

SR-Series Migration/ Installation Manual

Issue 8.0.2.0

For installing and configuring Symmetry™ SR-Series Access
Control Systems

9600-0632

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**SR-Series Migration/Installation Manual
9600-0632**

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CHANGE HISTORY

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Preface

About this Manual

This manual is for people who need to install, set up and configure a Symmetry™ SR-Series™ node. The manual explains how to:

- Convert one of the following microcontrollers (micros) from Casi-Rusco®, General Electric (GE®) or UTC Climate, Controls and Security into a Symmetry SR-Series node:
 - Micro/PX-2000™, Micro/PXN-2000™ or M2000PXNplus™ (in this manual, the word "Micro/2000" will be used when referring to these devices) or M2000™.
 - Micro/5™ or M3000™.

Step-by-step installation and configuration instructions are provided, including details of how to replace the existing boards with the Symmetry-equivalent boards.

- Install and set up additional SR-Series hardware. This may take place at the same time that the existing equipment is replaced or at a later time.

It is assumed that you understand the basic concepts of security management, including the purpose of components such as card readers, monitor points, auxiliary outputs and door releases. If you do not have this knowledge, please read the introductory chapter of the *Symmetry Software User Guide* first.

It is assumed that installers are competent and understand general hardware installation practices.

Related Documents

The following related documentation is available:

- Quick-reference installation instructions provided with each item of equipment in the box (9600-0620 to 9600-0626, and 9600-0646 to 9600-0647).
- Symmetry Software Installation Manual – Gives the Symmetry hardware and software requirements (9600-0427).
- Symmetry User Guide – Introduces the key concepts of the Symmetry software (9600-0429).

Chapter 1: Introduction

About Symmetry SR-Series Nodes

Symmetry SR-Series nodes are replacements for existing microcontrollers (micros) manufactured by Casi-Rusco, General Electric or UTC Climate, Controls and Security. Two SR-Series nodes are available:

- **SRNode™** – This is a replacement for a Micro/5 or M3000 microcontroller. Depending on the hardware fitted, the SRNode is able to control up to 16 card readers, 64 monitor points and 64 auxiliary outputs. Alternatively, for elevator systems, the SRNode is able to control up to up to four cabs, with a maximum of 64 floors when one cab is used, 32 floors when two cabs are used, or 16 floors when three/four cabs are used.
- **SR-2000™** – This is a replacement for a Micro/2000 or M2000 microcontroller. Each SR-2000 is able to control up to 4 card readers (see page 5 for types supported), 10 monitor points and 8 auxiliary outputs.

An example of a Symmetry SR-Series system is shown in Figure 1-1.

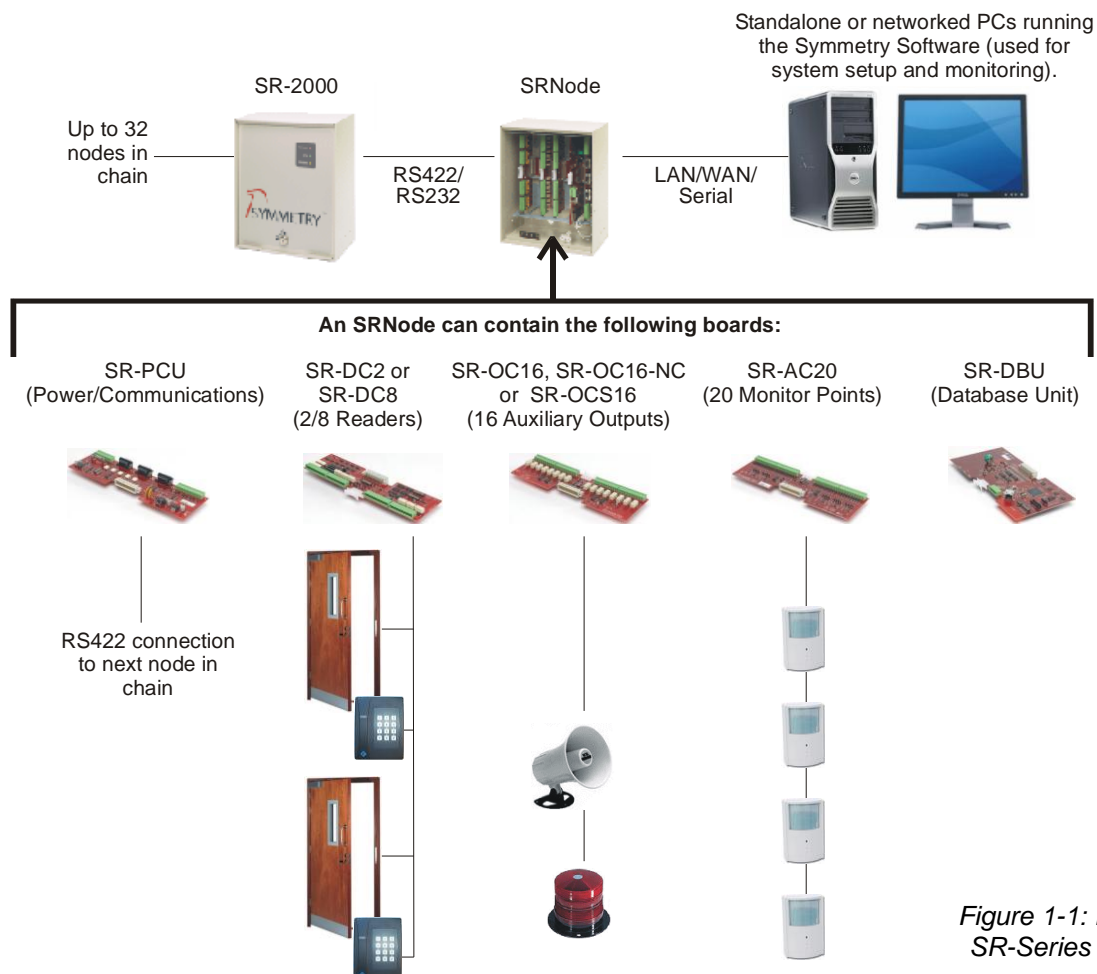


Figure 1-1: Example SR-Series System

Each SR-Series board is the equivalent of a Micro/5, M3000, Micro/2000 or M2000 board. This enables an existing Casi-Rusco, General Electric or UTC node to be converted into a SR-Series node simply by replacing the boards. In most cases, the existing wiring and connectors require no modification. The SR-Series boards are physically similar to the existing boards, but have a red appearance and are silkscreened with the Symmetry logo to make identification easy.

To maintain compatibility with existing systems, Symmetry SR-Series nodes support Wiegand, supervised F/2F, unsupervised F/2F and strobed (clock and data) readers. Further details of the supported reader types is given on page 5.

The following provides an introduction to each of the two SR-Series node types (SRNode and SR-2000).

SRNode

The SRNode adopts a modular approach to system architecture. The node contains a 7-slot backplane, which can be easily fitted with the required number and type of boards to match the exact needs of the site. The following boards are available:

- SR-PCU – Power/communications board
- SR-DBU – Database unit
- SR-DC2 – Two-reader board
- SR-DC8 – Eight-reader board
- SR-OC16 and SR-OC16-NC – Auxiliary output board (16 relay auxiliary outputs)
- SR-OCS16 – Auxiliary output board (16 open-collector auxiliary outputs)
- SR-AC20 – Monitor points board (20 monitor points)

The SRNode supports up to 16 card readers, 64 monitor points and 64 auxiliary outputs, depending on the combination of boards fitted. For elevator control, the node can control up to 4 elevator cabs and 64 floors. Table 1-1 and Table 1-2 give examples of the maximum number of devices available with different combinations of equipment. The tables show a small sample of possible configurations.

Note: A maximum of seven boards can be used in each node, since the backplane has seven slots.

Table 1-1: Examples of Equipment Use (Standard non-Elevator Access Control)

Devices	Readers	Monitor Points	Auxiliary Outputs
SR-DBU+ SR-PCU + One SR-DC2	2	0	0
SR-DBU+ SR-PCU + Two SR-DC2s	4	0	0
SR-DBU + SR-PCU + Two SR-DC8s	16	0	0
SR-DBU+ SR-PCU + Two SR-DC8s + Three SR-AC20s	16	60	0
SR-DBU+ SR-PCU + Four SR-DC2s + One SR-OC16	8	0	16
SR-DBU+ SR-PCU + Two SR-DC8s + Two SR-AC20s + One SR-OC16	16	40	16
SR-DBU+ SR-PCU + One SR-AC20 + Four SR-OCS16s	0	20	64
SR-DBU+ SR-PCU + Four SR-AC20s + One SR-OC16	0	64	16

Table 1-2: Examples of Equipment Use (Elevator Control)

Devices	Cabs	Floors
SR-DBU+ SR-PCU + One SR-DC2s + Four SR-OC16-NCs	1	64
SR-DBU+ SR-PCU + One SR-DC2s + Two SR-OC16s + Two SR-AC20s (for monitoring of floor buttons)	1	32
SR-DBU + SR-PCU + One SR-DC8 + Four SR-OC16-NCs	4	16
SR-DBU+ SR-PCU + One SR-DC8 + Two SR-OC16s + Two SR-AC20s (for monitoring of floor buttons)	4	8

Note: The cab and floor limits for an elevator node can be affected by the features that are used. Please refer to Chapter 6 for further details.

The boards and other components available for SRNodes are described in the section titled *SRNode Components and Compatibility* on page 6.

Chapter 2 of this manual explains how to convert a Micro/5 or M3000 to an SRNode.

SR-2000

The SR-2000 node consists of two boards: the SR-DB2000 database unit, and the SR-DC2000 door controller. The SR-2000 provides connections for 4 card readers, 10 monitor points and 8 auxiliary outputs.

The boards and other components available for SR-2000 nodes are described in the section titled *SR-2000 Components and Compatibility* on page 11.

Chapter 3 of this manual explains how to convert a Micro/2000 or M2000 to an SR-2000.

Symmetry Software

SR-Series nodes operate with the Symmetry software, which can run on a standalone PC, or in a client/server networked architecture. The software enables an operator to configure the system, enter card details, specify access rights, design badges, view video, manage visitors, operate hardware, view alarms, produce reports, and much, much more.

A Symmetry PC can communicate with an SR-Series node over a network, modem or serial connection.

Chapter 7 describes the steps you need to take in the Symmetry software to set up an SR-Series node. Further details of the Symmetry software are available in the *Symmetry User's Guide*.

Distributed Processing

The configuration and access-control rules set up using the Symmetry software are automatically stored in the node. This allows the node to perform tasks locally, such as to grant or deny access, or switch auxiliary devices on or off. Alarm conditions, such as a door forced open or a card used at the wrong time are automatically uploaded to the Symmetry software.

Since each SR-Series node stores the rules applicable to the readers and other devices it manages, this distributes and localizes processing tasks, enhances system performance and enables the system to operate without the need for a permanent link to a Symmetry PC.

Expanding the System – Chaining SR-Series Nodes

As the organization grows or requirements change, the number of available readers, monitor points and auxiliary outputs can be increased by adding new nodes or by adding additional boards in any spare slots that may be available in SRNodes.

Each SR-Series node can communicate independently with a Symmetry PC (e.g. over a network). Alternatively, a chain of up to 32 nodes can be constructed using RS422 or hardwired RS232 communications between the nodes – this requires only the node at the head of the chain to communicate with a Symmetry PC, as shown in Figure 1-1. If required, a chain can consist of mixture of SRNodes and SR-2000 nodes.

Note: A chain containing an SR-Series node must not contain other types of Symmetry node, such as M2150. If M2150 or other Symmetry nodes are required, ensure that they are installed on different chain(s). The Symmetry software supports the mixed use of different Symmetry node types in the same system.

Connections to Door Furniture

To maintain compatibility with existing wiring, the door furniture (door release, door monitor, exit-request switch and bypass circuit) connect in a different way than in other Symmetry nodes, such as the M2150. Table 1-3 describes the alternatives for SR-Series systems.

Table 1-3: Connection Alternatives for Door Furniture

Connection	SRNode	SR-2000
Door monitor and exit-request	Can be connected to: <ul style="list-style-type: none"> The dedicated door monitor and exit-request inputs on an SR-DC2. The dedicated door monitor and exit-request inputs at a supervised F/2F reader or Wiegand Interface Unit or M/RJ. Monitor points on an SR-AC20. 	Can be connected to: <ul style="list-style-type: none"> The dedicated door monitor and exit-request inputs at a supervised F/2F reader or Wiegand Interface Unit or M/RJ. Monitor points on an SR-DC2000.
Door release	Can be connected to: <ul style="list-style-type: none"> The dedicated door release output on a SR-DC2. An external relay triggered by the DOOR DO output to the reader. An external relay triggered by the DOOR DO output to a Wiegand Interface Unit or M/RJ. An auxiliary output on an SR-OC16 or SR-OCS16 (with external relay). 	Can be connected to: <ul style="list-style-type: none"> An external relay triggered by the DOOR DO output to the reader. An external relay triggered by the DOOR DO output to a Wiegand Interface Unit or M/RJ. An auxiliary output on an SR-DC2000.
Alarm bypass	Can be connected to: <ul style="list-style-type: none"> The dedicated alarm bypass output on a SR-DC2. An auxiliary output on an SR-OC16 or SR-OCS16 (with external relay). 	Can be connected to: <ul style="list-style-type: none"> An auxiliary output on an SR-DC2000.

In unusual circumstances you can, if you wish, use a monitor point for the exit request and the standard input at the SR-DC2 reader for the door monitor, or vice versa.

If required, you can have more than one auxiliary output for the same door release, alarm bypass or door-held alarm. This may be useful if, for example, you have two separate door-held sounders.

Note: The SR-DC2 provides door release and alarm bypass outputs by default. If you use an auxiliary output for one of these, the equivalent output at the SR-DC2 is disabled. This means that if, for example, you want to use two outputs for door held, both must be auxiliary outputs.

Reader Types

SR-Series nodes support the connection of the following reader types:

- **Supervised F/2F readers** – These use a form of data encoding known as "F/2F" and are able to report any communication failures between the reader and node. Most also have door monitor and exit request inputs and are able to report the states of these inputs to the node.
- **Unsupervised F/2F readers** – These use F/2F encoded data, but are not able to provide door monitor, exit request or communication failure information to the node. Therefore, the door monitor must connect to a monitor point or SR-DC2, as shown in Table 1-3.
- **Wiegand readers** – These use the Wiegand communications protocol; a protocol widely used within access-control systems. Wiegand readers can connect to an SR-DC2 or Wiegand Interface Unit connected to an SR-DC8 or SR-DC2000.
- **Strobed (clock-and-data) magstripe readers** – These use the standard clock-and-data communications protocol.

Note:

- All readers on the same reader board must use the same reader technology. This means that you cannot, for example, connect both supervised and unsupervised F/2F readers to the same board.
- All readers connected to the same SR-DC2 or SR-DC2000 must use the same voltage setting (5V or 12V). The SR-DC8 supports only 12V readers.
- F/2F readers with a keypad must be the supervised F/2F type.
- Casi-Rusco, General Electric or UTC Micro/Reader Junction (M/RJ) boxes are supported.

Wiegand Interface Units

A Wiegand reader can connect to a Symmetry SR-DC8 or SR-DC2000 through a Wiegand Interface Unit, which contains a Wiegand-to-F/2F data converter and all terminals necessary to connect a single reader and its door furniture (door release, door monitor and exit request).

Several Wiegand Interface Units are available, including the following:

- Casi-Rusco, General Electric or UTC WIU-2™ – This provides 2-state cable supervision (see page 75) and includes a 2A door-release relay (up to 24 Vac or 30 Vdc).
- Casi-Rusco, General Electric or UTC WIU-4™ – This provides 2-state or 4-state cable supervision and includes an 8A door-release relay (up to 24 Vac or 30 Vdc).
- HID® 4033BGN00 – This provides 2-state cable supervision, includes a door release relay and is supported with SR-DC8 v1.1 or later firmware. **Note:** This device supports only a limited set of Wiegand card formats; it does not support Casi ProxLite or G4S/AMAG 37-bit format cards.

Separate installation instructions are available for the Wiegand Interface Units.

SRNode Components and Compatibility

This section provides an overview of the boards in a Symmetry SRNode and the equivalent Micro/5 or M3000 boards, together with compatibility information. Please refer to page 11 for details of SR-2000 components and compatibility.

Note: The Symmetry boards use a distinctive red color. The Micro/5 or M3000 boards are green.

SR-DBU (Database Unit)



The SR-DBU database unit is a replacement for the PXNPlus, PXN or PX processor board in a Micro/5 or M3000.

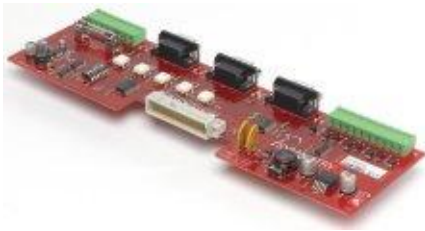
The board manages the autonomous operation of the access control system. A single SR-DBU board is required in each SRNode.

Table 1-4 shows the key features of the SR-DBU and its compatibility with the equivalent Micro/5 or M3000 boards.

Table 1-4: SR-DBU Feature and Compatibility Matrix

Feature	Symmetry SR-DBU	PXNPlus, PXN or PX
On-board Ethernet port – allows network access from the host PC for system configuration, monitoring and reporting	Supported Note: The SR-PCU board (see the next section) can be used for RS232, modem or fallback communications to the Symmetry PC	Supported
On-board modem for fallback communications	Not supported – connect an external modem to the SR-PCU	Supported
Nodes per chain	32 Note: SR and M2150 nodes must be on different chains	8
Remote diagnostics	Not supported	Supported
Port for NX Control Panel	Not supported	Supported
Non-volatile storage to maintain system configuration in the event of a power loss	Supported (using on-board battery)	Supported
Compatibility with other Symmetry SR hardware	Supported	Not supported

SR-PCU (Power and Communications Unit)

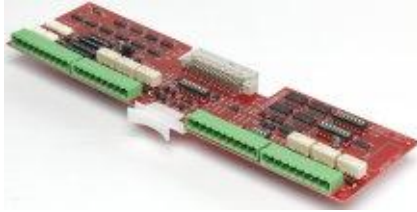


The SR-PCU is a power and communications board and is a direct replacement for the Power and Communications Board in a Micro/5 or M3000. A single SR-PCU is required in each SRNode. Table 1-5 shows the key features of the SR-PCU and its compatibility with the Micro/5 or M3000 board.

Table 1-5: SR-PCU Feature and Compatibility Matrix

Feature	Symmetry SR-PCU	Power/Communications Board
Direct RS232 or modem communications to host PC (for system configuration, monitoring and reporting)	Supported	Supported
Fallback communications to host PC. This is used in the event that an Ethernet communications failure is detected	Supported using external modem	Supported (through processor board)
Chaining nodes using RS422 communications	Supported	Supported
Chaining nodes using hardwired RS232 (as an alternative to RS422)	Supported	Supported
Chaining nodes using modems (as an alternative to RS422)	Not supported	Supported
RS232 communications port for auxiliary equipment (e.g. time and attendance equipment)	Not supported (used for fallback communications)	Supported
Tamper and AC fail inputs	Supported	Supported

SR-DC2 (2-Door Controller)



The SR-DC2 is a 2-door controller board and is a direct replacement for a 2RP or 2SRP board in a Micro/5 or M3000.

Note: A node must contain only SR-DC2 or SR-DC8 boards; you cannot use both types of reader boards in the same node.

The SR-DC2 provides connections for up to two supervised F/2F, unsupervised F/2F, Wiegand or strobed (clock and data) readers, together with the associated door furniture (door lock, exit-request switch, door monitor contact and alarm bypass output). An optional auxiliary output is also provided.

Table 1-6 shows the key features of the SR-DC2 and its compatibility with the equivalent Micro/5 or M3000 boards.

Note: Please refer to page 5 for further important notes about readers.

Table 1-6: SR-DC2 Feature and Compatibility Matrix

Feature	Symmetry SR-DC2	2RP or 2SRP
Number of readers per board	2	2
Number of boards per node	4	4
12V and 5V readers	Supported	Supported
Wiegand reader interface	Supported Note: Symmetry 8xx Wiegand readers must connect through a Wiegand Interface Unit.	Supported
F/2F reader interface	Supported	Supported
Optional direct connection of exit request and door monitor to reader board	Supported Note: 2-state and 4-state cable supervision are supported (see page 75). Note: If the 2SRP uses special resistor values (6.8/18k) for the door monitor/exit request, these must be replaced by 1k resistors.	Supported
Strobed (clock and data) readers	Supported with firmware version 1.1 or later	Supported
Reverse-strobed, Water Mark, single-color LED, time display and other special readers	Not supported	Supported

SR-DC8 (8-Door Controller)



The SR-DC8 is an 8-door controller board for the SRNode and is a direct replacement for the 8RP in a Micro/5 or M3000. The SR-DC8 provides connections for up to eight F/2F devices (F/2F readers, Wiegand Interface Units or M/RJs).

Note: A node must contain only SR-DC2 or SR-DC8 boards; you cannot use both types of reader boards in the same node.

Note: A direct replacement for a CK8RP board is not available. Other Symmetry nodes are available to replace the CK8RP and the associated Secure Terminal Interfaces (STIs). Please seek technical assistance for further information.

Note: The board contains no exit-request, door monitor input or door release output. These can be provided by using one of the options given in Table 1-3 on page 4.

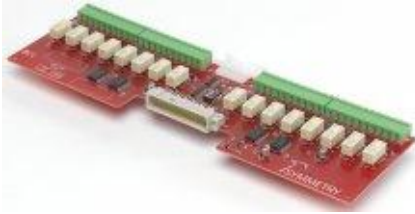
Table 1-7 shows the key features of the SR-DC8 and its compatibility with the 8RP.

Note: Please refer to page 5 for further important notes about readers.

Table 1-7: SR-DC8 Feature and Compatibility Matrix

Feature	Symmetry SR-DC8	8RP
Number of readers per board	8	8
Number of boards per node	2	2
Wiegand reader interface	Supported using Wiegand Interface Unit	Supported using Wiegand Interface Unit
F/2F reader interface	Supported (see note above)	Supported
Alarm bypass outputs	Supported using auxiliary outputs	Supported using auxiliary outputs
Strobed (clock and data) readers	Not supported	Not supported

SR-OC16, SR-OC16-NC and SR-OCS16 (Output Controllers)



These provide 16 programmable relay auxiliary outputs. The SR-OC16 provides relay auxiliary outputs (8 fixed at normally open) and is a replacement for the 16DOR board in a Micro/5 or M3000. The SR-OC16-NC is the same as the SR-OC16, but has 8 relays fixed at normally closed for elevator control. The SR-OCS16 provides open-collector auxiliary outputs and is a replacement for the 16DO board.

Table 1-8 shows the key features of these boards and their compatibility with the Micro/5 or M3000 boards.

Table 1-8: SR-OC16 Feature and Compatibility Matrix

Feature	Symmetry SR-OC16(-NC)/SR-OCS16	16DOR
Number of outputs per board	16	16
Number of boards per node	4	4
Number of outputs per node	64 Note: Reader 1-8 aux outputs (on SR-DC2 boards, if fitted) follow auxiliary outputs 57 to 64 (which may be on an SR-OC16/SR-OC16-NC or SR-OCS16). If an output and the corresponding reader aux output are both being used, the output wiring must be changed.	64
Door release, bypass and door held connected to board	Supported	Supported

SR-AC20 (Alarms Controller)



The SR-AC20 alarms controller provides 20 monitor points. It is a replacement for the 20DI board in a Micro/5 or M3000.

Table 1-9 shows the key features of the SR-AC20 and its compatibility with the 20DI.

Table 1-9: SR-AC20 Feature and Compatibility Matrix

Feature	Symmetry SR-AC20	20DI
Number of inputs per board	20	20
Number of boards per node	4	4
Number of inputs per node	64 Note: The last 16 inputs are not used on the fourth SR-AC20 (if fitted). An additional node is required if more than 64 inputs are needed.	80
2-state or 4-state supervision	Supported (see page 75)	Only 4-state supported
Door monitor and exit request inputs connected to board	Supported	Supported

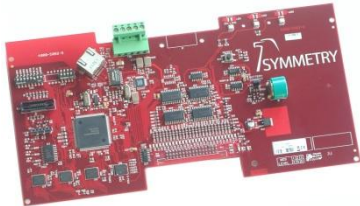
SR-2000 Components and Compatibility

This section provides an overview of the boards in a Symmetry SR-2000 node and the equivalent Micro/2000 or M2000 boards, together with compatibility information.

Note: The Symmetry boards use a distinctive red color. The Micro/2000 or M2000 boards are green.

Please refer to page 6 for details of SRNode components and compatibility.

SR-DB2000 (Database Unit)



The SR-DB2000 database unit is a replacement for the PXNPlus, PXN or PX processor board in a Micro/2000 or M2000.

The board manages the autonomous operation of the SR-2000 node. A single SR-DB2000 board is required in each node.

Table 1-10 shows the key features of the SR-DB2000 and its compatibility with the equivalent Micro/2000 or M2000 boards.

