant DC Powered



AC Powered



AC Powered with Grounded Secondary



AC Powered with Battery Backup

Specifications

Electrical	DC	AC
Input voltage	10–36 Volts	8–24 Volts
Input power	8 W	8 VA
Input frequency	N/A	47–63 Hz

Environmental

Operating temperature	0°C to +60°C
Storage temperature	–40°C to +85°C

Functionality

Data rates		
AI-SRVR-1/485	156 kbps to 10 Mbps	
AI-SRVR-1/485X	1.25 Mbps to 5 Mbps	
AI-SRVR-1/CXB	2.5 Mbps	
AI-SRVR-1/TB5	2.5 Mbps	
AI-SRVR-8/485	156 kbps to 10 Mbps	
AI-SRVR-8/485X	1.25 Mbps to 5 Mbps	
AI-SRVR-8/CXB	2.5 Mbps	
AI-SRVR-8/TB5	2.5 Mbps	
Extended timeouts	Supports all three extended ARCNET timeouts	
Compliance	ANSI/ATA 878.1	ANSI/IEEE 802.3
Regulatory Compliance	CE Mark; CFR 47, Part 15 Class A	

RJ-45 Pin Assignments**Ethernet MDI 10BASE-T/100BASE-TX**

Pin	Usage
1	TD+
2	TD–
3	RD+
4	Not Used
5	Not Used
6	RD–
7	Not Used
8	Not Used

Console Port Pin Assignments (EIA-232C)¹

Male D-Sub	Usage
1	Not Used
2	RX
3	TX
4	Not Used
5	Gnd
6	Not Used
7	Not Used
8	Not Used
9	Not Used

¹ Console port is wired as a DTE requiring a null-modem cable for attaching to a terminal emulation or workstation.

Electromagnetic Compatibility

Standard	Test Method	Description	Test Levels
EN 55024	EN 61000-4-2	Electrostatic Discharge	4 kV Contact, 6 kV Air
EN 55024	EN 61000-4-3	Radiated Immunity	10 V/m, 80 MHz to 1 GHz
EN 55024	EN 61000-4-4	Fast Transient Burst	1 kV Clamp & 2 kV Direct
EN 55024	EN 61000-4-5	Voltage Surge	1 kV L-L & 2 kV L-Earth
EN 55024	EN 61000-4-6	Conducted Immunity	10 Volts (rms)
EN 55024	EN 61000-4-11	Voltage Dips & Interruptions	1 Line Cycle, 1 to 5 s @ 100% dip
EN 55022	CISPR 22	Radiated Emissions	Class A
EN 55022	CISPR 22	Conducted Emissions	Class A
CFR 47, Part 15	ANSI C63.4	Radiated Emissions	Class A

Ordering Information**Hubs**

Model	Description
AI-SRVR-1/485	Single-node ARCNET server for DC-coupled EIA-485
AI-SRVR-1/485X	Single-node ARCNET server for AC-coupled EIA-485
AI-SRVR-1/CXB	Single-node ARCNET server for coaxial bus
AI-SRVR-1/TB5	Single-node ARCNET server for twisted-pair bus
AI-SRVR-8/485	Eight-node ARCNET server for DC-coupled EIA-485
AI-SRVR-8/485X	Eight-node ARCNET server for AC-coupled EIA-485
AI-SRVR-8/CXB	Eight-node ARCNET server for coaxial bus
AI-SRVR-8/TB5	Eight-node ARCNET server for twisted-pair bus

Accessories

Model	Description
AI-XFMR	Wall-mount plug-in transformer, 120 VAC input/24 VAC output (nominal values)
AI-XFMR-E	Wall-mount plug-in transformer, 230 VAC input/24 VAC output (nominal values)
BNC-T	BNC "T" connector
BNC-TER	93 ohm BNC terminator
TB5-TER	100 ohm RJ-45 terminator

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