Table 1-10: SR-DBU Feature and Compatibility Matrix

Feature	Symmetry SR-DB2000	PXNPlus, PXN or PX
On-board Ethernet port – allows network access from the host PC for system configuration, monitoring and reporting	Supported Note: The SR-DC2000 board (see the next section) can be used for RS232, modem or fallback communications to the Symmetry PC	Supported
On-board modem for fallback communications	Supported (through SR-DC2000)	Supported
Nodes per chain	32 Note: SR and M2150 nodes must be on different chains	8
Remote diagnostics	Not supported	Supported
Non-volatile storage to maintain system configuration in the event of a power loss	Supported (using on-board battery)	Supported
Compatibility with other Symmetry SR hardware	Supported	Not supported

SR-DC2000



The SR-DC2000 is a direct replacement for the Integrated I/O Board in a Micro/2000 or M2000. The SR-DC2000 provides connections for up to four F/2F devices (F/2F readers, Wiegand Interface Units or M/RJs), eight auxiliary outputs and ten monitor points.

Note: The board contains no exit-request, door monitor input or door release output. These can be provided by using one of the options given in Table 1-3 on page 4.

Table 1-11 shows the key features of the SR-DC2000 and its compatibility with the Integrated I/O Board.

Note: Please refer to page 5 for further important notes about readers.

Table 1-11: SR-DC2000 Feature and Compatibility Matrix

Feature	Symmetry SR-DC2000	Integrated I/O Board
Number of readers	4	4
Number of auxiliary outputs	8	8
Number of monitor points	10	10
Direct RS232 or modem communications to host PC (for system configuration, monitoring and reporting)	Supported	Supported
Fallback communications to host PC. This is used in the event that an Ethernet communications failure is detected	Supported using external modem	Supported (through processor board)
Chaining nodes using RS422 communications	Supported	Supported
Chaining nodes using hardwired RS232 (as an alternative to RS422)	Supported	Supported
RS232 communication to last node in chain (bidirectional communications)	Not supported	Supported
Connection of Time Display	Not supported	Supported
Wiegand reader interface	Supported using Wiegand Interface Unit	Supported using Wiegand Interface Unit
F/2F reader interface	Supported	Supported
Alarm bypass outputs	Supported using auxiliary outputs	Supported using auxiliary outputs
Tamper and backup battery input	Supported	Supported
Strobed (clock and data) readers	Not supported	Not supported

Chapter 2: Converting a Micro/5 or M3000 Micro

This chapter explains how to convert a Micro/5 or M3000 into the equivalent Symmetry SR-Series SRNode. If you wish to convert an Micro/2000 or M2000 to a Symmetry SR-2000, please refer to Chapter 3.

The process of converting a Micro/5 or M3000 into an SRNode involves:

1. Replacing every plug-in board in the Micro/5 or M3000 with the Symmetry equivalent. In exceptional cases, this may involve some rewiring and the installation of an external fallback modem, if fallback communications are required.

Replacement of the boards should be carried out from right to left.

2. Replacing the lid of the cabinet (Micro/5 only). The SR-DBU will not fit under the original cover of a Micro/5 cabinet, so a new Symmetry lid is required. The new lid also provides visibility to the LEDs on the SR-DBU.

Note: Before you begin the conversion work, consider whether it would be better to install and configure the Symmetry software before replacing any hardware. This can minimize downtime and allow the hardware to be brought online more quickly after installation. Please refer to Chapter 7 if you wish to carry out this work now.

Note: Before you start, please determine whether the node being converted controls elevator cabs, doors or both. If the node controls only elevators, please read Chapter 6 first. If the node controls only doors, follow the steps described next. If the node currently controls both elevator cabs and doors, these functions must be split into separate SRNodes.

Step 1 – Disconnect Power and Mark Connectors

Before you replace any boards:

1. Disconnect all power to the unit, including the backup battery.
2. Mark each connector with the name of its port (J2, J3, etc.). A permanent marker pen is ideal for this purpose.

Step 2 – Replace the Power/Communications Board

Each Micro/5 or M3000 contains a single Power/Communications Board, which must be replaced by the Symmetry SR-PCU board. The board is used for optional RS232/modem communications to a Symmetry PC and for communications between nodes when forming a chain of nodes. The Power/Communications Board normally occupies the slot farthest to the right.

Note: Any time-and-attendance or other device currently connected to port J5 cannot be used.

To replace the Power/Communications Board:

1. Identify and remove the Power/Communications Board from the backplane – it is the only board that has three 9-pin serial ports along the front edge.
2. The SR-PCU does not support the use of modems between nodes in a chain. Confirm that this architecture is not used by checking the following:
 - a) Check that no modem is connected to J4. Any modem connected to J4 indicates that modems are used between nodes in a chain.
 - b) Check that if a modem is connected to J3, it is used for dial-up communications to the Symmetry PC.
3. Remove the connectors.
4. If fallback communication is required, connect an external modem to port J5 on the SR-PCU (see Figure 2-1). Fallback is used in the event that an Ethernet communications failure is detected.

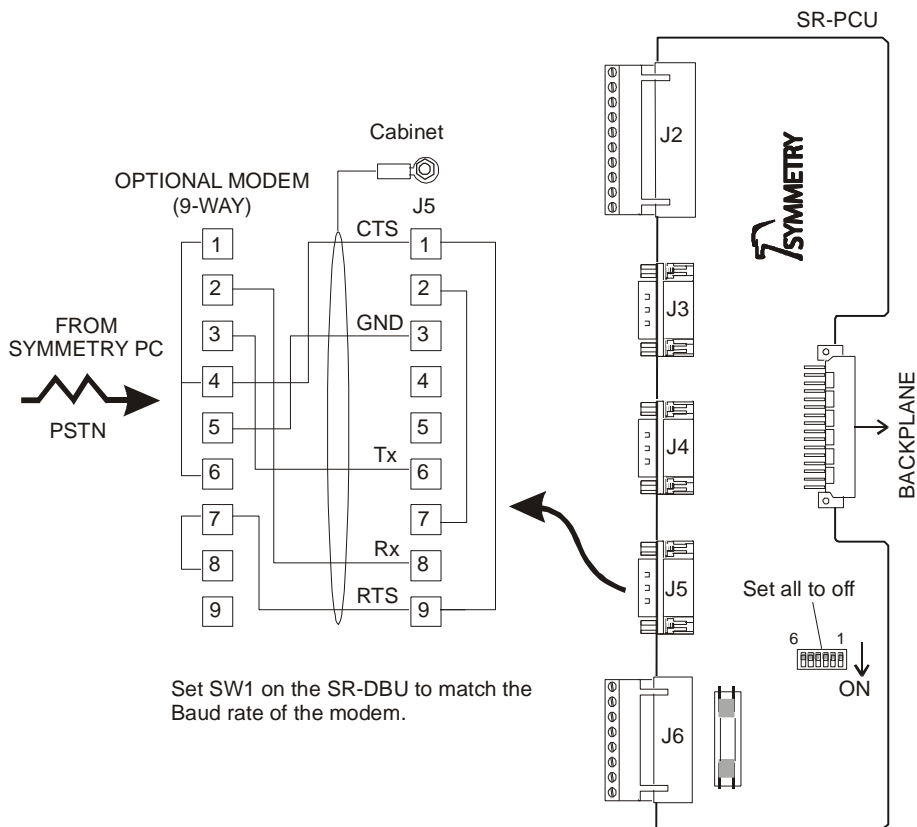


Figure 2-1: Connecting a Fallback Modem to the SR-PCU

Note: If a modem is used for fallback or dial-up communication with a Symmetry PC, the modem must be configured with a Symmetry-supported modem initialization string, as described in the *Symmetry Software Installation Manual*.

5. Fit all other connectors to the SR-PCU, making sure they go to the correct ports.
6. Insert the SR-PCU into the backplane. **Note:** If you are converting an M3000, remove the board in the slot second from the right, and insert the SR-PCU in its place (the SR-DBU may need to occupy the slot farthest to the right to enable the lid to close).

Step 3 – Replace the PXNPlus, PXN or PX Processor Board

Each Micro/5 or M3000 contains a PXNPlus, PXN or PX Processor Board, which must be replaced by the Symmetry SR-DBU board.

To replace the Processor Board:

1. Identify and remove the Processor Board from the backplane – it is the board with the fewest (if any) connectors along the front edge.
2. Remove all connections to the Processor Board (if it has any).
3. Connect and set up the SR-DBU as described on page 35. This involves setting the address and communication bit switches, fitting the battery link, connecting the SR-DBU to ground and attaching the network cable (if applicable).

Note: If the on-board modem is used on a PXNPlus Processor Board, or if the optional PCMCIA modem card is used on a PXN Processor Board, a separate external fallback modem must be installed and connected to the SR-PCU board as described in the previous section.

4. Insert the SR-DBU into the backplane.

Note:

- If you are converting a Micro/5, install the SR-DBU in the slot second from the right. This allows the LEDs on the SR-DBU to be visible through the replacement cover of the Micro/5.
- If you are converting an M3000, install the SR-DBU in the slot farthest to the right. This enables the lid to close without contacting the SR-DBU.

Step 4 – Replace 20DI Input Boards (if used)

The Micro/5 or M3000 20DI board provides 20 monitor points and there may be up to four 20DI boards in the same node. You can use Figure 2-2 to help identify any 20DI boards the node may contain. The Symmetry replacement for a 20DI board is the SR-AC20, which also provides 20 monitor points.

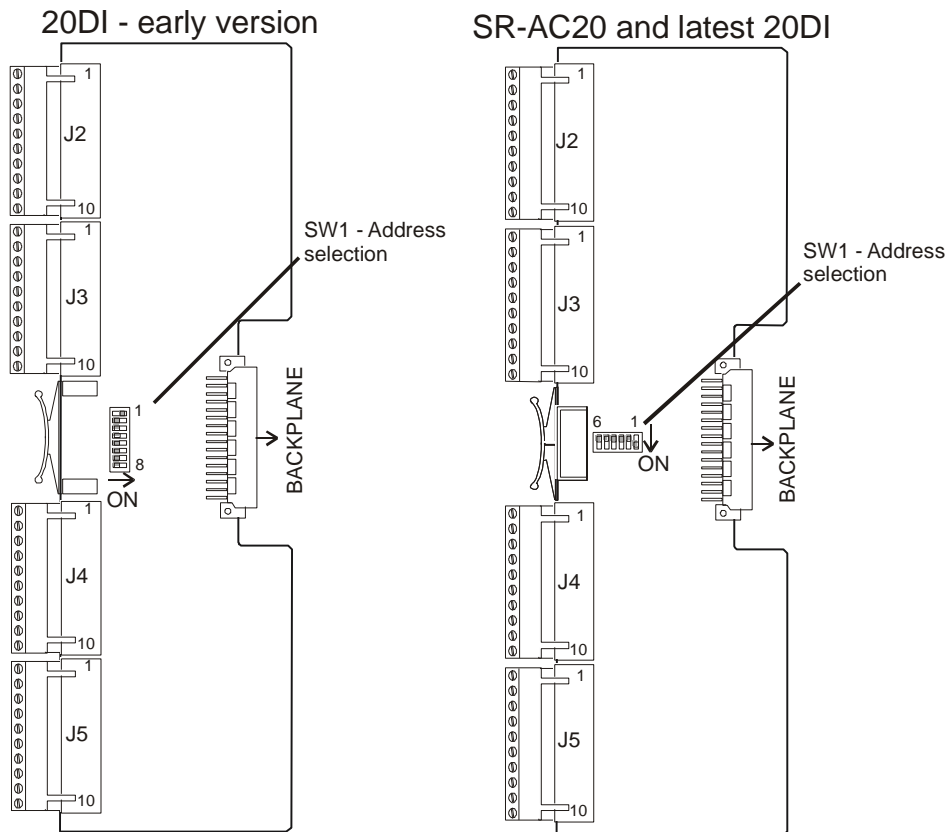


Figure 2-2: Identifying a 20DI Board

Note: Symmetry supports a maximum of 64 monitor points per SRNode. If the Micro/5 or M3000 is fitted with four 20DI boards, check whether any of the final 16 monitor points (MP5-MP20) are used on the 20DI board set to address number 4. If any in this range is used, move it to an unused monitor point, remove it altogether (if possible) or if necessary, add an additional SRNode.

Replace each 20DI in turn as follows:

1. Remove the 20DI from the backplane.
2. Remove the connectors.
3. Using Table 2-1, determine the address of the 20DI and set the SR-AC20 to the same address.

Table 2-1: Address Switches on the 20DI and SR-AC20

Address	SW1 (20DI/SR-AC20)			
	1	2	3	4
1	ON	–	–	–
2	–	ON	–	–
3	–	–	ON	–
4	–	–	–	ON

(– means "OFF")

If present, bit switches 5-8 on the 20DI are not used
 Bit switches 5 and 6 on the SR-AC20 are not used

4. Fit the connectors to the SR-AC20, making sure they go to the correct ports.
5. Insert the SR-AC20 into the backplane.

Step 5 – Replace 16DOR and 16DO Output Boards (if used)

The 16DOR or 16DO board in a Micro/5 or M3000 provides 16 programmable auxiliary outputs. There may be up to four 16DOR/16DO boards in the same node.

You can use Figure 2-3 to help to identify any 16DOR/16DO boards the node may contain, although please be aware that the location and size of SW1 may vary between versions. The Symmetry replacement for a 16DOR is the SR-OC16, and the replacement for the 16DO is the SR-OCS16. The Symmetry boards have the same appearance as the latest 16DOR and 16DO.

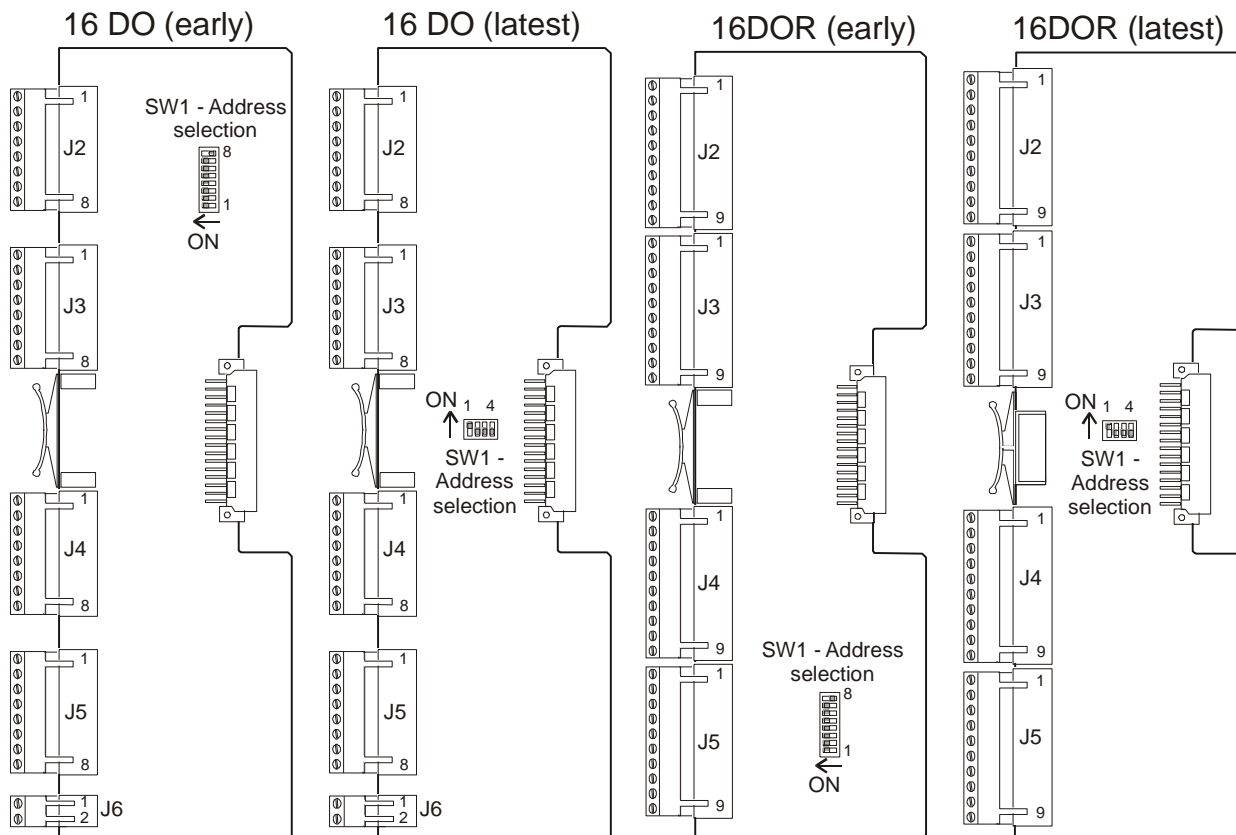


Figure 2-3: Identifying a 16DOR/16DO Board

Note: If the node is fitted with four 16DOR/16DO boards, it is essential to check whether any 2RP/2SRP 2-reader boards are also fitted. Refer to Figure 2-4 if you need help to identify a 2RP/2SRP. If the node contains a 2RP/2SRP:

1. Determine whether either or both of the two auxiliary outputs on the 2RP/2SRP are being used. Pin 3 of J3, and pin 3 of J5 are the common terminals of the auxiliary output relays, so if pin 3 is connected, the auxiliary output is in use. If it is in use:
2. Determine whether any of the last eight auxiliary outputs (AO9 to AO16) are being used on the 16DOR/16DO board set to address number 4. If any is being used, the auxiliary output wiring will need to be changed, since reader 1-8 auxiliary outputs follow auxiliary outputs 57 to 64 respectively. In extreme cases, a new node may need to be added to gain additional auxiliary outputs.

Replace each 16DOR/16DO in turn as follows:

1. Remove the 16DOR/16DO from the backplane.
2. Remove the connectors.
3. Using Table 2-2, determine the address of the 16DOR/DO and set SW1 on the SR-OC16/SR-OCS16 to the same address.

Table 2-2: Address Switches on the 16DOR, 16DO and SR-OC16/SR-OCS16

Address	SW1 (16DOR/16DO/SR-OC16/SR-OCS16)			
	1	2	3	4
1	ON	-	-	-
2	-	ON	-	-
3	-	-	ON	-
4	-	-	-	ON

(- means "OFF")

If present, bit switches 5-8 on the 16DOR/DO are not used

4. Fit the connectors to the SR-OC16/SR-OCS16, making sure they go to the correct ports.
5. Insert the SR-OC16/SR-OCS16 into the backplane.

Step 6 – Replace 2RP or 2SRP Reader Boards (if used)

The Micro/5 or M3000 2RP or 2SRP board provides connections for up to two supervised F/2F, unsupervised F/2F, Wiegand or strobed (clock & data) readers and associated door furniture. There may be up to four 2RP/2SRP boards in the same node.

You can use Figure 2-4 to help to identify any 2RP/2SRP boards the node may contain, although please be aware that the location and size of the DIP switches and other components may vary between versions. The Symmetry replacement is the SR-DC2, which is also shown in Figure 2-4.

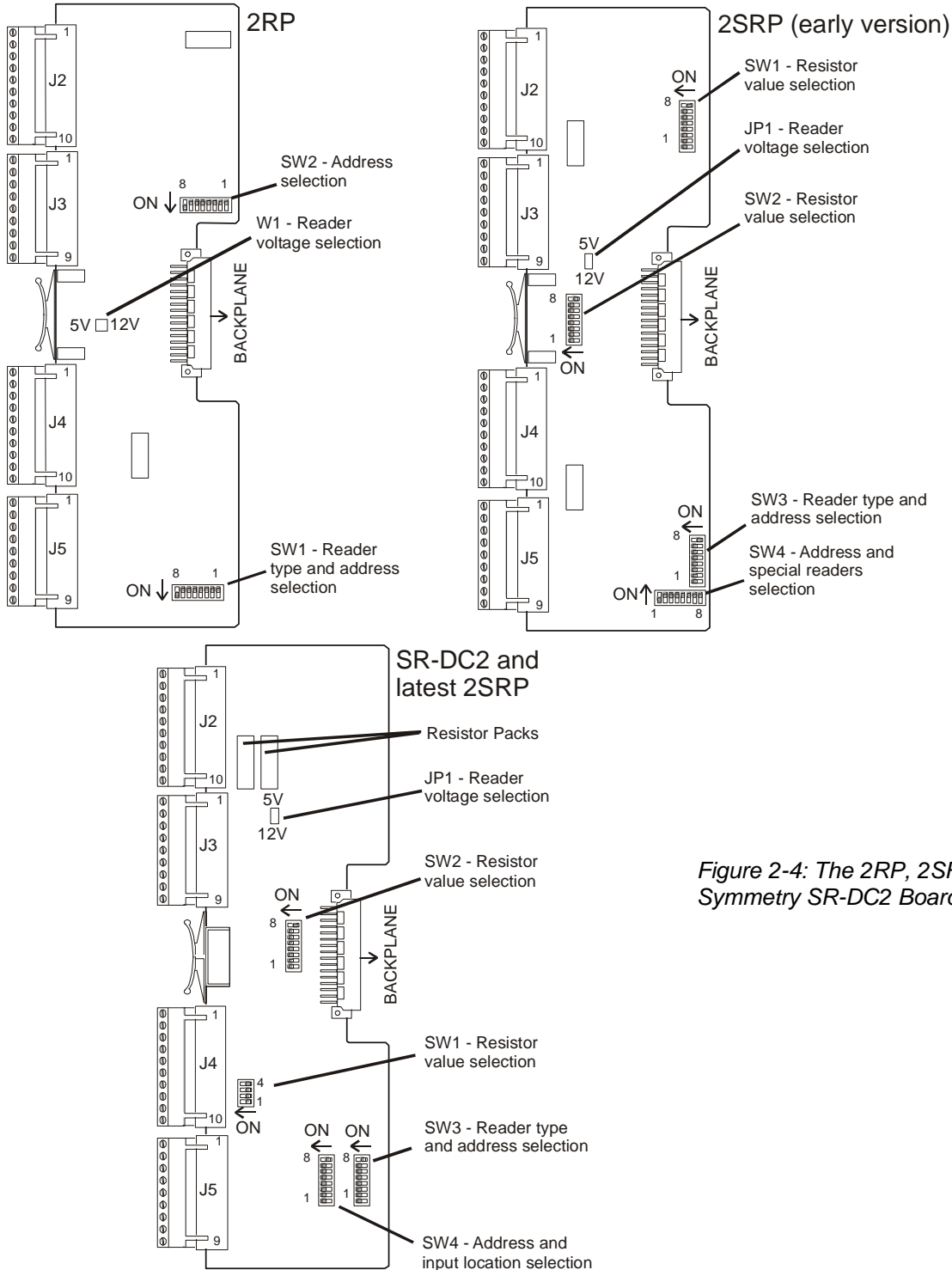


Figure 2-4: The 2RP, 2SRP and Symmetry SR-DC2 Boards

Replace each 2RP/2SRP in turn as follows:

1. Remove the 2RP/2SRP from the backplane.
2. Remove the connectors.
3. Using Table 2-3, determine the type of readers currently connected to the 2RP/2SRP and whether they are supported. If unsupported readers are being used, all readers connected to the 2RP/2SRP must be replaced (refer to page 39 for installation details, if required).

Table 2-3: Identifying the Reader Type from the 2RP or 2SRP

Reader Type		Supported by SRNode	SW1 (2RP) or SW3 (2SRP)			
			1	2	3	4
Not Valid		–	–	–	–	–
Reserved		No	ON	–	–	–
Reserved		No	–	ON	–	–
Magstripe - Reverse Strobed		No	ON	ON	–	–
Magstripe Water Mark		No	–	–	ON	–
Supervised F/2F		Yes	ON	–	ON	–
Magstripe - Strobed		Yes*	–	ON	ON	–
Unsupervised F/2F		Yes	ON	ON	ON	–
Wiegand	3701, 3702	Yes	–	–	–	ON
	3702, 34-bit KSC, 38-bit ADT, 3601	Yes	ON	–	–	ON
	3202, 4001, 4401, 64-bit BCD	Yes	–	ON	–	ON
	2802, 2804, 3600	Yes	ON	ON	–	ON
	2700, 2801, 32-bit Motorola Indala	Yes	–	–	ON	ON
	2800, 35/37-bit Hughes	Yes	ON	–	ON	ON
	26-bit, 34-bit CardKey, 35-bit Hughes, 4002	Yes	–	ON	ON	ON
	2500, 2804, 3400, 3703	Yes	ON	ON	ON	ON

(– means "OFF")

* With v1.1 or later firmware

4. Using Table 2-4, set switch SW3 on the SR-DC2 to specify the same reader type as the 2RP/2SRP.

Table 2-4: Setting the Reader Type on the SR-DC2

Reader Type	SW3 (SR-DC2)			
	1	2	3	4
Supervised F/2F	ON	–	ON	–
Unsupervised F/2F	ON	ON	ON	–
Wiegand (all types)	–	–	–	ON
Strobed (clock and data)*	–	ON	ON	–

(– means "OFF")

*Requires firmware version 1.1 or later

5. If a 2RP (not 2SRP) is being replaced:
 - Check pin 10 of J2 and J4. If there is a connection to this pin, it indicates that an unsupervised F/2F keypad reader is connected to the port. Such readers are not supported and must be replaced by a supervised F/2F or Wiegand reader (see page 11). Non-keypad F/2F readers can be supervised or unsupervised. See page 39 for installation details.

6. If a 2SRP (not 2RP) is being replaced:
 - Check DIP switch SW4 against Table 2-5. Confirm that only **Standard** readers are being used. **Single-Color LED, Time Display** and **HID Pin Pad** readers are not supported and must be disconnected or replaced.
 - Check DIP switches SW1 and SW2 against Table 2-6. Confirm that the setting is for 1k, 1k end-of-line resistors. **If 6.8k and 18k resistors are being used at the exit-request switches and door monitors, these must be replaced by 1k resistors.**

Table 2-5: Checking Special Reader Types on the 2SRP

Special Reader Type	SW4 (2SRP)			
	5	6	7	8
Standard	ON	ON	ON	ON
Single-Color LEDs	–	ON	ON	ON
Time Display	ON	–	ON	ON
HID Pin Pad	–	–	ON	ON

(– means "OFF")

Table 2-6: Checking Resistor Values on the 2SRP

Resistor Values	SW1 (2SRP)				SW2 (2SRP)				
	1	2	3	4-8	1	2	3	4	5-8
Standard (1k, 1k)	ON	ON	–	–	ON	–	ON	–	ON
Special (6.8k, 18k)	ON	–	ON	–	ON	–	ON	–	–
Time Display Readers	–	ON	ON	–	–	ON	–	ON	ON

(– means "OFF") Note: Time Display readers (for time-and-attendance recording) are not supported.

7. Determine whether the Reader Voltage Selection jumper on the 2RP/2SRP is set to 5V or 12V and make the same setting on the SR-DC2. Figure 2-4 shows the locations of the jumpers.

Note: If a replacement 12V Wiegand reader is used, determine whether it uses 5V signaling. If so, set the jumper on the SR-DC2 to 5V and power the reader from a separate 12Vdc source (such as the SR-PCU). If you are not changing existing readers, the jumper on the SR-DC2 must have the same setting as on the 2RP/2SRP.
8. Fit the correct resistor packs to the SR-DC2 (see Figure 2-4). Use a 5V resistor pack or 12V resistor pack, depending on the setting of the Reader Voltage Selection jumper.
9. Using Table 2-7, determine the address of the 2RP/2SRP and set the SR-DC2 to the same address. Note that both SW3 and SW4 must be set.

Table 2-7: Address Switches on the 2RP, 2SRP and SR-DC2

Address	SW3 (2RP, 2SRP or SR-DC2)				SW4 (2RP, 2SRP or SR-DC2)			
	5	6	7	8	1	2	3	4
1	ON	–	–	–	ON	–	–	–
2	–	ON	–	–	–	ON	–	–
3	–	–	ON	–	–	–	ON	–
4	–	–	–	ON	–	–	–	ON

(– means "OFF")

- Set the resistor DIP switches on the SR-DC2 as shown in Table 2-8. Choose the 1k,1k setting even if cable supervision to exit-request switches and door monitors is not used.

Table 2-8: Setting the Resistor Values on the SR-DC2

Resistor Values	SW1 (SR-DC2)				SW2 (SR-DC2)				
	1	2	3	4	1	2	3	4	5-8
Standard (1k, 1k)	ON	ON	-	-	ON	-	ON	-	ON

(- means "OFF")

- Set the bit switches shown in Table 2-9 to specify whether the exit-request switches and door monitors are connected to a supervised F/2F reader, Wiegand Interface Unit or to the SR-DC2. Bit switch 7 is for door 1; bit switch 8 is for door 2.

Table 2-9: Exit-Request and Door Monitor Input Location

Door Monitor and Exit Request Location	SW4 (SR-DC2)		
	5	6	7 (for Door 1) and/or 8 (for Door 2)
Use input on SR-DC2	ON*	ON*	-
Use input on supervised F/2F reader or Wiegand Interface Unit	ON*	ON*	ON

(- means "OFF")

*Bit switches 5 and 6 currently have no function, but should be left in the ON position for possible future use. The settings are not relevant if both the door monitor and exit request use monitor points connected to an SR-AC20.

- Fit the connectors to the SR-DC2, making sure they go to the correct ports. **Note:** Any pull-up resistor fitted between pins 1 and 7 of J3/J4 can be removed.
- Insert the SR-DC2 into the backplane.

Note: Please refer to page 39 if you have unused door-monitor or exit-request inputs at an SR-DC2 or supervised F/2F reader. Page 39 gives details of how the unused inputs should be terminated.

Step 7 – Replace 8RP Reader Boards (if used)

The Micro/5 or M3000 8RP board provides connections for up to eight F/2F readers, Wiegand Interface Units or M/RJs. There may be up to two 8RP boards in the same node. Wiegand readers can be connected using a Wiegand Interface Unit.

You can use Figure 2-5 to help to identify any 8RP boards the node may contain, although please be aware that the location and size of the DIP switches and other components may vary between versions. The Symmetry replacement is the SR-DC8, which is also shown in Figure 2-5.

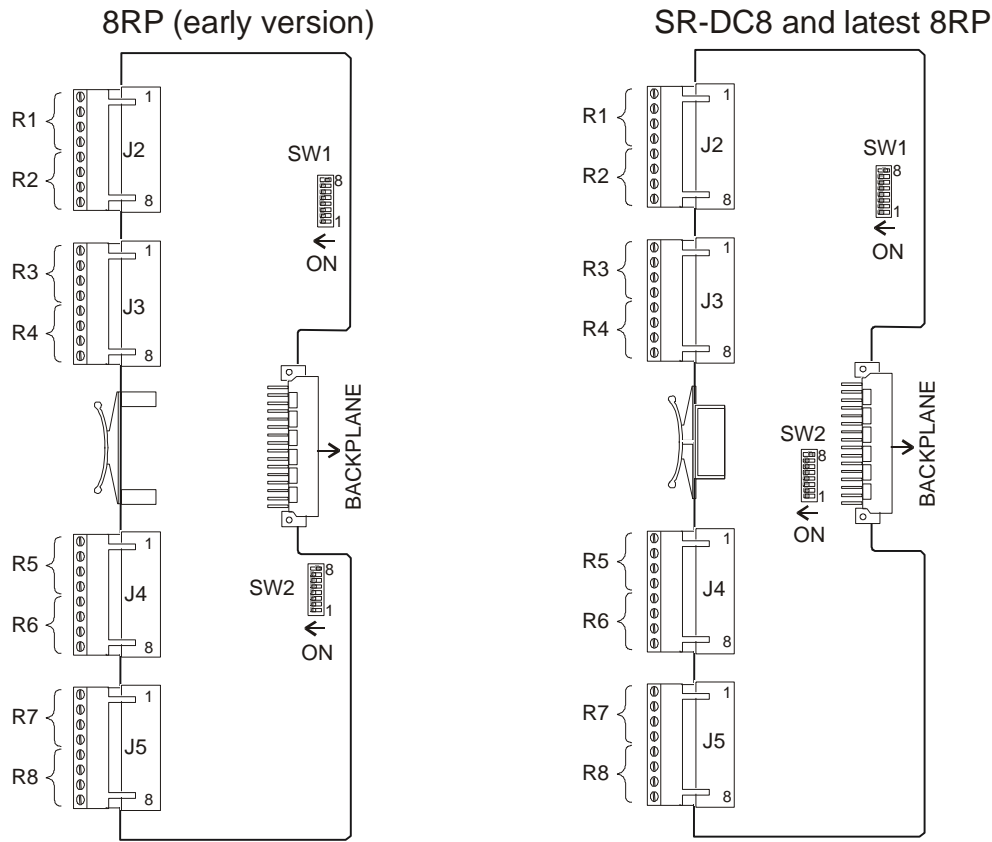


Figure 2-5: The 8RP and Symmetry SR-DC8 Boards

Replace each 8RP in turn as follows:

1. Remove the 8RP from the backplane.
2. Remove the connectors.
3. Using Table 2-10, determine the type of readers currently connected to the 8RP and set the SR-DC8 to be the same.

Table 2-10: Identifying the Reader Type from the 8RP

Reader Type	SW1 (8RP or SR-DC8)			
	1	2	3	4
Supervised F/2F, WIU or M/RJ	ON	–	ON	–
Unsupervised F/2F	ON	ON	ON	–

(– means "OFF")

- Using Table 2-11, determine the address of the 8RP and set the SR-DC8 to the same address. Note that both SW1 and SW2 must be set.

Table 2-11: Address Switches on the 8RP and SR-DC8

Address	SW1 (8RP or SR-DC8)				SW2 (8RP or SR-DC8)							
	5	6	7	8	1	2	3	4	5	6	7	8
1	–	–	–	ON	ON	–	ON	–	ON	–	ON	–
2	–	–	–	ON	ON	ON	–	–	–	ON	–	ON

(– means "OFF")

- Fit the connectors to the SR-DC8, making sure they go to the correct ports.
- Insert the SR-DC8 into the backplane.

Step 8 – Replace the Lid of the Node (Micro/5 only)

Remove the existing lid of the Micro/5 and replace it with the Symmetry lid provided. This is necessary to allow room for the SR-DBU and to provide viewing of the status LEDs with the cover installed. The original lid cannot be reinstalled once the system is converted.

On completion, connect power to the node, including the backup battery.

After fully testing the system, the SRNode and Symmetry software are ready for use.

Step 9 – Configure the Symmetry Software

Configure the Symmetry software as described in Chapter 7.

Chapter 3: Converting a Micro/2000 or M2000 Micro

This chapter explains how to convert a Micro/2000 or M2000 into the equivalent Symmetry SR-2000 node. If you wish to convert a Micro/5 or M3000, please refer to Chapter 2.

Note: Consider whether it would be better to install and configure the Symmetry software before replacing any hardware. This can minimize downtime and allow the hardware to be brought online more quickly after installation. Please refer to Chapter 7 if you wish to carry out this work now.

The process of converting a Micro/2000 or M2000 into an SR-2000 involves replacing the existing boards in the cabinet (Integrated I/O Board and Processor board) with the Symmetry equivalents (SR-DC2000 and SR-DB2000 respectively). If fallback communications are required, an external fallback modem will also need to be installed. Figure 3-1 shows the connectors on the SR-DC2000, which are referred to throughout this chapter.

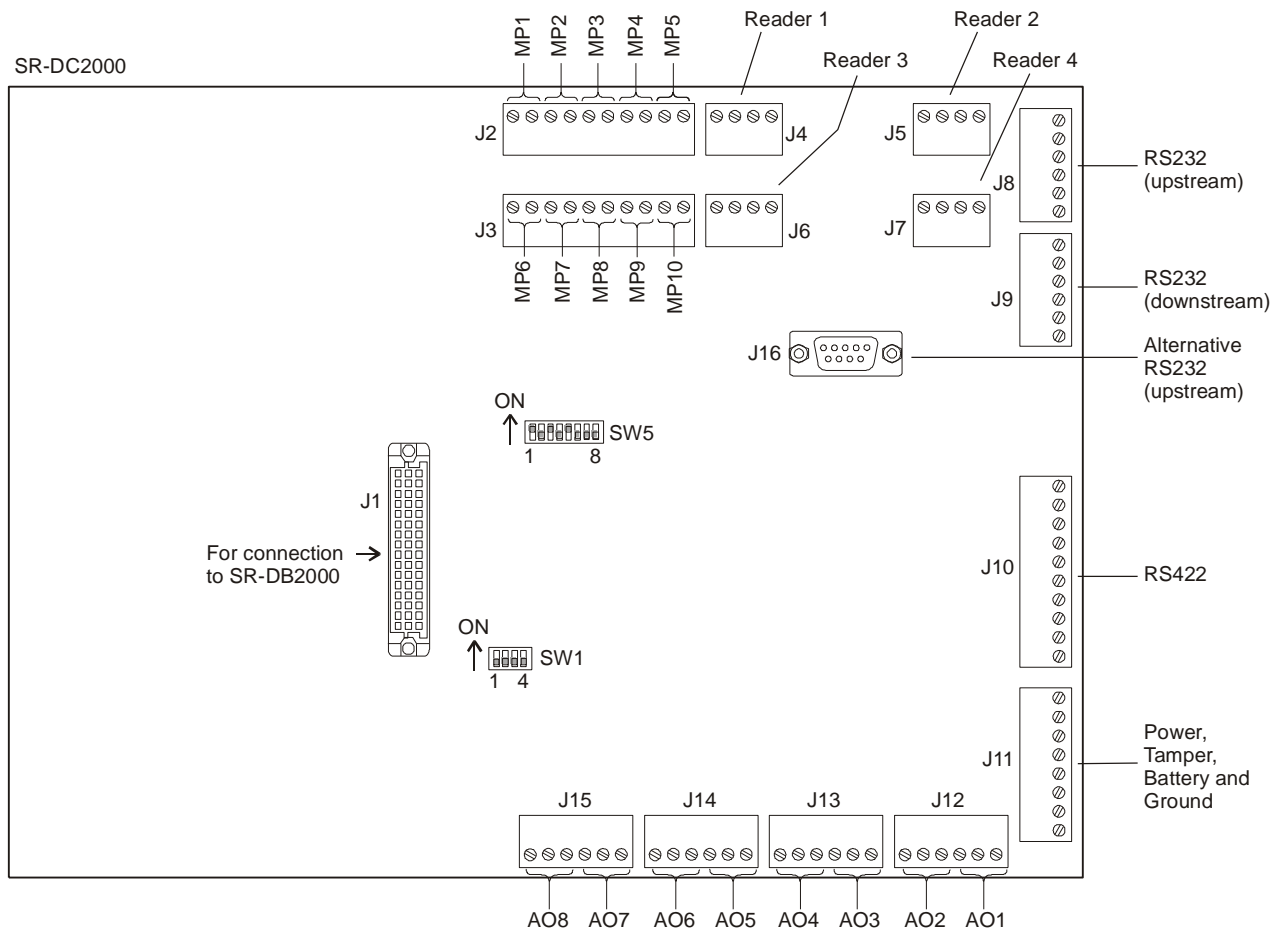


Figure 3-1: Connectors on SR-DC2000

Step 1 – Remove the Existing Equipment

Remove the existing equipment from the cabinet as follows:

1. Disconnect all power to the unit, including the backup battery.
2. Mark each connector with the name of its port (J2, J3, etc.). A permanent marker pen is ideal for this purpose.
3. Remove each connector, but do not disconnect any wiring.
4. Remove the existing Processor Board and Integrated I/O Board from the cabinet. The Processor Board is mounted on top of the Integrated I/O Board.
5. Fit the Symmetry SR-DC2000 into the cabinet. This is the replacement for the Integrated I/O Board.
6. Fit the Symmetry SR-DB2000 onto the SR-DC2000, connecting it to the large connector located near the center of the SR-DC2000.
7. Complete the steps described next.

Step 2 – Set Up the SR-DB2000 Database Unit

Set up the SR-DB2000 Database Unit as described on page 44. This involves setting the address and communication bit switches, fitting the battery link, connecting the SR-DB2000 to ground and attaching the network cable (if used).

Note: If the on-board modem or optional PCMCIA modem card was used on the Processor Board, a separate external fallback modem must be installed and connected to J8 on the SR-DC2000 as shown Figure 3-2. You must configure the modem with a Symmetry-supported modem initialization string, as described in the *Symmetry Software Installation Manual*.

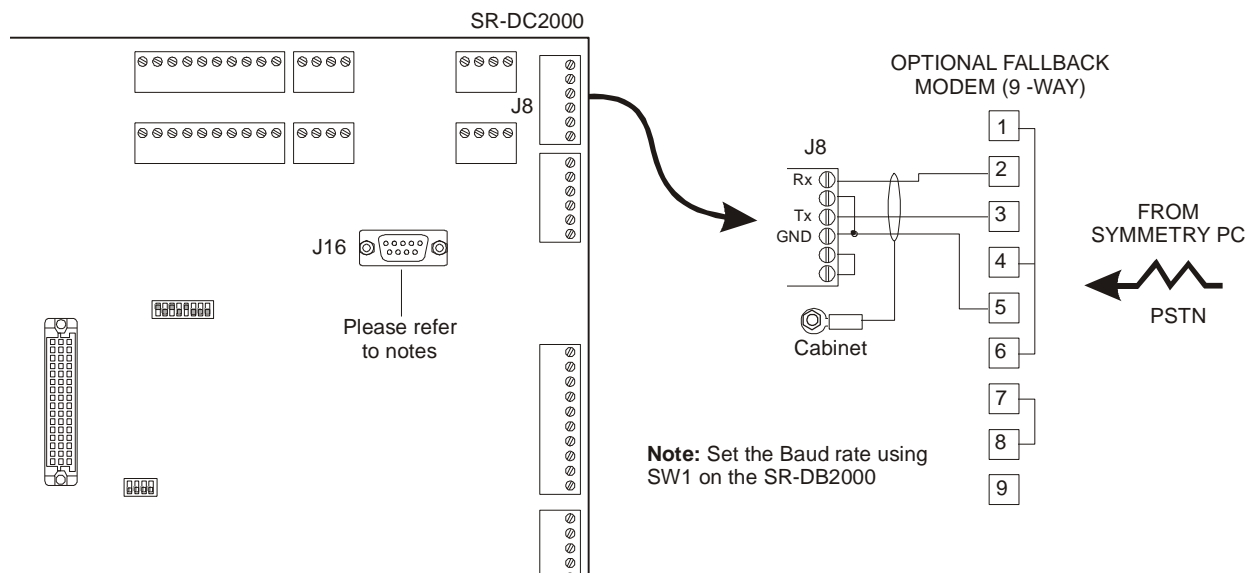


Figure 3-2: Connecting a Fallback Modem

Step 3 – Attach the RS232 Connectors (J8, J9 and J16, if used)

One or more of the connectors J8, J9 and J16 will have wiring attached if the node uses serial (RS232) or modem communications to the host PC or to other nodes. Reattach the connectors without making any changes to the wiring, subject to the following:

- Any Time Display currently connected to J9 cannot be used.
- The SR-2000 does not support the use of modems between nodes in a chain. Although this architecture is unlikely, you should confirm that it is not used by checking that no modem is connected to J9. Any modem connected to J9 will need to be removed and an alternative architecture adopted.
- You must configure all modems with a Symmetry-supported modem initialization string, as described in the *Symmetry Software Installation Manual*. The modem Baud rate must be specified using SW1 on the SR-DB2000.

Step 4 – Connect the RS422 Connector (J10, if used)

The node may be connected to others using an RS422 chain. Reattach J10 without making any wiring changes.

Step 5 – Connect the Monitor Points (J2 and J3, if used)

The SR-2000 contains ten monitor points, which are available through J2 and J3. Reattach J2 and J3 without making any wiring changes.

Step 6 – Connect the Auxiliary Outputs (J10 - J13, if used)

The SR-2000 contains eight relay-type auxiliary outputs, which are available through J10, J11, J12 and J13. Reattach these connectors without making any wiring changes.

Step 7 – Connect the Readers (J4 - J7, if used)

The SR-2000 supports a maximum of four F/2F readers, Wiegand Interface Units or M/RJs connected to J4, J5, J6 and J7. Reattach J4, J5, J6 and J7 without making any wiring changes.

Step 8 – Set the Bit Switches on the SR-DC2000 (SW1 and SW5)

In all cases, set SW1 and SW5 on the new SR-DC2000 board as follows:

SW1-1 = OFF (SW1 is not currently used)
SW1-2 = OFF
SW1-3 = OFF
SW1-4 = OFF

SW5-1 = ON
SW5-2 = OFF
SW5-3 = ON
SW5-4 = OFF
SW5-5 = ON
SW5-6 = OFF
SW5-7 = OFF
SW5-8 = OFF

(SW5 sets the reader type. Use these settings for all readers.)

Step 9 – Connect Power/Ground/Battery/Tamper Switch (J11)

J11 provides the connection to the 18Vac power supply, tamper switch, backup battery and ground. Reattach J11 without making any wiring changes.

Conversion of the node is now complete – you can now replace the lid and switch on the node.

Step 10 – Configure the Symmetry Software

Configure the Symmetry software as described in Chapter 7.

Chapter 4: Installing a Symmetry SRNode

This chapter provides all the information you need to install an "SRNode", without it being a replacement for an existing Micro/5 or M3000. Additional nodes may need to be installed at the same time as other existing nodes are replaced, or at a later time to expand the system.

Note: Please refer to Chapter 5 if you wish to install an SR-2000 node.

Note: Please read Chapter 6 first if you are installing a node that is used for elevator control.

Cable and Wiring Requirements

Before starting the installation of an SRNode, please ensure that you have considered the cable needed, checked that the maximum lengths are not going to be exceeded and decided the level of cable supervision, as described on page 74.

Step 1 – Install the SR-PCU Power/Communications Board

The SR-PCU is a power and communications board. It provides:

- Connections for the 12Vdc power supply, AC fail input and tamper switch.
- An RS422 port for communications with other SR-Series nodes (SRNode or SR-2000) in a chain.
- Serial ports that allow the SRNode to communicate with:
 - Other SR-Series nodes in a chain (as an alternative to RS422).
 - A Symmetry host PC for system configuration, monitoring and reporting. A hardwired RS232 link or modem can be used to the first node in a chain.
 - A fallback modem, which is used if the Ethernet port on the SR-DBU is used and an Ethernet communications failure is detected.

Note: It is recommended that you install the SR-PCU in the slot farthest to the right. This will make it easier to connect to pre-wired ground and other connections in the cabinet.

Note: If you have connected the node to the network and are not chaining nodes or using modems, you need only connect J6.

Connecting a Symmetry PC Using Direct RS232 or a Modem

Figure 4-1 shows how to connect the SR-PCU to a Symmetry PC using a direct RS232 or dial-up modem connection. These connections should be made only to the first node in a chain, and only if the SRNode is not using a network (page 35).

If a modem is used, it must be configured with a Symmetry-supported modem initialization string, as described in the *Symmetry Software Installation Manual*.

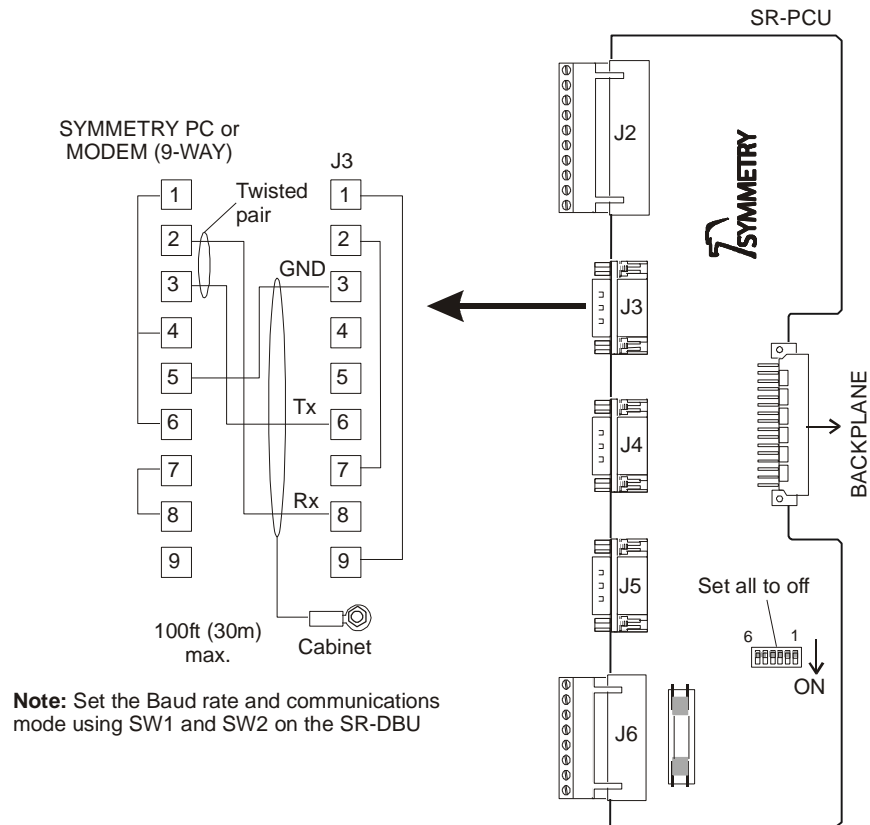


Figure 4-1: SR-PCU Connections to Symmetry PC or Dial-Up Modem

Connecting a Fallback Modem

Figure 4-2 shows how to connect the SR-PCU to a fallback modem.

The modem must be configured with a Symmetry-supported modem initialization string, as described in the *Symmetry Software Installation Manual*.

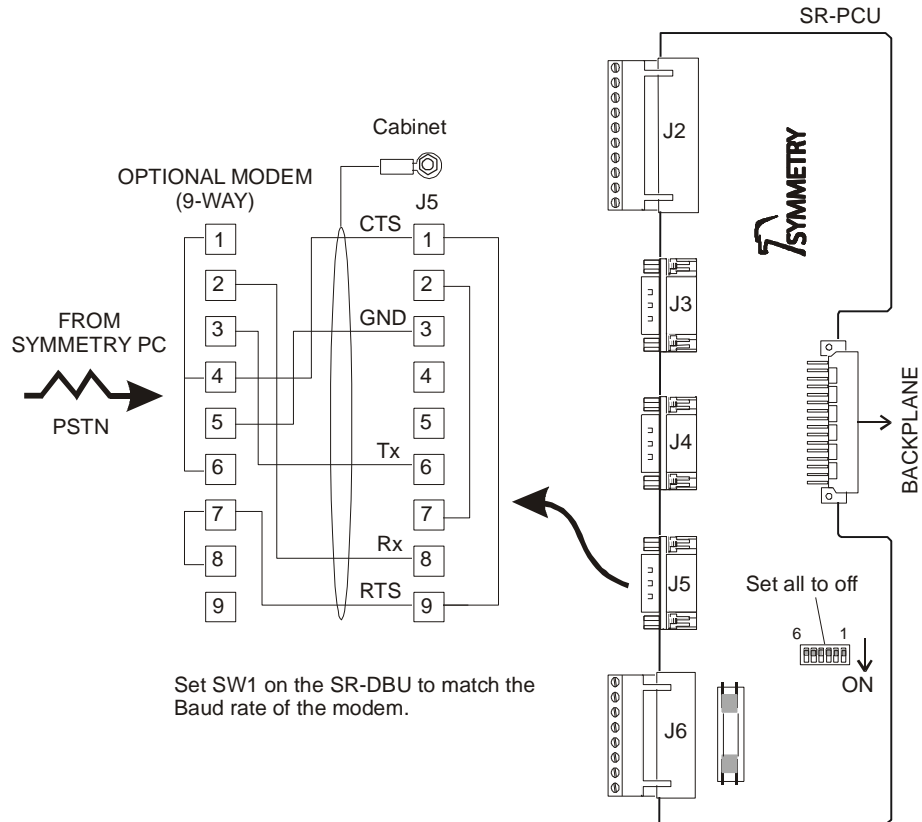


Figure 4-2: SR-PCU Connections to a Fallback Modem

Chaining Nodes using RS232 or RS422

Figure 4-3 shows how to chain SR-Series nodes (SRNode or SR-2000) using the RS232 or RS422 ports on the SR-PCU.

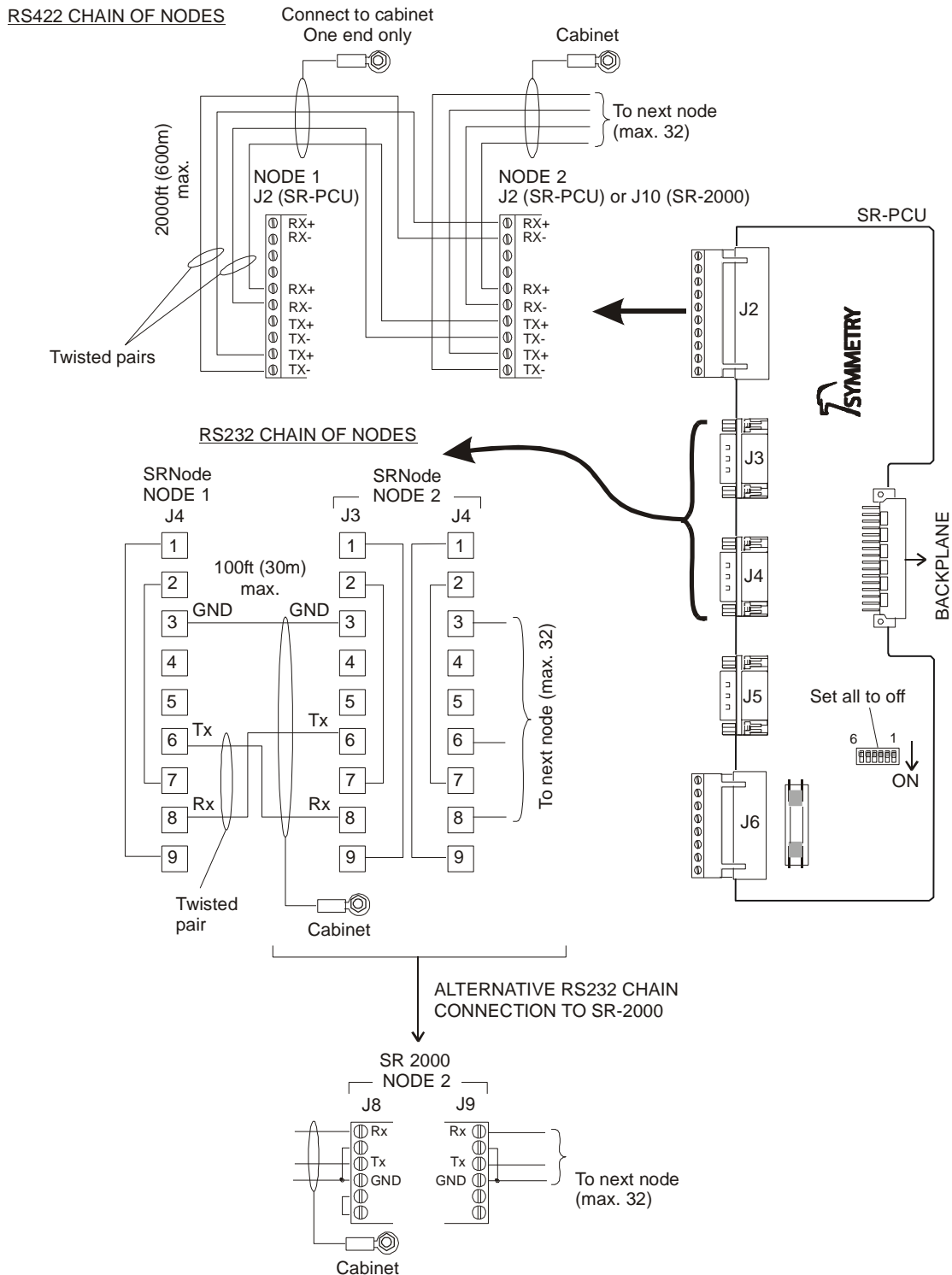


Figure 4-3: SR-PCU Connections for Chaining Nodes

Connecting Power, Tamper and AC Fail

Figure 4-4 shows how to connect power, tamper and AC fail to the SR-PCU.

Note: Connect the backup battery and switch on power to the node only after all required boards are fitted and all connections have been made.

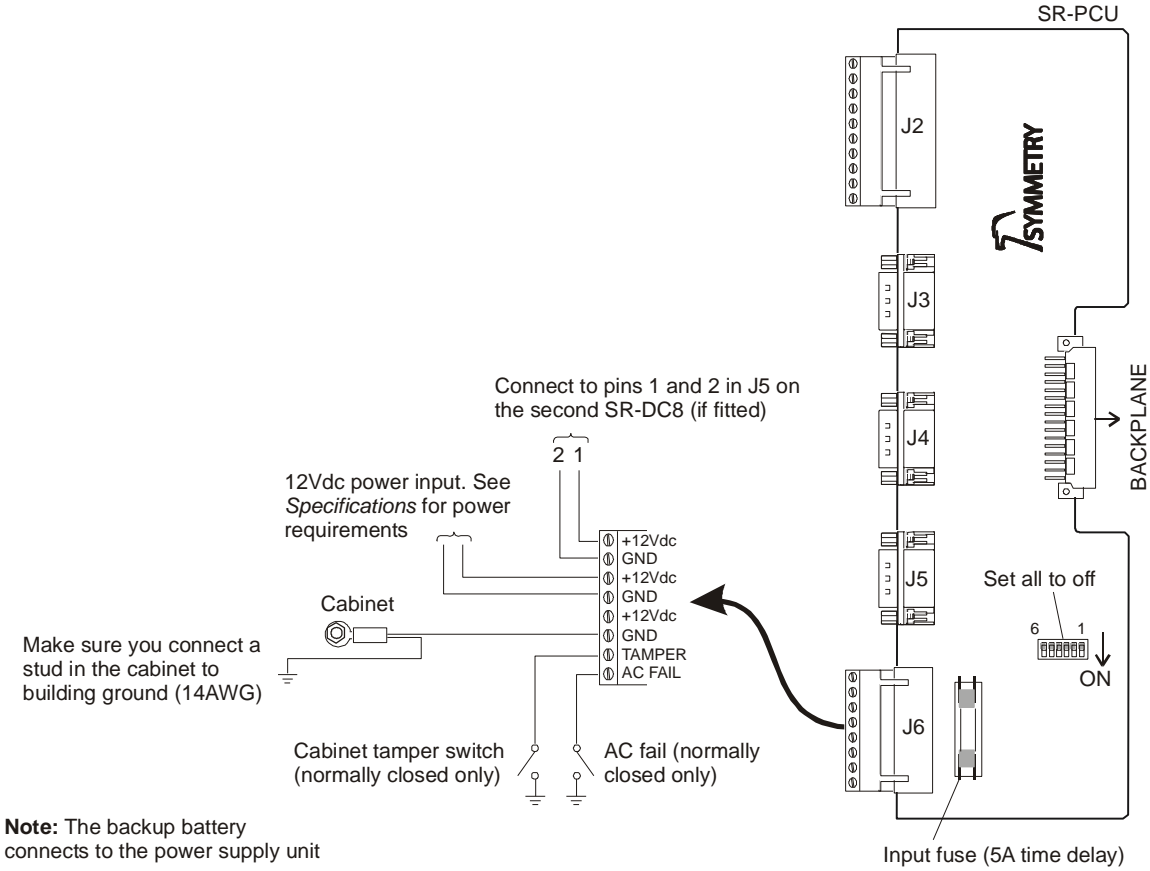


Figure 4-4: SR-PCU Power, Tamper and AC Fail Connections

Step 2 – Install the SR-DBU Database Unit

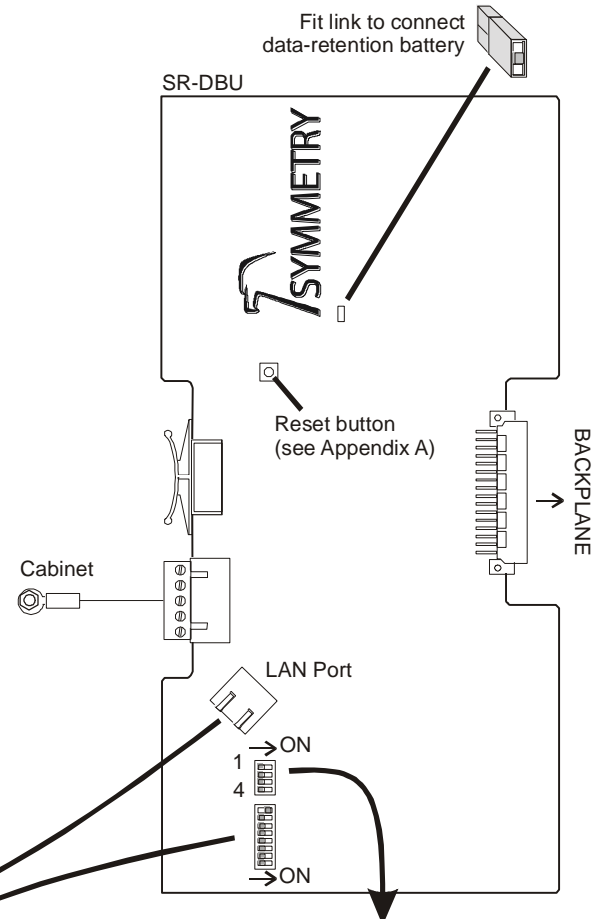
The SR-DBU is the node's database unit. Each SRNode must contain a single SR-DBU, which should be installed in the slot second from the right (this allows the LEDs on the SR-DBU to be visible through the cover). Figure 4-5 shows how to connect and set up the SR-DBU.

Note: The SRNode can use only the SRNode version of the SR-DBU. In addition, Micro/5 or M3000 plug-in boards are not compatible with the SRNode.

Setting the Address of the SR-DBU (- means "OFF")

Node Address	Address Bit Switches				
	ADR0	ADR1	ADR2	ADR3	ADR4
1	-	-	-	-	-
2	ON	-	-	-	-
3	-	ON	-	-	-
4	ON	ON	-	-	-
5	-	-	ON	-	-
6	ON	-	ON	-	-
7	-	ON	ON	-	-
8	ON	ON	ON	-	-
9	-	-	-	ON	-
10	ON	-	-	ON	-
11	-	ON	-	ON	-
12	ON	ON	-	ON	-
13	-	-	ON	ON	-
14	ON	-	ON	ON	-
15	-	ON	ON	ON	-
16	ON	ON	ON	ON	-
17	-	-	-	-	ON
18	ON	-	-	-	ON
19	-	ON	-	-	ON
20	ON	ON	-	-	ON
21	-	-	ON	-	ON
22	ON	-	ON	-	ON
23	-	ON	ON	-	ON
24	ON	ON	ON	-	ON
25	-	-	-	ON	ON
26	ON	-	-	ON	ON
27	-	ON	-	ON	ON
28	ON	ON	-	ON	ON
29	-	-	ON	ON	ON
30	ON	-	ON	ON	ON
31	-	ON	ON	ON	ON
32	ON	ON	ON	ON	ON

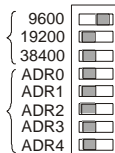
Figure 4-5: SR-DBU Connections and Configuration



Connect to Ethernet network if using network communications to a Symmetry PC (10/100Base-T). For a chain of nodes, connect only the node at the head of the chain.

Baud rate (default 9600) - Baud rate for direct RS232, dial-up or fallback comms with a Symmetry PC. It must match the setting in the modem (if used) and Symmetry software (Client Ports screen or LAN tab of the Node Definition screen).

Address (default 1) - each node in a chain must have a unique address. Set the address as shown in the table above.



Bit switch 1 - Determines communication method to Symmetry PC:

- OFF - Ethernet LAN port is connected.
- ON - RS232 or dial-up modem (via SR-PCU).

Bit switch 2 - Determines the LED/sounder operation for readers:

- OFF - Standard Symmetry reader behavior.
- ON - Legacy behavior (similar to Casi/GE/UTC reader operation).

Note:
 a) User code mode uses the code followed by #. For example, to enter user code 1234, press keys '1', '2', '3', '4', then '#'.
 b) All audible warnings disabled at F/2F readers, except for "incorrect PIN".

Bit switch 3 - Modem operation:

- OFF - Node does not use a modem.
- ON - Node is using a modem for dial-up and/or possible fallback communications with a Symmetry PC.

Bit switch 4 - not used.

Step 3 – Install the SR-AC20 Input Boards (if used)

The SR-AC20 provides 20 monitor points, which enable the current state of digital devices such as alarm sensors to be monitored. Monitor points can also be used as inputs for exit-request switches and door monitors (see *Connections to Door Furniture* on page 4). There can be up to four SR-AC20 boards fitted in each SRNode.

Each monitor point can use 2-state or 4-state supervision. With 2-state supervision, the cable is not monitored for faults. Four-state supervision allows both short-circuit and open-circuit conditions to be detected. Each monitor point can be normally open or normally closed.

Figure 4-6 shows how to connect the SR-AC20 and set its address (1-4). The address must not be the same as any other SR-AC20 in the same node. Always set the address to the lowest-available value.

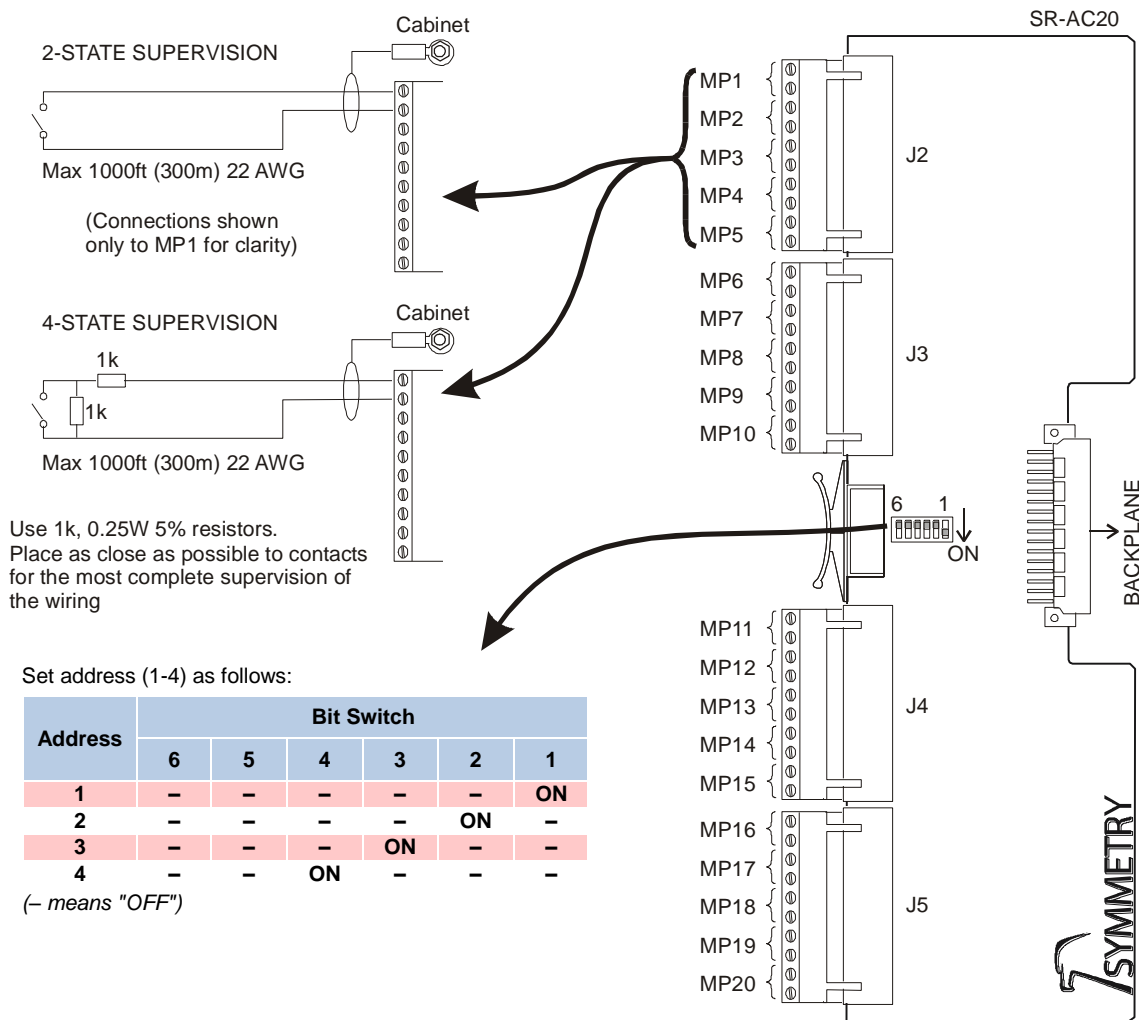


Figure 4-6: SR-AC20 Connections and Address Setting

Step 4 – Install the SR-OC16/SR-OCS16 Output Boards (if used)

The SR-OC16 and SR-OCS16 provide 16 programmable auxiliary outputs to drive external devices. The SR-OC16 provides relay-type auxiliary outputs; the SR-OCS16 provides open-collector auxiliary outputs. There can be up to four SR-OC16/SR-OCS16 boards fitted in each SRNode. If required, auxiliary outputs can be used to operate door releases, alarm-bypass circuits and door-held sounders (see page 4).

Figure 4-7 shows how to connect and set the address of an SR-OC16. Figure 4-8 shows how to connect and set the address of an SR-OCS16. The address must not be the same as any other output board in the same node. Always set the address to the lowest-available value.

Auxiliary outputs 57 to 64 – Please note the following:

The eight possible auxiliary outputs provided by up to four SR-DC2s (page 39) map to auxiliary outputs 57 to 64 in Symmetry. This means that when an auxiliary output in this range is operated, up to two auxiliary outputs can operate – one on an SR-DC2 and another on an SR-OC16/SR-OCS16. Eg:

- Operating auxiliary output 57 can operate Reader 1 auxiliary output on the first SR-DC2 and auxiliary output 57 on the fourth output board (i.e. set to address 4).
- Operating auxiliary output 59 can operate Reader 1 auxiliary output on the second SR-DC2 and auxiliary output 59 on the fourth output board.

If you are using any auxiliary output on a SR-DC2, you may need to leave the corresponding auxiliary output on the fourth output board unconnected.

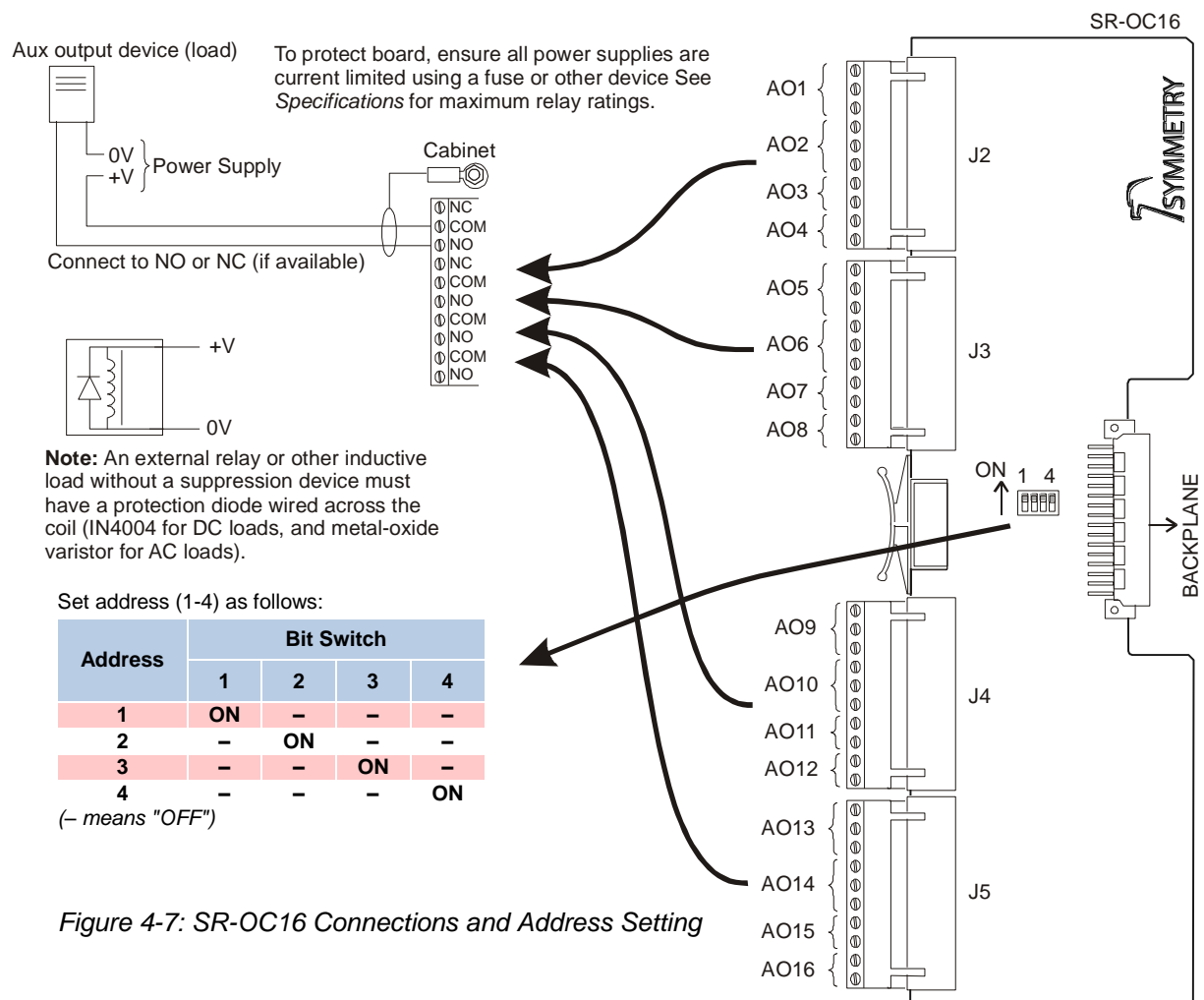


Figure 4-7: SR-OC16 Connections and Address Setting

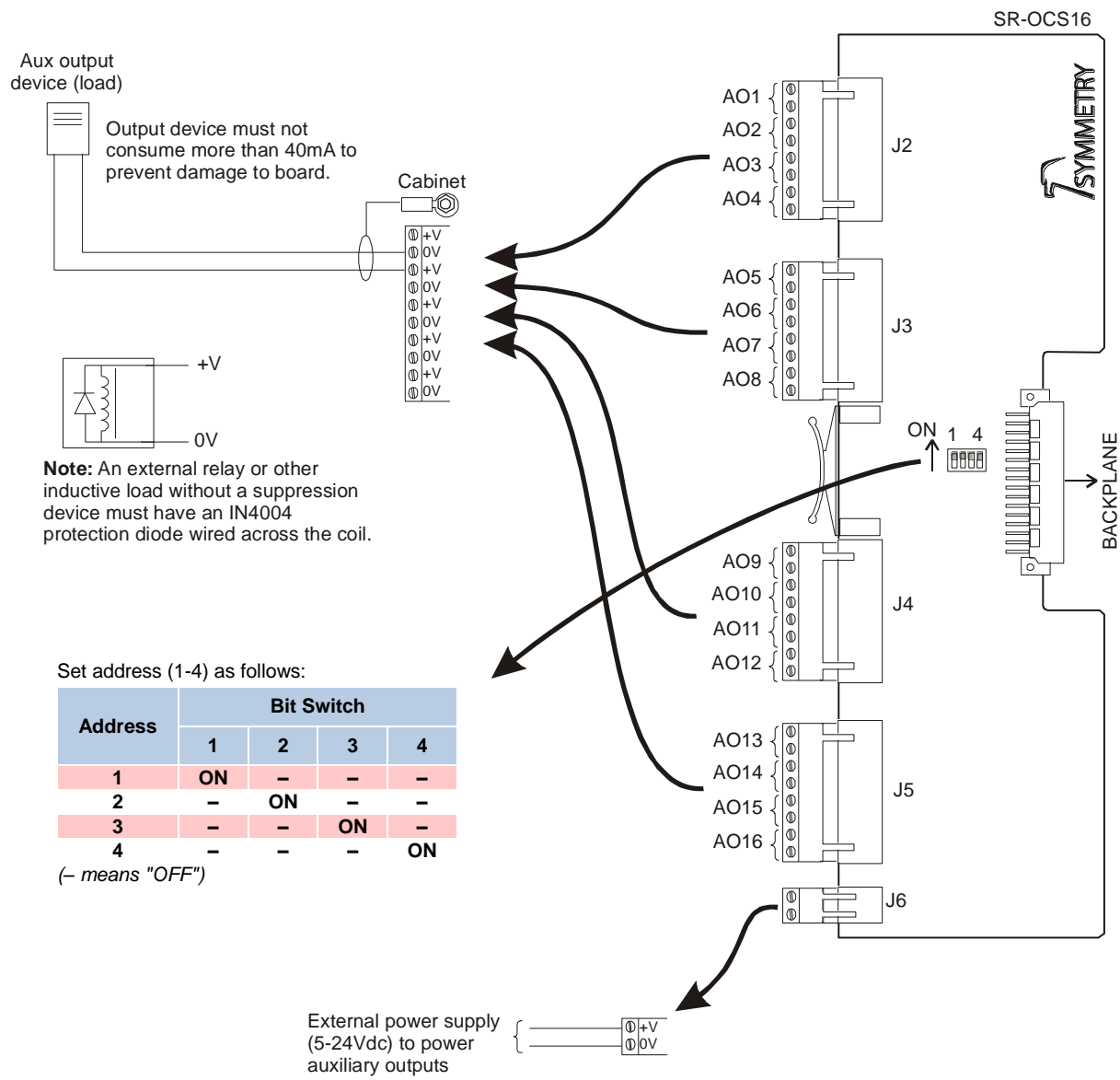


Figure 4-8: SR-OCS16 Connections and Address Setting

Step 5 – Install the SR-DC2 Reader Boards (if used)

The SR-DC2 provides connections for up to two supervised F/2F, unsupervised F/2F, Wiegand or strobed (clock & data) readers and associated door furniture. There can be up to four SR-DC2 boards fitted in each SRNode.

Figure 4-9 shows how to connect and set up the SR-DC2, including its address (1-4). The address must not be the same as any other SR-DC2 in the same node. Always set the address to the lowest-available value.

Note:

- Please refer to *Reader Types* on page 11 for further important information.
- When using a supervised F/2F reader, you must carry out the following at the unused exit-request and door-monitor contacts (that is, at either the SR-DC2 or reader):

Table 4-1: Unused Exit-Request and Door-Monitor Contacts

Exit Request				Door Monitor			
2-State		4-State		2-State		4-State	
Normally open	Normally closed	Normally open	Normally closed	Normally open	Normally closed	Normally open	Normally closed
Leave contacts open	Short contacts	Add 2k resistor across contacts	Add 1k resistor across contacts	Short contacts	Leave contacts open	Add 1k resistor across contacts	Add 2k resistor across contacts

- It is possible (although unusual) to connect door furniture (exit request, door release, etc.) to monitor points and auxiliary outputs, rather than to the SR-DC2 or supervised F/2F reader. See *Connections to Door Furniture* on page 4 for further information.
- If you are using a supervised F/2F reader, but decide to use a monitor point for the exit-request or door monitor, leave the input at the reader and SR-DC2 disconnected, unless 4-state supervision is used, in which case, add a resistor across only the reader terminals as given above.
- Door releases or other inductive loads (including relays) must contain noise suppression circuitry (see Figure 4-9). Fit a metal-oxide varistor (MOV) across AC door releases and an IN4004 suppression diode across DC door releases. Some locks (e.g. Abloy Magneguard) already contain a suppression device and in these cases, no additional circuitry should be fitted, or the lock may fail.
- The Wiegand output of Symmetry 8xx Wiegand readers must connect through a Wiegand Interface Unit. They will not function correctly if connected directly to an SR-DC2.
- If a 12V Wiegand reader is used, determine whether it uses 5V signaling. If so, set the jumper on the SR-DC2 to 5V and power the reader from a separate 12Vdc source (such as the SR-PCU).
- The SR-DC2 has built-in pull-up resistors for readers; do not connect external pull-up resistors.

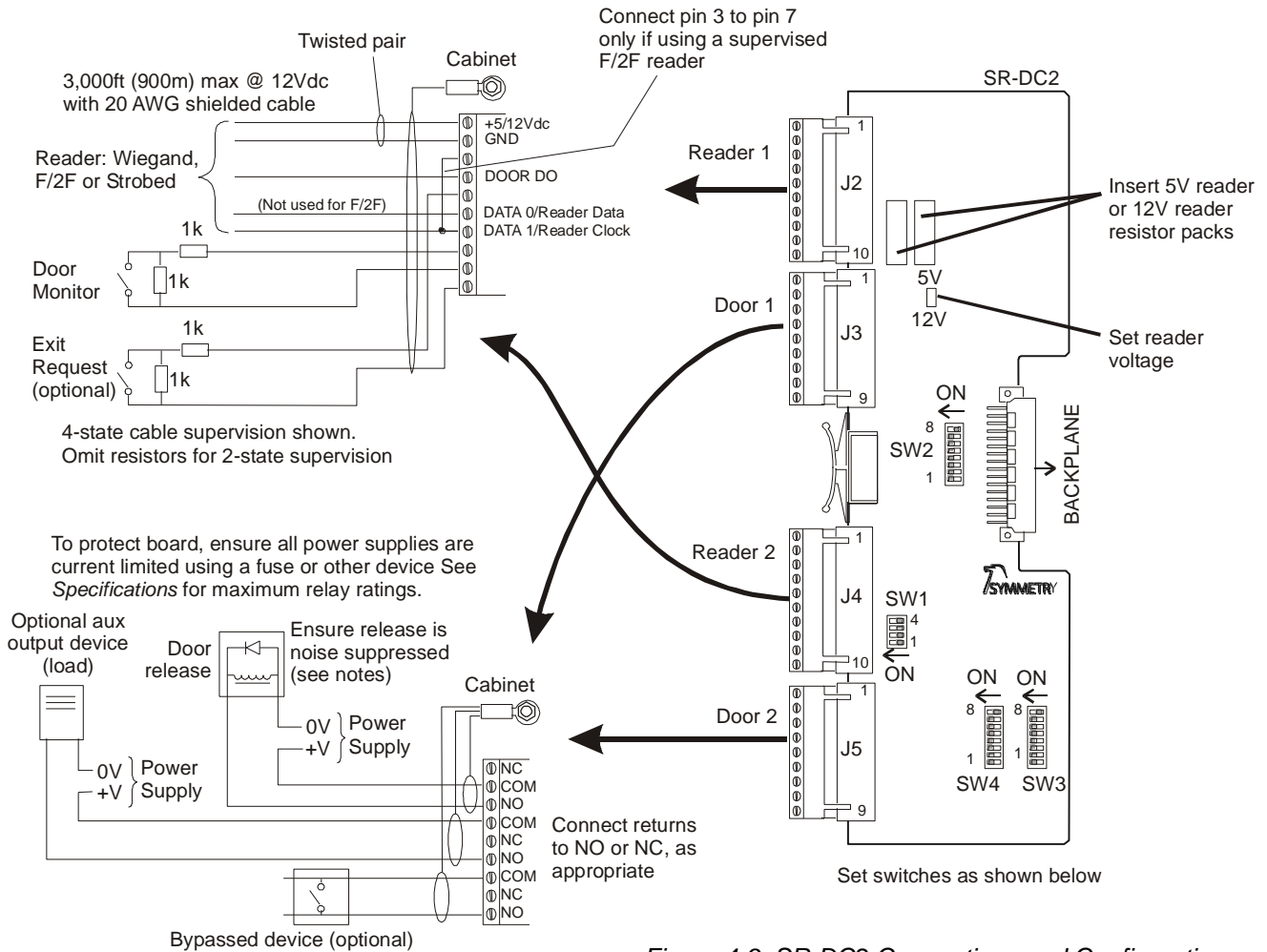


Figure 4-9: SR-DC2 Connections and Configuration

Address	SW3				SW4			
	5	6	7	8	1	2	3	4
1	ON	-	-	-	ON	-	-	-
2	-	ON	-	-	-	ON	-	-
3	-	-	ON	-	-	-	ON	-
4	-	-	-	ON	-	-	-	ON

Reader Type	SW3			
	1	2	3	4
Supervised F/2F	ON	-	ON	-
Unsupervised F/2F	ON	ON	ON	-
Wiegand (all types)	-	-	-	ON
Strobed (clock and data)*	-	ON	ON	-

*Requires firmware version 1.1 or later

Resistor Values	SW1				SW2				
	1	2	3	4	1	2	3	4	5-8
Standard (1k, 1k)	ON	ON	-	-	ON	-	ON	-	ON

Door Monitor and Exit Request Location	SW4 (SR-DC2)		
	5	6	7 (for Door 1) and/or 8 (for Door 2)
Use input on SR-DC2	ON*	ON*	-
Use input on supervised F/2F reader or Wiegand Interface Unit	ON*	ON*	ON

(- means "OFF"). *Bit switches 5 and 6 currently have no function, but should be left in the ON position for possible future use. The settings are not relevant if both the door monitor and exit request use monitor points connected to an SR-AC20.

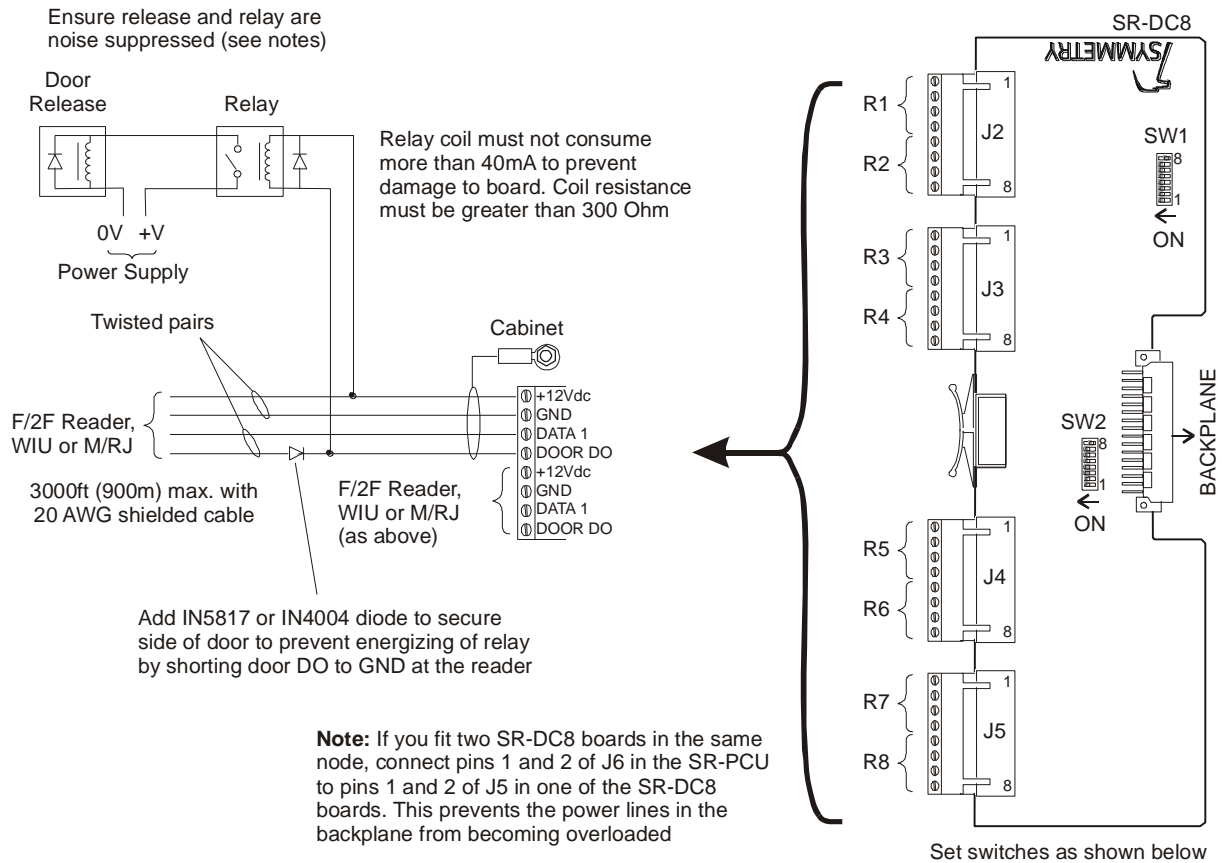
Step 6 – Install the SR-DC8 Reader Boards (if used)

The SR-DC8 provides connections for up to eight F/2F readers, Wiegand Interface Units or M/RJs. There can be up to two SR-DC8 boards fitted in each SRNode.

Figure 4-10 shows how to connect and set up the SR-DC8, including its address (1-2). The address must not be the same as any other SR-DC8 in the same node. Always set the address to the lowest-available value.

Note:

- Please refer to page 11 for information about reader types.
- The SR-DC8 contains no exit-request or door monitor inputs. See *Connections to Door Furniture* on page 4 for details of how to connect door furniture.
- Door releases or other inductive loads (including relays) must contain noise suppression circuitry (see Figure 4-10). Fit a metal-oxide varistor (MOV) across AC door releases and an IN4004 suppression diode across DC door releases. Some locks (e.g. Abloy Magneguard) already contain a suppression device and in these cases, no additional circuitry should be fitted, or the lock may fail.
- The SR-DC8 has built-in pull-up resistors for readers; do not connect external pull-up resistors.
- Strobed (clock and data) readers can be used by connecting through a Wiegand Interface Unit.



Reader Type	SW1			
	1	2	3	4
Supervised F/2F, WIU or M/RJ	ON	-	ON	-
Unsupervised F/2F	ON	ON	ON	-

Address	SW1			SW2							
	5-6	7	8	1	2	3	4	5	6	7	8
1	Not used	-	ON	ON	-	ON	-	ON	-	ON	-
2	Not used	-	ON	ON	ON	-	-	-	ON	-	ON

(- means "OFF")

Figure 4-10: SR-DC8 Connections and Configuration

Step 7 – Configure the Symmetry Software

Configure the Symmetry software as described in Chapter 7.

Chapter 5: Installing a Symmetry SR-2000

This chapter provides all the information you need to install a Symmetry SR-2000 node, without it being a replacement for an existing Micro/2000 or M2000. Additional nodes may need to be installed at the same time as other existing nodes are replaced, or at a later time to expand the system.

Cable and Wiring Requirements

Before starting the installation of an SR-2000, please ensure that you have considered the cable needed, checked that the maximum lengths are not going to be exceeded and decided the level of cable supervision, as described on page 74.

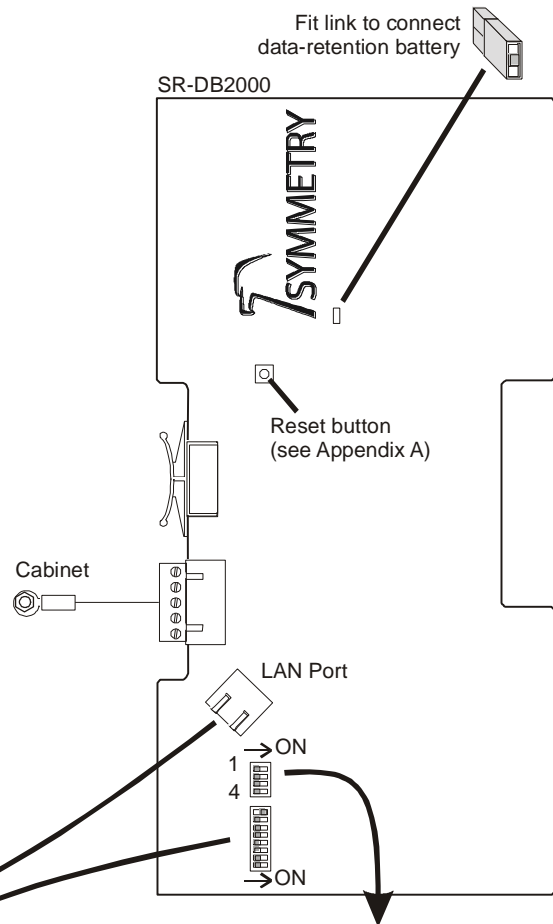
Step 1 – Install the SR-DB2000 Database Unit

The SR-DB2000 is the node's database unit. Each SR-2000 must contain a single SR-DB2000, which must be fitted onto the connector located near the center of the SR-DC2000 board. Figure 5-1 shows connection and setup details.

Setting the Address of the SR-DB2000 (- means "OFF")

Node Address	Address Bit Switches				
	ADR0	ADR1	ADR2	ADR3	ADR4
1	-	-	-	-	-
2	ON	-	-	-	-
3	-	ON	-	-	-
4	ON	ON	-	-	-
5	-	-	ON	-	-
6	ON	-	ON	-	-
7	-	ON	ON	-	-
8	ON	ON	ON	-	-
9	-	-	-	ON	-
10	ON	-	-	ON	-
11	-	ON	-	ON	-
12	ON	ON	-	ON	-
13	-	-	ON	ON	-
14	ON	-	ON	ON	-
15	-	ON	ON	ON	-
16	ON	ON	ON	ON	-
17	-	-	-	-	ON
18	ON	-	-	-	ON
19	-	ON	-	-	ON
20	ON	ON	-	-	ON
21	-	-	ON	-	ON
22	ON	-	ON	-	ON
23	-	ON	ON	-	ON
24	ON	ON	ON	-	ON
25	-	-	-	ON	ON
26	ON	-	-	ON	ON
27	-	ON	-	ON	ON
28	ON	ON	-	ON	ON
29	-	-	ON	ON	ON
30	ON	-	ON	ON	ON
31	-	ON	ON	ON	ON
32	ON	ON	ON	ON	ON

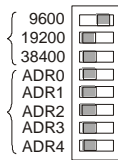
Figure 5-1: SR-DB2000 Connections and Configuration



Connect to Ethernet network if using network communications to a Symmetry PC (10/100Base-T). **For a chain of nodes, connect only the node at the head of the chain.**

Baud rate (default 9600) - Baud rate for direct RS232, dial-up or fallback comms with a Symmetry PC. It must match the setting in the modem (if used) and Symmetry software (Client Ports screen or LAN tab of the Node Definition screen).

Address (default 1) - each node in a chain must have a unique address. Set the address as shown in the table above.



Bit switch 1 - Determines communication method to Symmetry PC:
 OFF - Ethernet LAN port is connected.
 ON - RS232 or dial-up modem.

Bit switch 2 - Determines the LED/sounder operation for readers:
 OFF - Standard Symmetry reader behavior.
 ON - Legacy behavior (similar to Casi/GE/UTC reader operation).
 Note:

- a) User code mode uses the code followed by #. For example, to enter user code 1234, press keys '1', '2', '3', '4', then '#'.
- b) All audible warnings disabled at F/2F readers, except for "incorrect PIN".

Bit switch 3 - Modem operation:

OFF - Node does not use a modem.
 ON - Node is using a modem for dial-up and/or possible fallback communications with a Symmetry PC.

Bit switch 4 - not used.

Step 2 – Connecting Communications

Connecting a Symmetry PC Using Direct RS232 or a Modem

Figure 5-2 shows how to connect the SR-2000 to a Symmetry PC for system configuration, monitoring and reporting using a direct RS232 or dial-up modem connection. These connections should be made only to the first node in a chain, and only if the SR-2000 is not using a network (page 44).

Note: J16 can be used as an alternative to J8. J16 is used for legacy systems and uses non-standard D-type wiring as given on page 52.

If a modem is used, it must be configured with a Symmetry-supported modem initialization string, as described in the *Symmetry Software Installation Manual*. Also set the Baud rate on the SR-DB2000.

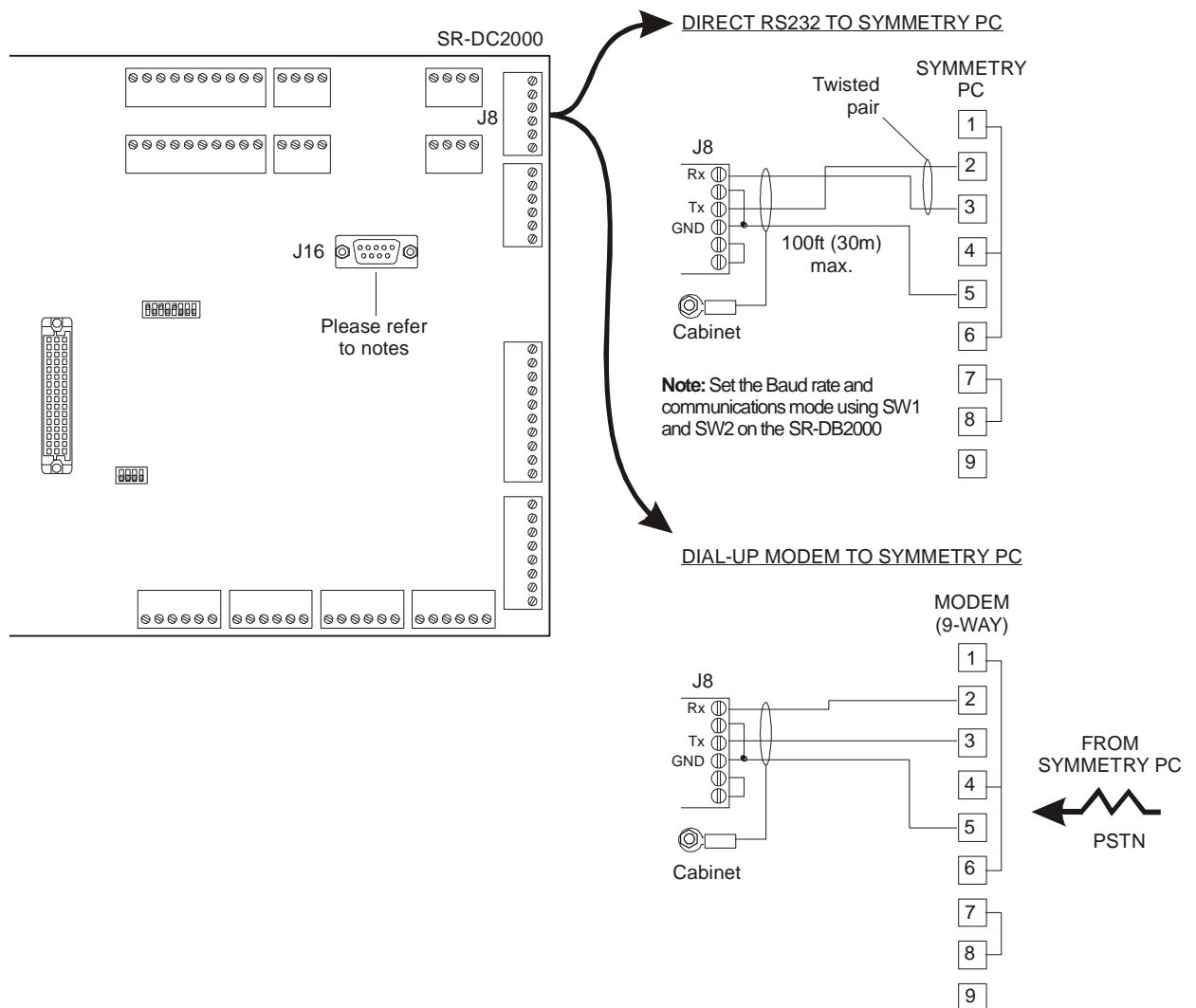


Figure 5-2: SR-2000 Connections to Symmetry PC or Dial-Up Modem

Connecting a Fallback Modem

Figure 5-3 shows how to connect the SR-2000 to a fallback modem, which is used if the Ethernet port on the SR-2000 is used and an Ethernet communications failure is detected.

Note: J16 can be used as an alternative to J8. J16 is used for legacy systems and uses non-standard D-type wiring as given on page 52.

The modem must be configured with a Symmetry-supported modem initialization string, as described in the *Symmetry Software Installation Manual*.

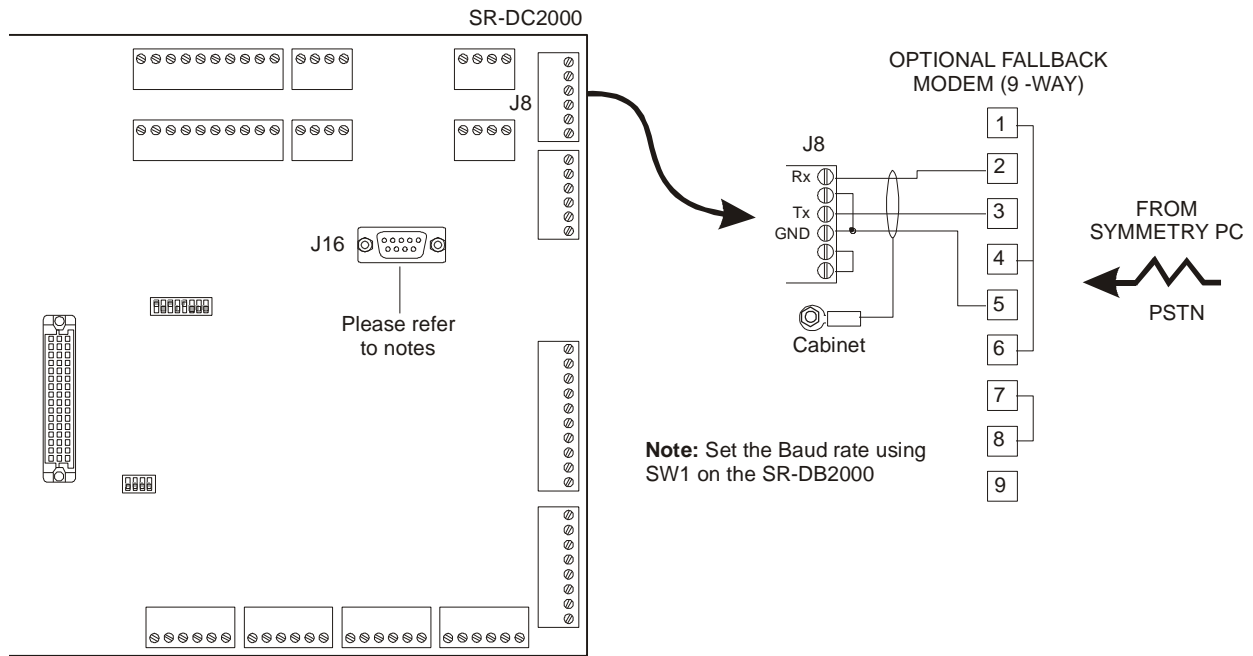


Figure 5-3: SR-2000 Connections to a Fallback Modem

Chaining Nodes using RS232 or RS422

Figure 5-4 shows how to chain SR-Series nodes (SR-2000 or SRNode) using the RS232 or RS422 ports. RS232 chaining can be used as an alternative to RS422.

Note: J16 can be used as an alternative to J8. J16 is used for legacy systems and uses non-standard D-type wiring as given on page 52.

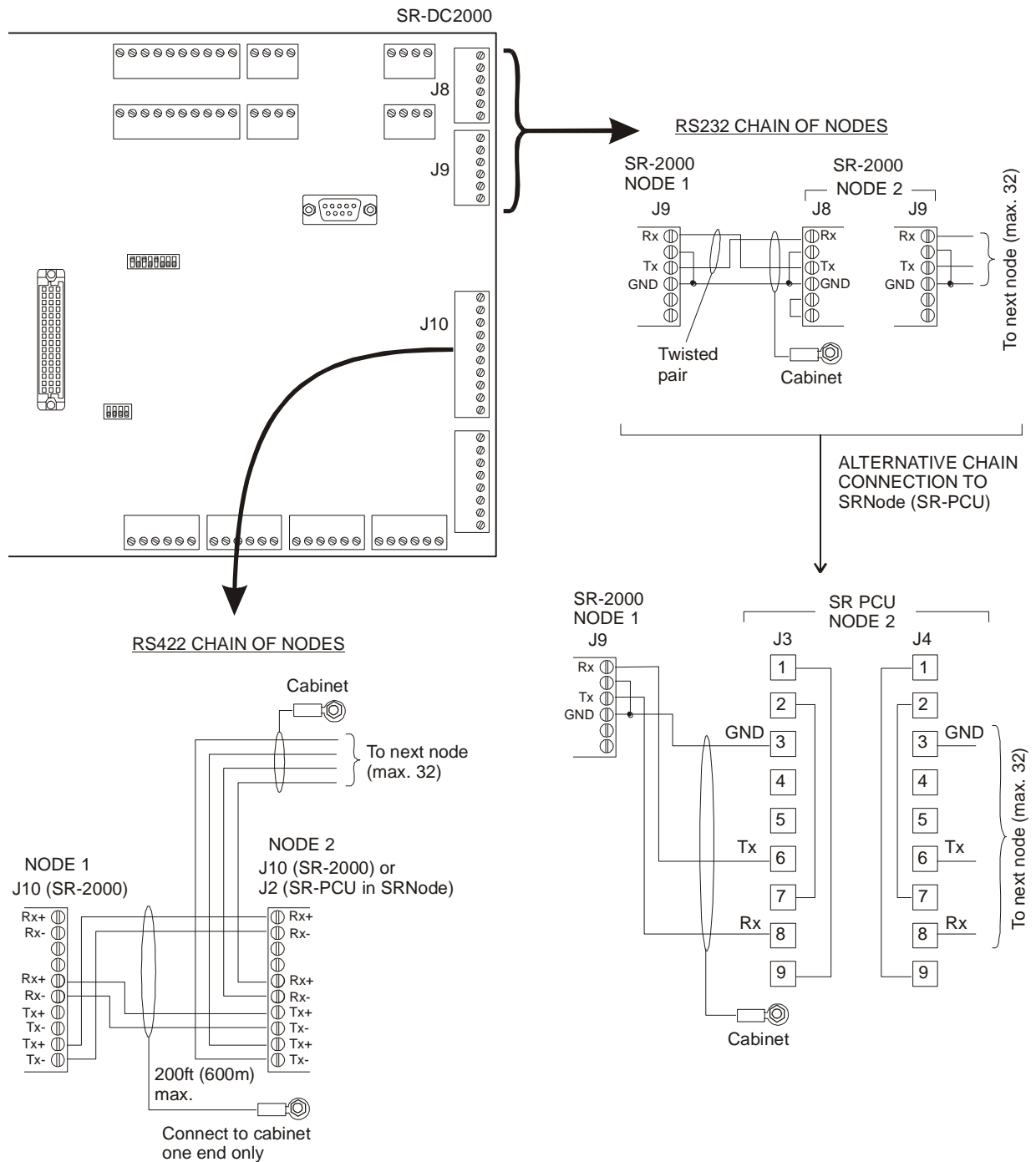


Figure 5-4: SR-2000 Connections for Chaining Nodes

Step 3 – Connect the Monitor Points (if used)

The SR-2000 provides 10 monitor points, which enable the current state of digital devices such as alarm sensors to be monitored. Monitor points can also be used as inputs for exit-request switches and door monitors (see *Connections to Door Furniture* on page 4).

Each monitor point can use 2-state or 4-state supervision. With 2-state supervision, the cable is not monitored for faults. Four-state supervision allows both short-circuit and open-circuit conditions to be detected. Each monitor point can be normally open or normally closed.

Figure 5-5 shows how to connect the monitor points.

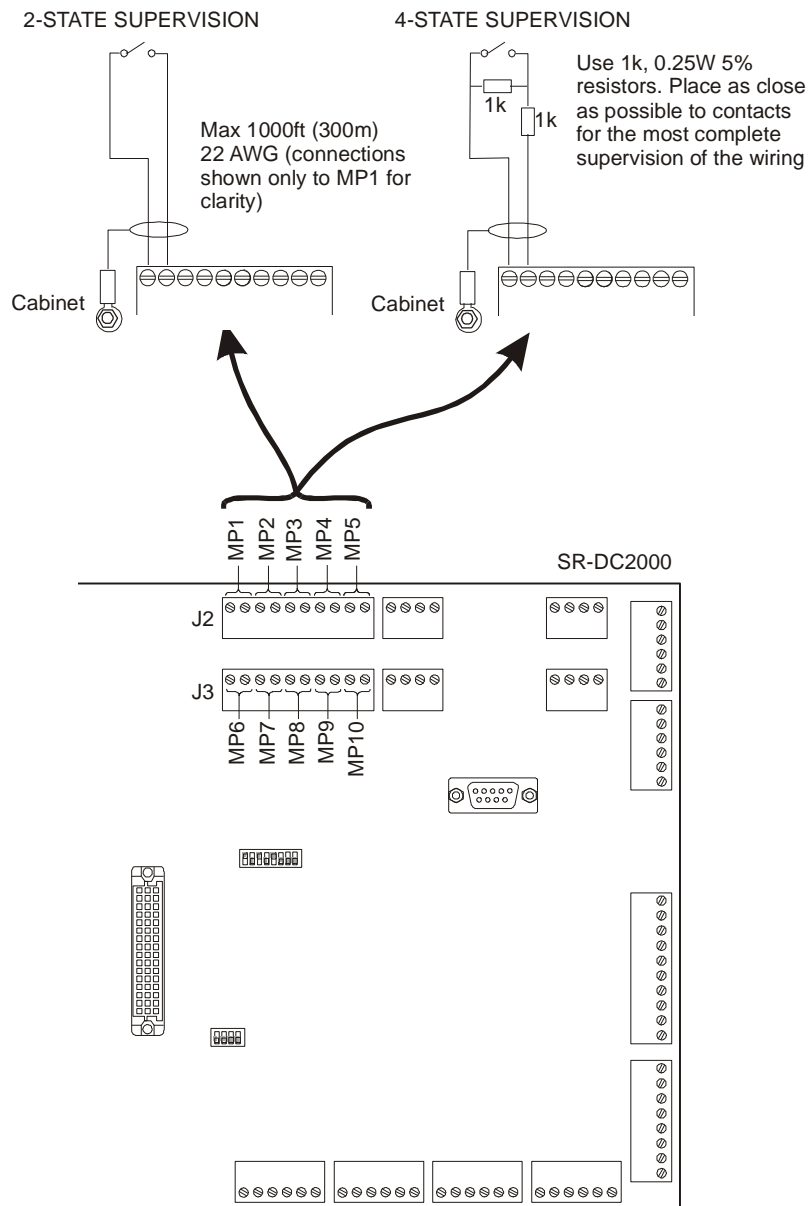


Figure 5-5: SR-2000 Monitor Point Connections

Step 4 – Connect the Auxiliary Outputs (if used)

An SR-2000 provides 8 programmable auxiliary outputs to drive external devices. Each auxiliary output uses an electromagnetic relay. If required, auxiliary outputs can be used to operate door releases, alarm-bypass circuits and door-held sounders (see *Connections to Door Furniture* on page 4).

Figure 5-6 shows how to connect the auxiliary outputs.

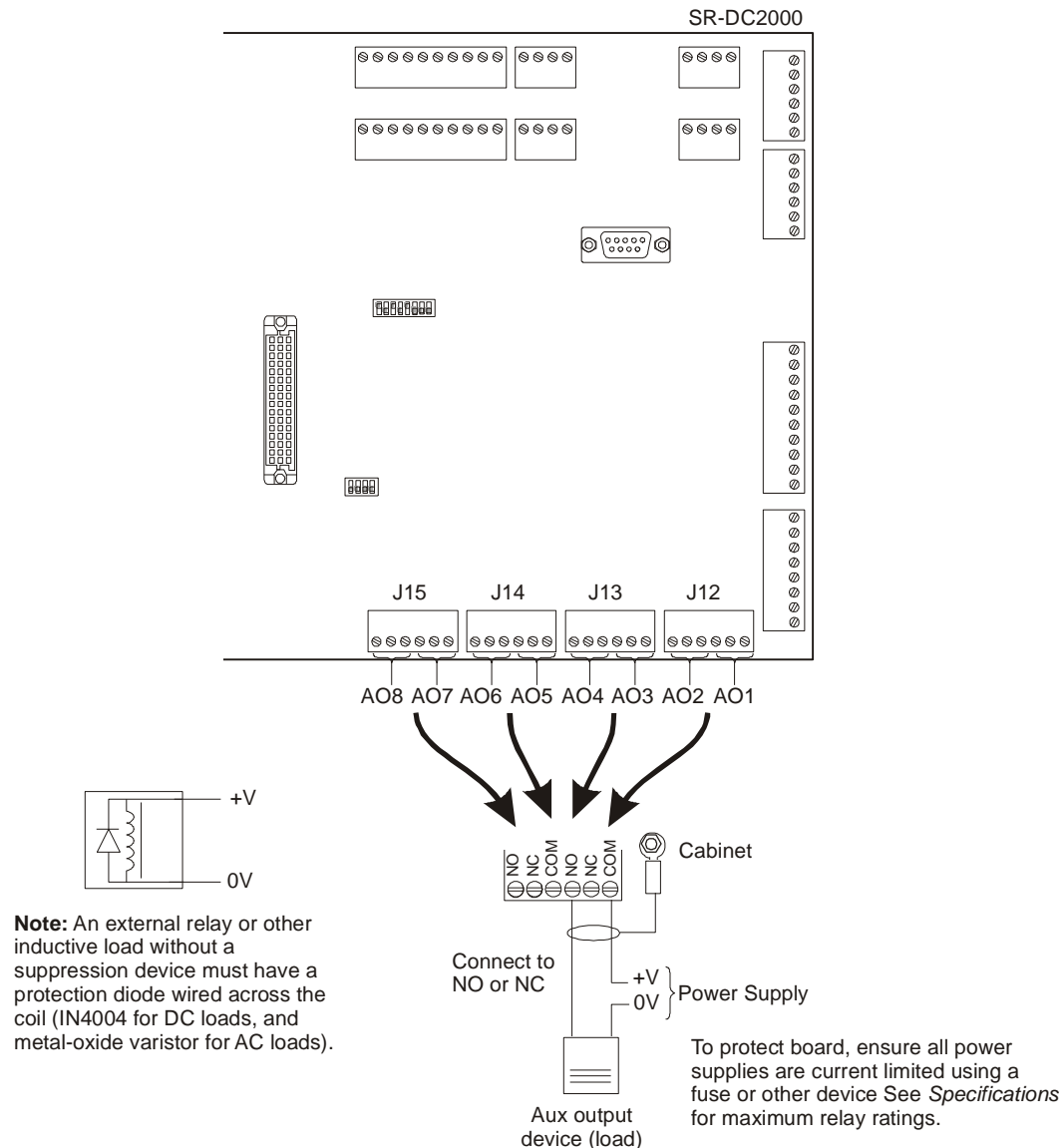


Figure 5-6: SR-2000 Auxiliary Output Connections

Step 5 – Connect the Readers

An SR-2000 provides connections for up to four F/2F readers, Wiegand Interface Units or M/RJs.

Figure 5-7 shows how to connect the readers.

Note:

- Please refer to page 11 for information about reader types.
- The SR-2000 contains no exit-request or door monitor inputs. See *Connections to Door Furniture* on page 4 for details of how to connect door furniture.
- Door releases or other inductive loads (including relays) must contain noise suppression circuitry (see Figure 5-7). Fit a metal-oxide varistor (MOV) across AC door releases and an IN4004 suppression diode across DC door releases. Some locks (e.g. Abloy Magneguard) already contain a suppression device and in these cases, no additional circuitry should be fitted, or the lock may fail.
- The SR-2000 has built-in pull-up resistors for readers; do not connect external pull-up readers.
- Strobed (clock and data) readers can be used by connecting through a Wiegand Interface Unit.

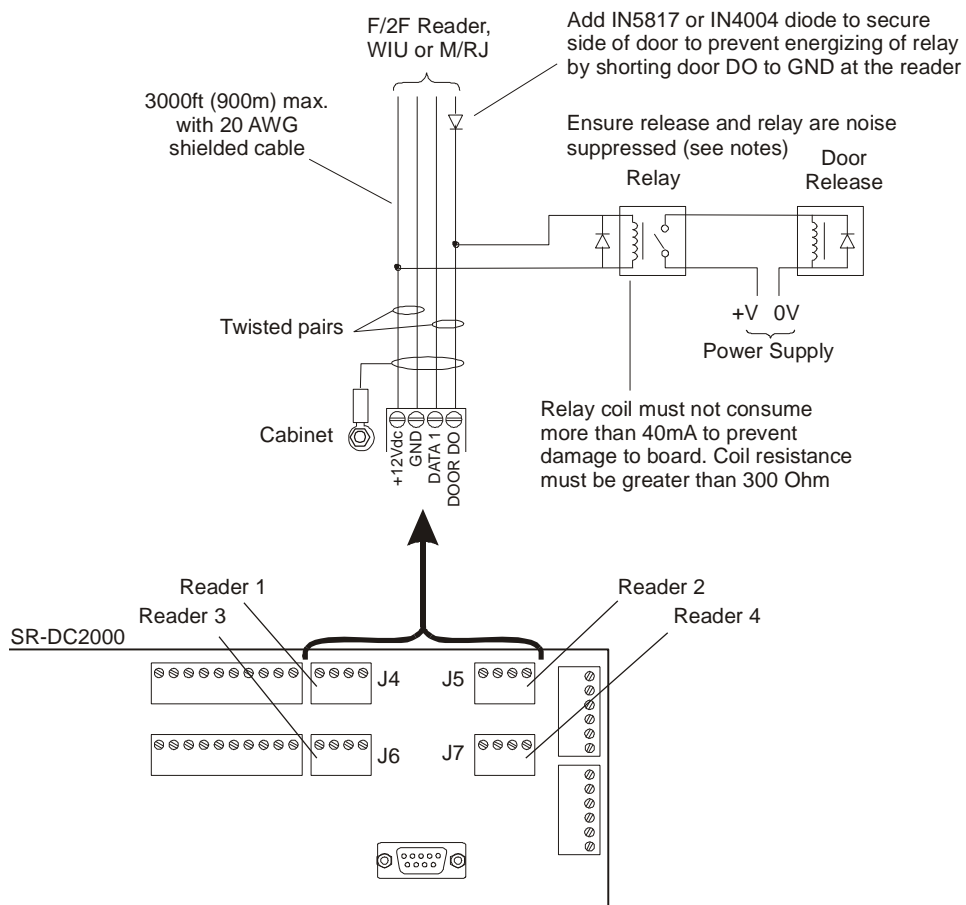


Figure 5-7: SR-2000 Reader Connections

Step 6 – Set the Bit Switches (SW1 and SW5)

In all cases, set SW1 and SW5 on the SR-DC2000 board as follows:

SW1-1 = OFF (SW1 is not currently used)
 SW1-2 = OFF
 SW1-3 = OFF
 SW1-4 = OFF

SW5-1 = ON (SW5 sets the reader type. Use these settings for all readers.)
 SW5-2 = OFF
 SW5-3 = ON
 SW5-4 = OFF
 SW5-5 = ON
 SW5-6 = OFF
 SW5-7 = OFF
 SW5-8 = OFF

Step 7 – Connect Power, Ground and Tamper Switch

Figure 5-8 shows the SR-2000 power, ground and tamper switch connections.

Note: Connect the backup battery and switch on power to the node only after the SR-DB2000 is fitted and all connections have been made.

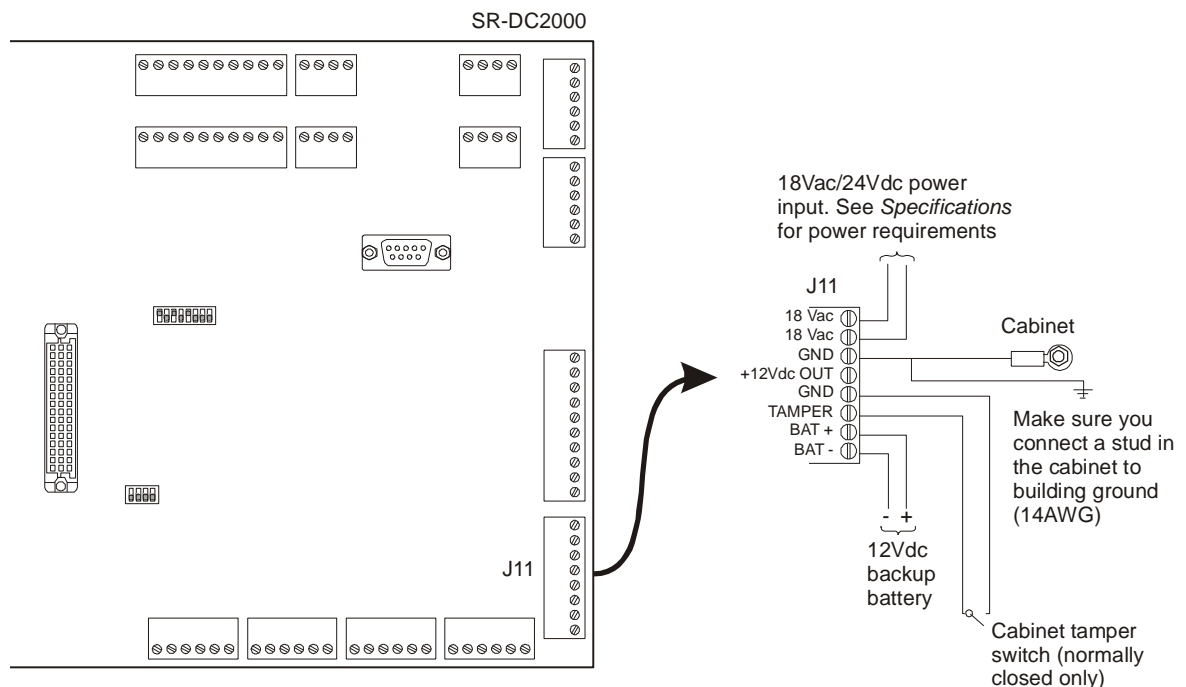


Figure 5-8: SR-2000 Power, Ground and Tamper Switch Connections

Step 8 – Configure the Symmetry Software

Configure the Symmetry software as described in Chapter 7.

J16 Serial Port

The D-type connector labeled J16 near the center of the SR-DC2000 can be used as an alternative to using J8 for dial-up, direct or fallback RS232 communications with the Symmetry PC. J16 is mainly provided to enable easy replacement of existing Micro/2000 or M2000 nodes that use J16 to connect to a dial-up modem powered by the SR-DC2000 board. For new systems, J8 should be used in preference to J16. For completeness, the wiring details for J16 are provided in Figure 5-9.

Warning: J16 uses non-standard D-type wiring, which includes power (5Vdc and 12Vdc) connections.

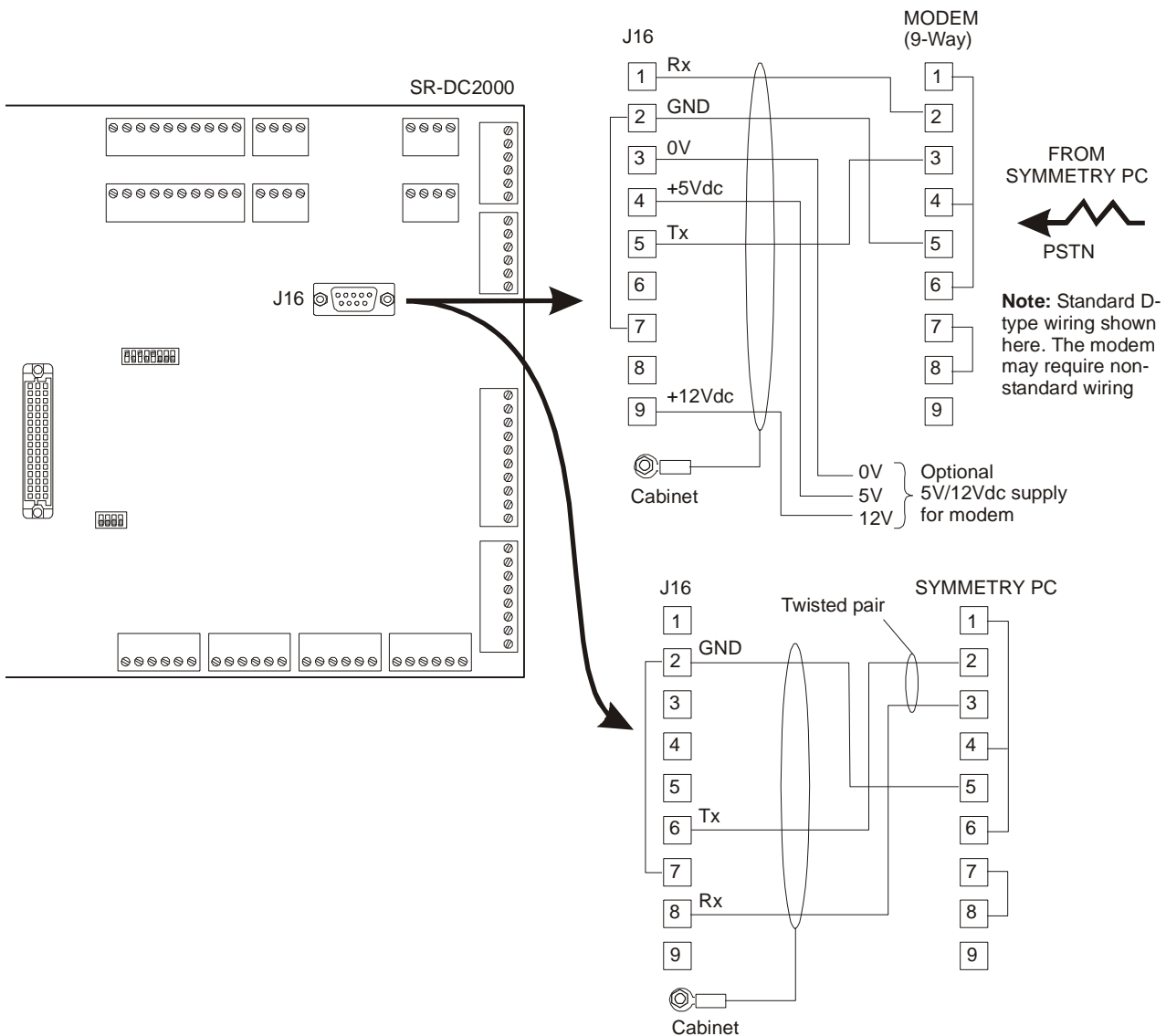


Figure 5-9: J16 Wiring

Chapter 6: Installing an Elevator Node

This chapter provides additional information about installing a Symmetry SRNode for elevator control. The node may be a replacement for an existing Micro/5 or M3000 elevator node, or a new node added to an SR-Series system.

If you are replacing an existing Micro/5 or M3000 elevator node, some rewiring to the auxiliary outputs and monitor points may be necessary, depending on the cabs and floors for which they are used. Before disconnecting any equipment, determine and record the purpose of the existing auxiliary outputs and monitor points. It is recommended that you work through this chapter and plan the migration before replacing any existing equipment.

Step 1 – Determine the Number of SRNodes Required

Each SRNode is able to manage the following combinations of cabs and floors:

- One cab: maximum of 64 floors
- Two cabs: maximum of 32 floors
- Three or four cabs: maximum of 16 floors

From the information above, determine the number of SRNodes required. For example, if the installation requires two cabs each with 64 floors to be access controlled, two SRNodes will be needed.

Note:

- You cannot use more than one SRNode for the same cab.
- The lobby may not require access control.
- If used, Enable Select mode (Step 3) may affect the number of nodes required or the maximum number of floors that can be access controlled.

Step 2 – Determine the Number Output Boards Required

Using Table 6-1, determine the number of Symmetry SR-Series output boards (SR-OC16 and/or SR-OCS16) required in each node, depending on the number of cabs and floors that are to be access controlled by the node. It is normal to use the relay-type output boards (SR-OC16), rather than the open-collector output boards (SR-OCS16).

Important: The SR-OC16 has 16 relay auxiliary outputs. Eight relay outputs can be normally-open or normally closed. The other eight are fixed at normally open. If the elevator control system does not use Tenant Security mode (see page 59), a variant of the SR-OC16 must be used, known as the SR-OC16-NC. The SR-OC16-NC allows all outputs to normally closed, if required.

Table 6-1: Number of Output Boards Required in Each Node

Number of Cabs to Control	Number of Floors per Cab to Control	Number of Auxiliary Output Boards Required in Node
1	1 to 16	1
	17 to 32	2
	33 to 48	3
	49 to 64	4
2	1 to 8	1
	9 to 16	2
	17 to 24	3
	25 to 32	4
3 or 4	1 to 4	1
	5 to 8	2
	9 to 12	3
	13 to 16	4

Step 3 – Determine Monitor Point Usage and Wiring

Connections to monitor points in an elevator node are needed only if Enable Select mode is required, as described next. The alternative to Enable Select mode is Enable All mode, which is described on page 55.

Enable Select Mode

With Enable Select mode, the node monitors each floor button using a monitor point to recognize which button is pressed. This enables the Symmetry software to log the floor that the card holder selects and to generate an alarm if, for example, an unauthorized floor button is selected (as determined by the card holder's access rights).

To implement Enable Select mode, there must be two pairs of contacts for each floor button: one set for connection to a monitor point (SR-AC20 input) in the SRNode, and the other set for connection to the elevator control system.

After a valid access-control transaction at the elevator reader, the card holder presses a floor button. The elevator node determines which button has been pressed, and if the floor is in the card holder's access rights, the appropriate floor relay in the node is de-energized (COM to NC contacts made) and further transactions are inhibited for the length of time specified by the reader's **Time To Select A Floor** option.

Note: In the Symmetry software, the elevator node **Floor Selection** option must be set to **Individual** to activate Enable Select mode.

Number of SR-AC20s Needed

The SRNode must be fitted with an SR-AC20 for every 20 floor buttons that are to be monitored. For example, if a node is to control two cabs, each with 16 floors (total floors = 32), two SR-AC20 boards will be required.

Checking System Capacity

Each SRNode has seven slots, of which three are occupied by the SR-DBU, SR-PCU and reader board, leaving four slots for auxiliary outputs and monitor points. If for example, you are using four auxiliary output boards, no spare slots will be available for SR-AC20s. In this case, you may be able to control the required number of cabs and floors and maintain Enable Select mode by increasing the number of nodes used and controlling different cabs with different nodes.

In some cases, Enable Select mode cannot be used. For example, if a node is to control a single cab and 64 floors, four auxiliary output boards will be used and therefore no slots will be available for monitor points.

Monitor Point Usage

If you are going to use Enable Select mode, you need to make sure that you use the correct monitor point for each floor. The monitor points map directly to auxiliary outputs. For example:

- Monitor point 1 on the first SR-AC20 must connect to the floor button associated with auxiliary output 1 on the first SR-OC16.
- Monitor point 2 on the first SR-AC20 must connect to the floor button associated with auxiliary output 2 on the first SR-OC16.
- Monitor point 1 on the second SR-AC20 must connect to the floor button associated with auxiliary output 4 on the second SR-OC16.

Enable All Mode

Enable All mode requires no wiring between the floor buttons and SRNode and therefore no SR-AC20 monitor point boards are needed for Enable All mode. However, since the node cannot know which floor button was selected, it reports only that the card holder was granted access at the elevator reader.

After a valid access-control transaction, the elevator node de-energizes all floor relays that correspond to the floors in the card holder's access rights. The relays are de-energized (COM to NC contacts made) and further card transactions are inhibited for the length of time specified by the reader's **Floor Selection Time**.

Note: In the Symmetry software, the elevator node **Floor Selection** option must be set to **Disabled** to activate Enable All mode.

Step 4 – Determine Auxiliary Outputs Usage and Wiring

Use the auxiliary outputs shown in:

- Table 6-2 if you are using one auxiliary output board.
- Table 6-3 if you are using two auxiliary output boards.
- Table 6-4 if you are using three auxiliary output boards.
- Table 6-5 if you are using four auxiliary output boards.

Page 59 describes how to connect the auxiliary outputs to the elevator control system.

Note: In the "Install/Access Control/Auxiliary Output" screen of the Symmetry software, it is essential to choose the correct auxiliary output number for each floor. The auxiliary output number is dependent on the cab number and the number of cabs that the node manages. Please refer to page 68 for further details.

Table 6-2: Auxiliary Output Usage when One Output Board is Fitted

SR-OC16 or SR-OCS16 Board Address	Auxiliary Output	Cab and Floor Usage					
		1-Cab System		2-Cab System		3 or 4-Cab System	
		Cab	Floor	Cab	Floor	Cab	Floor
1	1	CAB 1	1	CAB 1	1	CAB 1	1
	2		2		2		2
	3		3		3		3
	4		4		4		4
	5		5		5		5
	6		6		6		6
	7		7		7		7
	8		8		8		8
	9		9	CAB 2	1	CAB 2	1
	10		10		2		2
	11		11		3		3
	12		12		4		4
	13		13		5		5
	14		14		6		6
	15		15		7		7
	16		16		8		8

Table 6-3: Auxiliary Output Usage when Two Output Boards are Fitted

SR-OC16 or SR-OCS16 Board Address	Auxiliary Output	Cab and Floor Usage					
		1-Cab System		2-Cab System		3 or 4-Cab System	
		Cab	Floor	Cab	Floor	Cab	Floor
1	1	CAB 1	1	CAB 1	1	CAB 1	1
	2		2		2		2
	3		3		3		3
	4		4		4		4
	5		5		5		5
	6		6		6		6
	7		7		7		7
	8		8		8		8
	9		9	CAB 2	1	CAB 2	1
	10		10		2		2
	11		11		3		3
	12		12		4		4
	13		13		5		5
	14		14		6		6
	15		15		7		7
	16		16		8		8
2	1	CAB 1	17	CAB 1	1	CAB 1	1
	2		18		2		2
	3		19		3		3
	4		20		4		4
	5		21		5		5
	6		22		6		6
	7		23		7		7
	8		24		8		8
	9		25	CAB 2	9	CAB 2	1
	10		26		10		2
	11		27		11		3
	12		28		12		4
	13		29		13		5
	14		30		14		6
	15		31		15		7
	16		32		16		8

Table 6-4: Auxiliary Output Usage when Three Output Boards are Fitted

SR-OC16 or SR-OCS16 Board Address	Auxiliary Output	Cab and Floor Usage					
		1-Cab System		2-Cab System		3 or 4-Cab System	
		Cab	Floor	Cab	Floor	Cab	Floor
1	1	CAB 1	1	CAB 1	1	CAB 1	1
	2		2		2		2
	3		3		3		3
	4		4		4		4
	5		5		5		5
	6		6		6		6
	7		7		7		7
	8		8		8		8
	9		9		9		9
	10		10		10		10
	11		11		11		11
	12		12		12		12
	13		13		13		1
	14		14		14		2
	15		15		15		3
	16		16		16		4
2	1	CAB 1	17	CAB 2	17	CAB 2	5
	2		18		18		6
	3		19		19		7
	4		20		20		8
	5		21		21		9
	6		22		22		10
	7		23		23		11
	8		24		24		12
	9		25		1		1
	10		26		2		2
	11		27		3		3
	12		28		4		4
	13		29		5		5
	14		30		6		6
	15		31		7		7
	16		32		8		8
3	1	CAB 2	33	CAB 2	9	CAB 3	9
	2		34		10		10
	3		35		11		11
	4		36		12		12
	5		37		13		1
	6		38		14		2
	7		39		15		3
	8		40		16		4
	9		41		17		5
	10		42		18		6
	11		43		19		7
	12		44		20		8
	13		45		21		9
	14		46		22		10
	15		47		23		11
	16		48		24		12

Table 6-5: Auxiliary Output Usage when Four Output Boards are Fitted

SR-OC16 or SR-OCS16 Board Address	Auxiliary Output	Cab and Floor Usage					
		1-Cab System		2-Cab System		3 or 4-Cab System	
		Cab	Floor	Cab	Floor	Cab	Floor
1	1	CAB 1	1	CAB 1	1	CAB 1	1
	2		2		2		2
	3		3		3		3
	4		4		4		4
	5		5		5		5
	6		6		6		6
	7		7		7		7
	8		8		8		8
	9		9		9		9
	10		10		10		10
	11		11		11		11
	12		12		12		12
	13		13		13		13
	14		14		14		14
	15		15		15		15
	16		16		16		16
2	1	CAB 1	17	CAB 1	17	CAB 2	1
	2		18		18		2
	3		19		19		3
	4		20		20		4
	5		21		21		5
	6		22		22		6
	7		23		23		7
	8		24		24		8
	9		25		25		9
	10		26		26		10
	11		27		27		11
	12		28		28		12
	13		29		29		13
	14		30		30		14
	15		31		31		15
	16		32		32		16
3	1	CAB 1	33	CAB 2	1	CAB 3	1
	2		34		2		2
	3		35		3		3
	4		36		4		4
	5		37		5		5
	6		38		6		6
	7		39		7		7
	8		40		8		8
	9		41		9		9
	10		42		10		10
	11		43		11		11
	12		44		12		12
	13		45		13		13
	14		46		14		14
	15		47		15		15
	16		48		16		16
4	1	CAB 1	49	CAB 2	17	CAB 4	1
	2		50		18		2
	3		51		19		3
	4		52		20		4
	5		53		21		5
	6		54		22		6
	7		55		23		7
	8		56		24		8
	9		57		25		9
	10		58		26		10
	11		59		27		11
	12		60		28		12
	13		61		29		13
	14		62		30		14
	15		63		31		15
	16		64		32		16

Auxiliary Output Connections to Elevator Control System

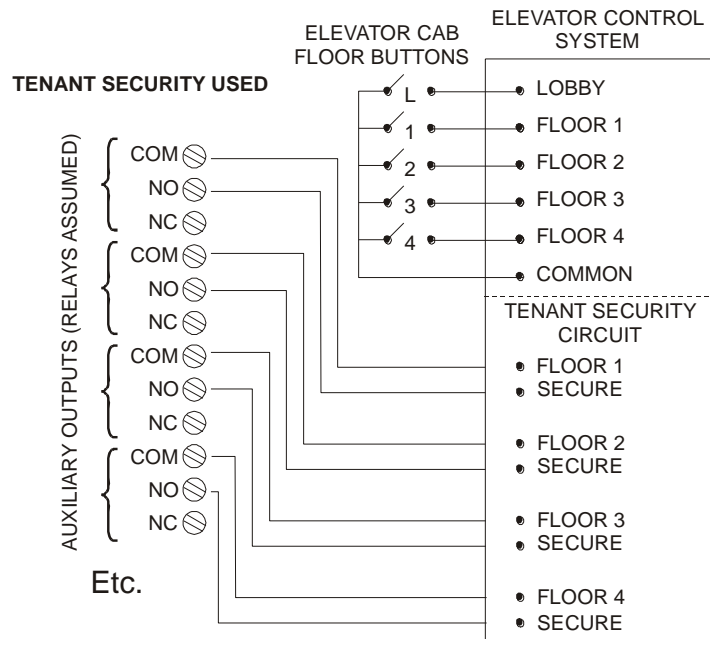
The wiring of the auxiliary outputs to the elevator control system (a third-party item of equipment) is dependent on whether Tenant Security mode is used. This is a feature provided by some elevator control system manufacturers to control the use of floor buttons.

Figure 6-1 shows how to wire the auxiliary outputs depending on whether Tenant Security mode is used or not.

Note: Some elevator control systems may mark the lobby input as "Floor 1", which probably does not need to be access controlled. Therefore, the "Floor 1" output from the SRNode may need to go to the connection marked "Floor 2" in the elevator control system, "Floor 2" to "Floor 3", etc.

Operation with Tenant Security: When Tenant Security is used, each floor button has a corresponding two-wire Tenant Security input at the elevator control system.

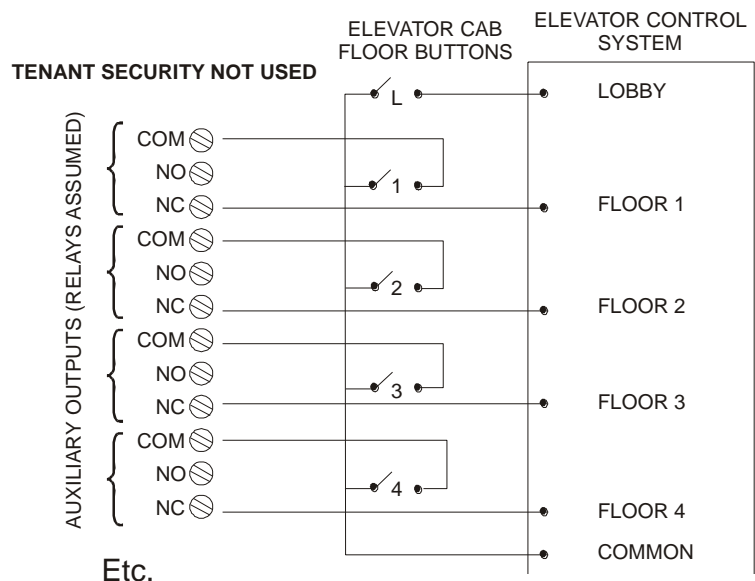
After a valid access-control transaction, the appropriate floor relays are de-energized (COM to NC contacts made). This open circuits the relevant Tenant Security inputs to the elevator control system, which enables the corresponding floor buttons in the elevator cab. Pressing an enabled floor button causes the elevator control system to deliver the passenger to the selected floor.



Operation without Tenant Security:

After a valid access-control transaction, the appropriate floor relays are de-energized (COM to NC contacts made). With the floor button pressed, a circuit is then completed, from the common output of the elevator control system, through contacts in the floor button, through the de-energized floor relay contacts and completing at the floor input to the elevator control system. The elevator control system then delivers the passenger to the selected floor.

Figure 6-1: Wiring of Auxiliary Outputs (SR-OC16 Shown)



Step 5 – Configure the Symmetry Software

Configure the Symmetry software as described in Chapter 7.

Chapter 7: Configuring SR-Series Nodes

This chapter explains how to configure SR-Series nodes using the G4FlashNet and Symmetry software. Configuration is necessary to make the node operational; that is, to enable it to respond to card transactions, operate doors, monitor alarms or perform any other action.

Note: You can configure the Symmetry software before or after installing the hardware. If you configure the software before installing the hardware, download the node configuration details once installation is complete as described on page 70.

Symmetry Software Requirements

SR-Series nodes require version 7.0.1, 8.0 or later of the Symmetry software. All editions of Symmetry v8.0 or later directly support SR-Series nodes. Professional and Enterprise editions of Symmetry version 7.0.1 support SR-Series nodes following installation of a software patch. The patch files are located in a patch folder on the installation media. Install the patch as described in the Technical Bulletin provided in this folder.

Step 1 – Set IP Address (G4FlashNet Symmetry v7.0.1 only)

If you are using Symmetry version 7.0.1 and the node communicates with a Symmetry PC over the network, you will need to configure the IP address of the first node in each chain using Symmetry G4FlashNet.exe as described next. If you are using Symmetry version 8.0 or later, you can set the IP address in the "Install/Access Control/Node" screen in the Symmetry software, since SR-Series nodes are discoverable in Symmetry version 8.0 or later.

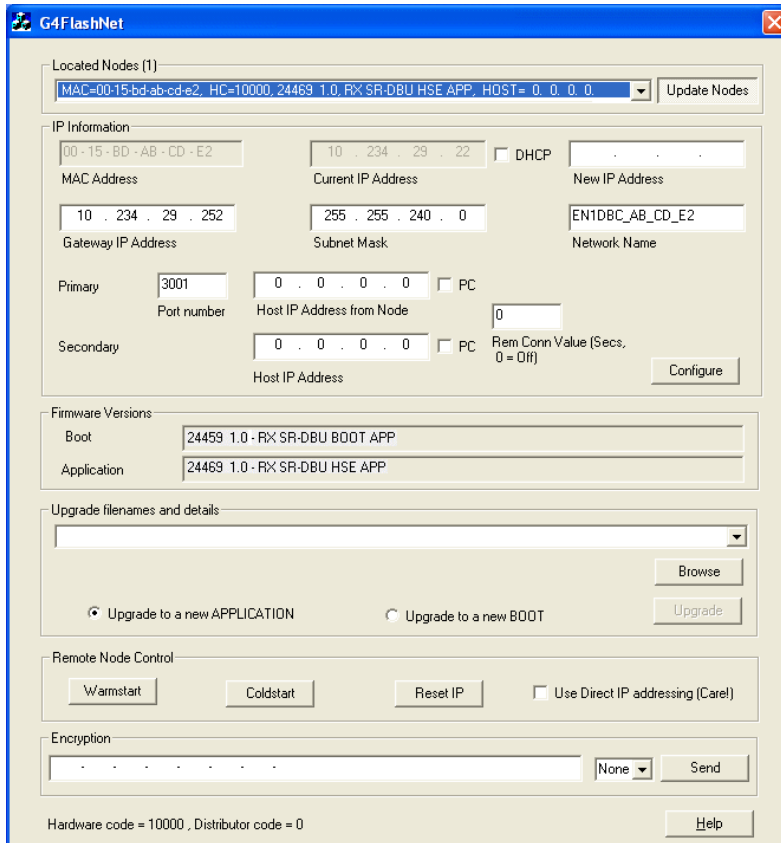
Note: If the hardware is not yet available, you can skip this step and do it when it is available.

Note: If the node has already been assigned an IP address (manually or automatically from a DHCP server), it may be necessary to clear the network settings. Please refer to Appendix A for details of how to do this.

To set the IP address using G4FlashNet:

1. Attach the SR-DBU/SR-DB2000 to the same network segment as the PC that is to run G4FlashNet. Ensure that the node is powered up.
2. Locate G4FlashNet (version 1.10.0.0 or higher) – You can find it on the same media as the Symmetry software. Check the file version in the properties of the G4FlashNet.exe file.

- Double-click G4FlashNet.exe to launch the application. The application continually searches for compatible devices on the network and lists them in the **Located Nodes** menu:



- Select the SR-DBU/SR-DB2000 from the **Located Nodes** menu.
- The IP address currently set in the SR-DBU/SR-DB2000 is shown in **Current IP Address**.
- Enter the new IP address details and click **Configure**.

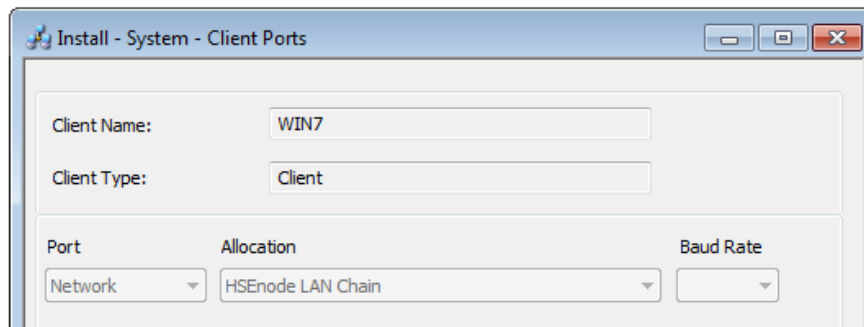
Additional information about G4FlashNet can be found in the application's own help system and in the Symmetry help (search for "G4FlashNet").

Step 2 – Define Client Port and Chain

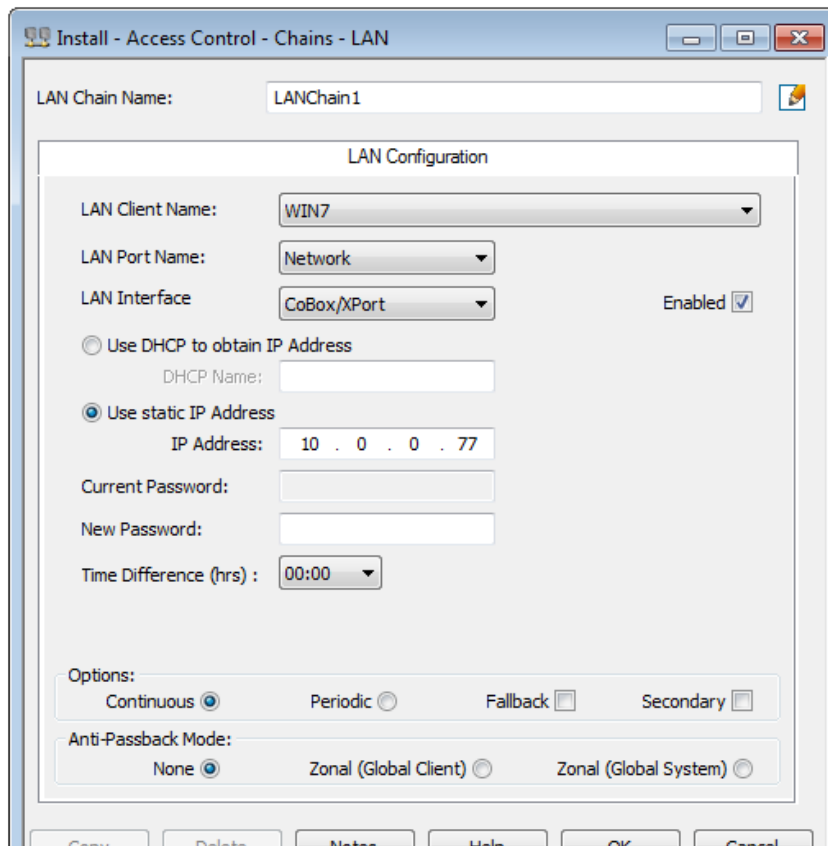
Note: This step is required only if the node communicates with the Symmetry PC via a serial or dial-up connection, or if you are using Symmetry v7.0.1 and a network connection is used.

To define a client port and chain:

- Log on to the Symmetry software as an installer.
- Using the "Install/System/Client Ports" screen, create a new network port (**HSEnode LAN Chain**) or COM port, as appropriate. The following shows an example.



3. Create a new LAN, hardwired or dial-up chain using the appropriate option from the "Install/Access Control/Chains" menu. For example:



Step 3 – Define the Node(s)

Define the node(s) as follows:

1. Create a new node using the "Install/Access Control/Node" screen.
2. Enter a **Node Description**.
3. If you set up a chain in "Step 2", select it from the **Chain Name** menu. Alternatively, if you are using Symmetry v8.0 or later and the node communicates over the network, select **<new>** from the **Chain Name** menu, as shown next.

4. Set **Node Type** to:
 - **HSE multiNODE-2100/2150 Series DBU** – If you are using Symmetry v7.0.1
 - **SR Access Control** – If you are using Symmetry v8.0 or later and the node is not for elevator control.
 - **SR Elevator** – If you are using Symmetry v8.0 or later and the node is for elevator control.
5. Set **Node Address** to match that of the node.
6. If you set the node type to **SR Elevator**, two additional options are displayed in the Setup tab:
 - **Number of Cabs** – Specify the number of cabs the node is to control.
 - **Floor Selection Options** – Select **Individual** if Enable Select mode is used (page 54).
7. If you selected **<new>**:
 - a) If the hardware is available, click **Discover** and select the node in the dialog displayed.

Note: If the node has already been assigned an IP address (manually or automatically from a DHCP server), it may be necessary to clear the network settings. Please refer to Appendix A for details of how to do this.
 - b) Configure the IP address settings of the node in the Communications tab. The Communications tab is used only for the first node in a chain.
8. If the node uses a fallback modem, specify the Baud rate of the modem in the LAN tab.

9. The Door & I/O Controllers tab is displayed for non-elevator nodes. If this tab is displayed, set the **Controller**, **Address** and **Description** options/fields exactly as shown next.

Note: Use this configuration regardless of which node you are using and the boards in the node. This will make future reader expansion simpler, and is required for possible future improvements to the configuration of the node in the Symmetry software.

Each Symmetry Controller (2DC) added provides the software configuration for 8 monitor points and 8 auxiliary outputs. These map to the physical monitor points and auxiliary outputs provided by SR-OC16\SR-OCS16\SR-AC-20\SR-DC2000 boards in the node in a sequential order based on the address of the actual input/output board. For example, if the node has one SR-DC8 (address 1) and two SR-AC20s (addresses 1 and 2):

- a) The first 2DC in Symmetry (address 1) is for:
 - Readers 1 and 2 on the SR-DC8 with address 1
 - Monitor points 1-8 on the SR-AC20 with address 1
- b) The second 2DC in Symmetry (address 2) is for:
 - Readers 3 and 4 on the SR-DC8 with address 1
 - Monitor points 9-16 on the SR-AC20 with address 1
- c) The third 2DC in Symmetry (address 3) is for:
 - Readers 5 and 6 on the SR-DC8 with address 1
 - Monitor points 17-20 on the SR-AC20 with address 1, and 1-4 on the SR-AC20 with address 2
- d) The fourth 2DC in Symmetry (address 4) is for:
 - Readers 7 and 8 on the SR-DC8 with address 1
 - Monitor points 5-12 on the SR-AC20 with address 2

- e) The fifth 2DC in Symmetry (address 5) is for:
 - Monitor points 13-20 on the SR-AC20 set to address 2
- 10. Save the node details and repeat the process for any additional nodes.

Note: If you selected **<new>**, you can add more nodes to the same chain by selecting the first node's **Node Description** from the **Chain Name** menu.

Step 4 – Define the Readers

Define the readers as follows:

1. Create a new reader using the "Install/Access Control/Reader" screen.
2. Enter a **Reader Description**.
3. Select the correct reader/card format from the **Reader Type** menu. Table 7-1 shows the **Reader Type** you should select for typical reader/card formats used by SR-Series nodes.

If the reader/card format is not listed in Table 7-1, define the reader/card format in the "Install/System/Default Settings/Reader/Card Formats" screen (seek advice to determine the correct settings). You will need to select **Display Additional Reader Types** in the "Install/Access Control/Reader" screen to display the new format.

Note: HID Wiegand interface units may provide a different output format for proximity cards than other Wiegand interface units and readers. You may need to create a reader/card format for these.

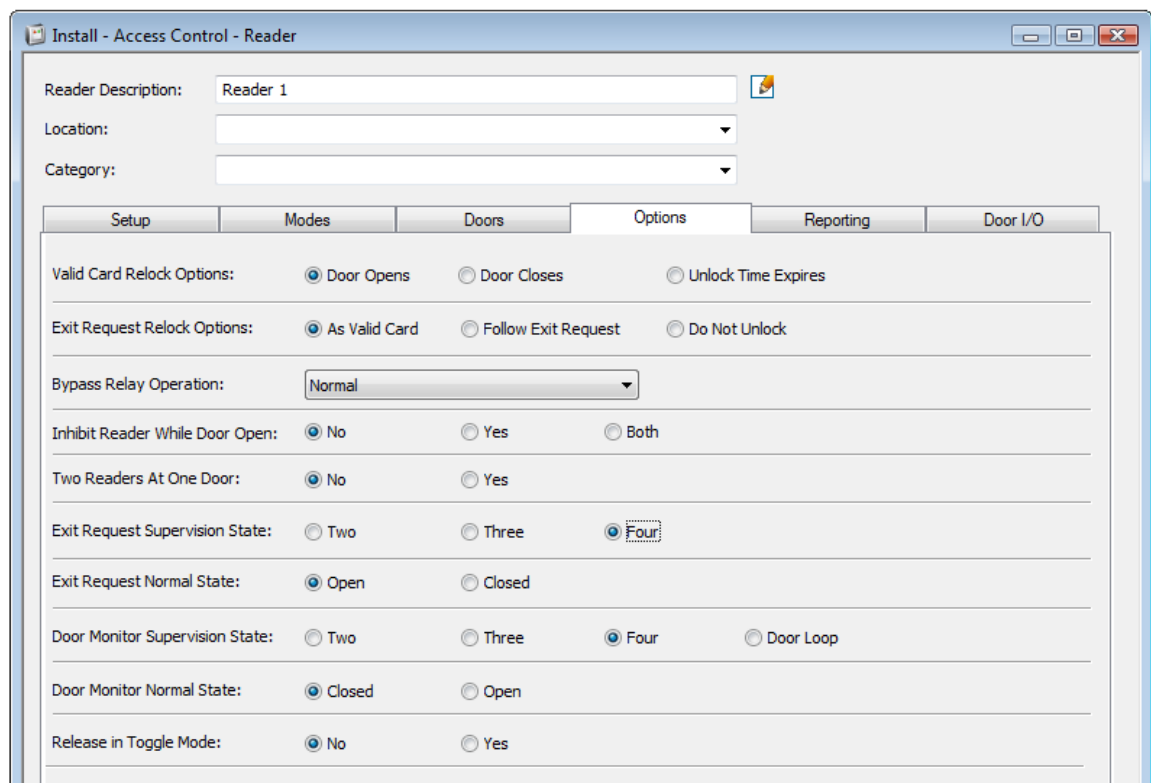
Hint: If combination readers are used (able to read proximity and magnetic stripe cards), assign a magnetic stripe format to each odd-numbered reader of the SR-DC2 or SR-DC8, and a proximity format to each even-numbered reader. Both formats will then be able to be used at each reader on that board of the node.

Table 7-1: Reader Type Selection in the Symmetry Software

Type	Reader	Card Format	Symmetry Reader Type
Proximity	F/2F reader connected to SR-DC2 or SR-DC8	N/A	SR-Series (15 digit) F/2F and 4002 readers
	Wiegand reader connected to SR-DC2 or SR-DC8 through Wiegand Interface Unit (or similar F/2F converter)	4001	SR-Series (10/12 digit) F/2F and 4001 readers
		4002	SR-Series (15 digit) F/2F and 4002 readers
	Wiegand reader configured to 4001 format connected to SR-DC2	4001	SR-Series (10/12 digit) F/2F and 4001 readers
4002		SR-Series (15 digit) F/2F and 4002 readers	
Magnetic stripe	F/2F reader connected to SR-DC2 or SR-DC8	12 digit*	SR-Series (10/12 digit) F/2F and 4001 readers
	Strobed (clock and data) reader connected to SR-DC2	12 digit*	SR-Series (10/12 digit) F/2F and 4001 readers
	Wiegand reader configured to 4001 format connected to SR-DC2	12 digit*	SR-Series (10/12 digit) F/2F and 4001 readers

* For 10-digit versions, define a custom format in the Reader/Card Formats screen.

4. In the Options tab (available only if the node is not used for elevator control), ensure that the exit-request and door-monitor supervision states and normal states are set correctly. The following shows an example.



6. Configure the Door I/O tab if:
 - a) You are using monitor points on an SR-AC20\SR-DC2000 for the exit request and/or door monitor.
 - b) You are using auxiliary outputs on an SR-OC16\SR-OCS16\SR-DC2000 for the door release, alarm bypass and/or door-held output.

If you are using monitor points or auxiliary outputs for any of the above purposes, use the tab to specify each monitor point and auxiliary output being used. Please refer to page 65 for details of input/output numbering and the *Online Help* for further information.

7. Save the reader details and repeat the process for any additional readers.

Step 5 – Define Monitor Points

Define each monitor point using the "Install/Access Control/Monitor Point" screen in the normal way. See page 65 for details of input numbering.

Step 6 – Define Auxiliary Outputs

Define each auxiliary output using the "Install/Access Control/Auxiliary Output" screen. See page 65 and 37 for details of output numbering.

Note: If you are configuring an elevator node, you will need to add an auxiliary output for each floor that the elevator node is to control. It is essential that you choose the correct auxiliary output numbers, irrespective of the number of output boards actually installed in the node. The auxiliary output to use for each floor is dependent on the cab number and the number of cabs that the node manages, as shown in Table 7-2.

Table 7-2: Auxiliary Output Numbering in the Symmetry Software

Floor	1-Cab Node: Aux Output N°s	2-Cab Node: Aux Output N°s		3/4-Cab Node: Aux Output N°s			
	Cab 1	Cab 1	Cab 2	Cab 1	Cab 2	Cab 3	Cab 4
1	1	1	17	1	17	33	49
2	2	2	18	2	18	34	50
3	3	3	19	3	19	35	51
4	4	4	20	4	20	36	52
5	5	5	21	5	21	37	53
6	6	6	22	6	22	38	54
7	7	7	23	7	23	39	55
8	8	8	24	8	24	40	56
9	9	9	25	9	25	41	57
10	10	10	26	10	26	42	58
11	11	11	27	11	27	43	59
12	12	12	28	12	28	44	60
13	13	13	29	13	29	45	61
14	14	14	30	14	30	46	62
15	15	15	31	15	31	47	63
16	16	16	32	16	32	48	64
17	17	33	49	-	-	-	-
18	18	34	50	-	-	-	-
19	19	35	51	-	-	-	-
20	20	36	52	-	-	-	-
21	21	37	53	-	-	-	-
22	22	38	54	-	-	-	-
23	23	39	55	-	-	-	-
24	24	40	56	-	-	-	-
25	25	41	57	-	-	-	-
26	26	42	58	-	-	-	-
27	27	43	59	-	-	-	-
28	28	44	60	-	-	-	-
29	29	45	61	-	-	-	-
30	30	46	62	-	-	-	-
31	31	47	63	-	-	-	-
32	32	48	64	-	-	-	-
33	33	-	-	-	-	-	-
34	34	-	-	-	-	-	-
35	35	-	-	-	-	-	-
36	36	-	-	-	-	-	-
37	37	-	-	-	-	-	-
38	38	-	-	-	-	-	-
39	39	-	-	-	-	-	-
40	40	-	-	-	-	-	-
41	41	-	-	-	-	-	-
42	42	-	-	-	-	-	-
43	43	-	-	-	-	-	-
44	44	-	-	-	-	-	-
45	45	-	-	-	-	-	-
46	46	-	-	-	-	-	-
47	47	-	-	-	-	-	-
48	48	-	-	-	-	-	-
49	49	-	-	-	-	-	-
50	50	-	-	-	-	-	-
51	51	-	-	-	-	-	-
52	52	-	-	-	-	-	-
53	53	-	-	-	-	-	-
54	54	-	-	-	-	-	-
55	55	-	-	-	-	-	-
56	56	-	-	-	-	-	-
57	57	-	-	-	-	-	-
58	58	-	-	-	-	-	-
59	59	-	-	-	-	-	-
60	60	-	-	-	-	-	-
61	61	-	-	-	-	-	-
62	62	-	-	-	-	-	-
63	63	-	-	-	-	-	-
64	64	-	-	-	-	-	-

Step 7 – Define Access Rights, Badges, Commands, etc.

Define access rights, badge designs, commands, holidays and all other standard Symmetry information as required. Please refer to the *Symmetry Software User's Guide* if you need an overview of available features.

Free and Secure Access Modes for Elevator Floors

The operator of the Symmetry software can generate a manual, timed or trigger command to place a group of floors in Free Access mode. When a floor is in Free Access mode, the appropriate floor relay in the node is de-energized, which enables the card holder to select the associated floor button and to be delivered to the relevant floor without a card.

Under normal conditions, floors are in Secure Access Mode, which requires a card holder to present his/her card before being able to select the relevant floor button. In Secure Access mode, a card holder is able to gain access only to those floors that are in his/her access rights.

Note: For fire safety reasons, if the node has a total loss of power, all floor relays are de-energized, and therefore all floor-selection buttons are automatically placed in Free Access mode.

Step 8 – Define Card Holders

Note: If a Micro/5, M3000, Micro/2000 or M2000 system is being replaced, you can use card data import to transfer basic card details from Picture Perfect™ or Secure Perfect™ to the Symmetry software.

Create card holders in the normal way using the "Home/Identity/Card Holders" screen:

The screenshot displays the 'Home - Identity - Card Holders' configuration window. The interface is organized into several sections:

- Card Details:** Includes fields for SR Series Card Number (123425), Card Number (123425), Active Date (09/01/2014), Inactive Date, Approving Official (None), and Badge Design (None).
- Access Rights:** Includes Credential Issue Level (0), Credential No. (000000), PIN Code (9681), IDS Code, Employee Ref, and Inactive Time.
- Personal:** Fields for Last Name (Clarke), First Name (Alan), and Middle Name.
- Biometrics:** A placeholder image for a biometric scan and buttons for Live, Import, Clear, and Export.
- Card Status:** Includes Badge Expires, Usage Remaining (No Limit), Card Type (SR Series (10/12 digit)), and a green 'ACTIVE' button.
- Additional Options:** A collection of checkboxes for various card features like Area Occupancy Card, Card Watch, Command Card Holder, Conditional Card, Executive Card, Extended Door Times, Keycard Holder, and Visitor Escort.

At the bottom of the window, there are buttons for Copy, Delete, Move, Badge, Notes, Permissions, Help, Save, and Cancel.

Note:

- In the **Format** (Symmetry v7.0.1) or **Card Type** (Symmetry v8.0 or later) menu, choose one of the following:
 - **SR Series (10/12 digit)** – Select this for 10-digit or 12-digit cards to be used at readers connected to SR-Series nodes.
 - **SR Series (15 digit)** – Select this for 15-digit cards to be used at readers connected to SR-Series nodes.
- Enter the **SR Series Card Number (up to 15 digits)**. This automatically populates the **Card Number** and **Credential No** fields, which are read-only for SR-Series cards.
- The **Credential Issue Level** must be set to **0** for Casi/GE proximity cards.

Step 9 – Download Node Configuration

If you have configured the Symmetry software before installing the hardware, you will need to do the following when installation is complete:

1. If you configured the node's communication settings using the Communications tab in the "Install/Access Control/Node" screen (page 63):
 - a) Open each node definition.
 - b) Click **Discover**.
 - c) Select the node from the list displayed.
 - d) Save the changes.
2. If you are using Symmetry version 7.0.1 and nodes communicate with the Symmetry software over a network, set the IP address of the first node in each chain using G4FlashNet.exe, if it is not already done (see page 61).
3. Download the configuration details to each node using the "Maintenance/Download/Chain" screen.

Appendix A Troubleshooting

Resetting an SR-Series Node

Warm Reset – If an operational problem is encountered, a warm reset of an SRNode database unit can be achieved (assuming the SR-DBU/SR-DB2000 is powered up) by pressing then immediately releasing the reset button. A warm reset restarts the processor. It does not clear data from the database unit, such as card and other data that has been downloaded from the Symmetry software.

Cold Reset – A cold reset can be achieved by pressing then holding down the reset button for five seconds or until the OK LED flashes. This clears the memory to factory-set defaults, but does not clear the network settings.

Network Settings Reset – To clear the network settings, press and hold reset button until the OK LED flashes, release the button and repeat twice more, ensuring that all three resets occur within 30 seconds. The DHCP server (if connected) allocates an IP address, which the SR-DBU/SR-DB2000 stores.

LED Operation

SR-PCU

DS1 (Non-fallback Rx upstream) – Flashes when there is non-fallback Rx communication activity on the upstream (towards host) port: J3 or J2 (pins 1 and 2).

DS2 (Non-fallback Tx upstream) – Flashes when there is non-fallback Tx communication activity on the upstream (towards host) port: J3 or J2 (pins 7 and 8).

DS3 (Rx downstream) – Flashes when there is Rx communication activity on the downstream port: J4 or J3 (pins 5 and 6).

DS4 (Tx downstream) – Flashes when there is Tx communication activity on the downstream port: J4 or J10 (pins 9 and 10).

DS5 (Fallback Rx) – Flashes when there is Rx communication activity on J5.

DS6 (Fallback Tx) – Flashes when there is Tx communication activity on J5.

DS7 (+5V) – Lit to indicate that the 5Vdc output of the SR-PCU is available on the rail.

DS8 (+12V) – Lit when the 12Vdc supply is connected.

SR-DBU and SR-DB2000

LED1 (ON LINE) – Lit when the SR-DBU/SR-DB2000 has received a message within the last 30 seconds from the Symmetry client that is managing the LAN, hardwired or dial-up chain.

LED2 (OK) – Flashes once per second when the SR-DBU/SR-DB2000 is functioning normally.

LED3 (PWR) – Lit when the power is connected.

SR-OC16

LED1 (Power) – Lit when the power is connected.

SR-OCS16

D1-16 (AO1 to AO16 respectively) – Lit when the auxiliary output is energized.

D26 (Power) – Lit when the power is connected.

SR-AC20

DS1 (Power) – Lit when the power is connected.

SR-DC2000

DS1-8 (AO8 to AO1 respectively) – Lit when the relay for the auxiliary output is energized.

DS9 (Non-fallback Rx upstream) – Flashes when there is non-fallback Rx communication activity on the upstream (towards host) port: J8, J16 or J10 (pins 1 and 2).

DS10 (Rx downstream) – Flashes when there is Rx communication activity on the downstream port: J9 or J10 (pins 5 and 6).

DS11 (Fallback Rx) – Flashes when there is Rx fallback communication activity on J8 or J16.

DS12 (Non-fallback Tx upstream) – Flashes when there is non-fallback Tx communication activity on the upstream (towards host) port: J8, J16 or J10 (pins 7 and 8).

DS13 (Tx downstream) – Flashes when there is Tx communication activity on the downstream port: J9 or J10 (pins 9 and 10).

DS14 (Fallback Tx) – Flashes when there is Tx fallback communication activity on J8 or J16.

DS15 (Power) – Lit when the power is connected. (Full intensity indicates AC power; two-thirds intensity or less indicates 12Vdc battery backup power.)

Appendix B: Specifications

General Specifications

Electrical

SRNode Power supply: 12-15Vdc, 3-6A. The required rating of the power supply must be determined from the number of and rating of the readers, boards, auxiliary outputs, etc. that it needs to power.

SR-2000 Power supply: 18Vac or 24Vdc. The required rating of the power supply must be determined from the number of and rating of the readers, auxiliary outputs, etc. that it needs to power.

Maximum current consumptions:

- SR-DBU: 55mA @12Vdc
- SR-PCU: 1.5A @12Vdc
- SR-DC2: 65mA @12Vdc (all relays energized, excluding readers)
- SR-DC8: 40mA @12Vdc (excluding readers)
- SR-OC16 and SR-OCS16: 200mA @12Vdc (excluding outputs)
- SR-AC20: 100mA @12Vdc
- SR-2000 (SR-DC2000 and SR-DB2000 fitted; all relays energized, excluding readers): 1A @18Vac, or 800mA @24Vdc

Backup batteries: 7Ahr.

On-board battery on SR-DBU/SR-DB2000: VARTA 2/V80H or equivalent. 2.4V 80mAh Nickel Metal Hydride; maintains data during supply and backup battery power failure.

SR-OC16 relay rating (auxiliary-outputs):

Pre-Rev.2: 2A max @ 18Vdc; 500mA max @ 18Vac.
Rev.2 and later: 2A max @ 30Vdc; 500mA max @ 30Vac

SR- DC2 relay rating (door-release, auxiliary-output and bypass):

Pre-Rev.2: 2A max @ 18Vdc; 500mA max @ 18Vac.
Rev.2 and later: 2A max @ 30Vdc; 500mA max @ 30Vac

SR-DC2000 relay rating (auxiliary-outputs): 2A max @ 30Vdc; 500mA max @ 30Vac.

SR-DC8/SR-DC2000 output for release relay: 40mA @12Vdc maximum.

SR-OCS16 auxiliary (open collector) outputs: 40mA @24Vdc maximum.

SR-DC2/SR-DC8/SR-DC2000 reader port: Nominally 12Vdc output; maximum of 300mA per reader port.

SR-PCU input fuse: 5A time delay.

Maximum cable distances: see page 30.

Physical

Micro/5 cabinet dimensions: 14" (356mm) height x 10.5" (267mm) width x 6.25" (159mm) depth.

M3000 cabinet dimensions: 17" (431mm) height x 15.6" (396mm) width x 6.2" (158mm) depth.

Micro/2000 and M2000 cabinet dimensions: 14" (356mm) height x 14" (356mm) width x 3.5" (89mm) depth.

Environmental

Operating temperature: 35 to 122°F (2 to 50°C).

Operating humidity: 5% to 95% humidity, non-condensing at 90°F (32°C).

All equipment is for indoor use only, except readers whose specifications state otherwise.

System Limits

Database units per chain: maximum of 32.

Per non-elevator node: maximum of 16 readers, 64 auxiliary outputs and 64 monitor points (hardware dependent).

Per elevator node: maximum of 3 cabs and 64 floors (dependent on hardware and number of cabs).

Card holders: maximum of 200,000.

Offline buffered transactions: maximum of 16,000.

Cable and Wiring Requirements

The following table specifies the cable requirements for SR-Series nodes.

Table B-1: Cable and Wiring Requirements

Item to be Connected	Max. Length of Cable	Cable
Node to node in chain (RS422)	2000ft (600m)	22 AWG, Belden 8723
Node to node in chain (RS232)	100ft (30m)	22 AWG, Belden 8723
Node to PC or dial-up modem (RS232)	100ft (30m)	22 AWG, Belden 8723
Node to fallback modem (RS232)	100ft (30m)	22 AWG, Belden 8777
Node to Monitor point	1000ft (300m)	22 AWG shielded 2-core cable, stranded
Node to Auxiliary output	1000ft (300m), depending on minimum operating voltage of device and voltage drop along cable	12-22 AWG (depending on power requirements and voltage drop along cable) shielded 2-core cable, stranded. Use 22AWG for open-collector auxiliary outputs.

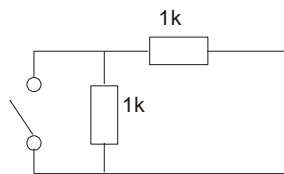
Node to F/2F reader	3000ft (900m)	20 AWG, Belden 9874 (12-core), Belden 8725 (8-core) or Belden 9873 (6-core) cable as appropriate
Node (SR DC2) to Wiegand reader	500ft (150m)	
Node to WIU	1000ft (300m)	
WIU to Wiegand reader	250ft (75m)	Shielded 2-core cable, stranded
Node (SR DC2) or WIU to door release	Maximum distance and cable choice is dependent on the specific lock current and its minimum operating voltage.	

Cable Supervision

Cable supervision determines whether the node is able to detect and report short-circuit and open-circuit fault conditions on monitor points, exit-request switches and door monitors.

SR-Series nodes supports two levels of cable supervision:

- **Two-state supervision** – The cable is not monitored for faults. No resistors are added at the end of the cables.
- **Four-state supervision** – This allows the node to detect both short-circuits and open-circuits on the cable and report these conditions to the Symmetry software. Four-state supervision uses the cable termination resistors shown in Figure 7-1.



Use 1k, 0.25W 5% resistors.
Place as close as possible to contacts

Figure 7-1: Four-State Supervision

The supervision level must be specified for each contact in the Install screens of the Symmetry software. There is no requirement to use the same level of supervision for each contact.

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