SUPERTERM®

CIC1800 / CICP1400UL

Access Control Unit

Installation and Service Manual

Version 1

Continental Access

A NAPCO SECURITY TECHNOLOGIES COMPANY

355 Bayview Avenue, Amityville, NY 11701
Phone: 631-842-9400 Fax: 631-842-9135

www.cicaccess.com

Publicly traded on NASDAQ Symbol: NSSC

WI 1073CLF 5/19

FCC Warning

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which the user will be required to correct the interference at his own expense.

Shielded cables must be used with this unit to ensure compliance with the Class A FCC limits.

"This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications."

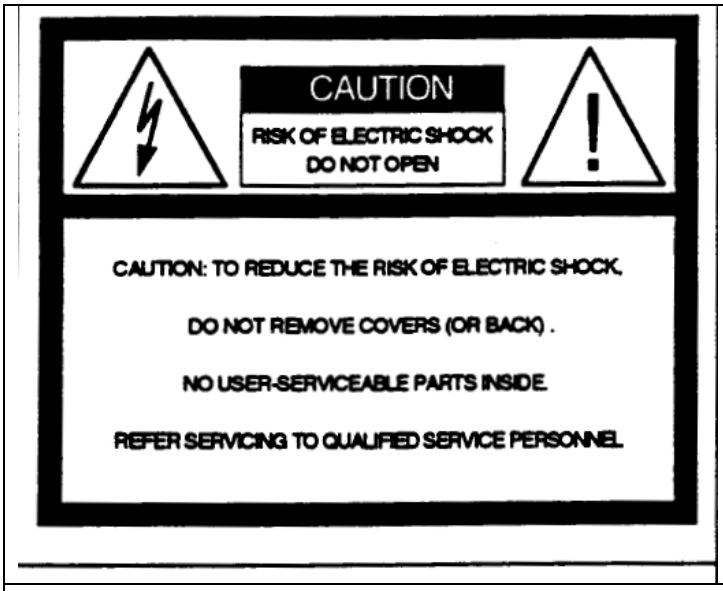
Le present appareil numerique n' émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numeriques de la class A prescrites dans le Réglement sur le brouillage radioélectriques edicté par le ministere des Communications du Canada.

DISCLAIMER

Continental Instruments LLC makes no representations or warranties with respect to the contents hereof and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. Further, Continental Instruments LLC reserves the right to revise this publication and to make changes from time to time in the content hereof without obligation of Continental Instruments LLC to notify any person of such revision or changes.

A NAPCO SECURITY TECHNOLOGIES COMPANY

The installation of this product should be made by qualified service personnel and should conform to all local codes.



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

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

WARNING

This product generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this product in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

UNPACKING AND INSPECTION

Unpack carefully. This is an electronic product and should be handled as such. Compare the items received with the packing list with your order.

Be sure to save:

1. **The shipping cartons and insert pieces. They are the safest material in which to make future shipments of the product**
2. **The IMPORTANT SAFEGUARDS sheet**
3. **These Installation and Operating Instructions.**

WARNING

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

MAINTENANCE

User maintenance of this unit is limited to external cleaning and inspection. For specific recommendations refer to the IMPORTANT SAFEGUARDS sheet packaged with this product

Table of Contents

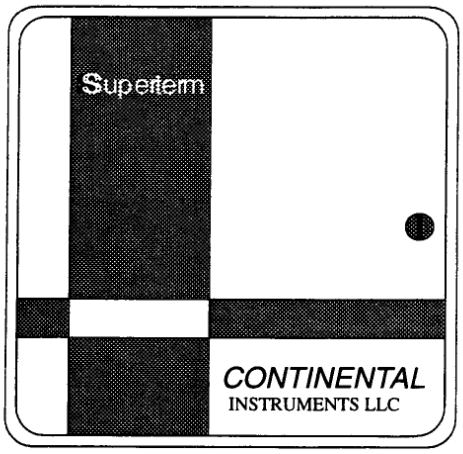


Figure 1 - Superterm Cabinet

DESCRIPTION

The Superterm is a fully programmable, self contained, 8-door access control system that offers users flexibility, expandability, and simplicity. Operating as a stand-alone unit or within a network, each Superterm makes independent access control decisions.

The Superterm accepts Wiegand, Magnetic Stripe, Proximity card readers and Keypads to control the access functions for a maximum of eight individual sites (entrances/exits). It supports a maximum of 24 alarm devices including door contact sensors, door bypass switches, or other related detection accessories. Seventeen onboard Form C relays support door locking mechanisms, door alarm shunts, request to-exit sensors or handicapped access privileges.

The standard Superterm features a user-programmable, onboard database that supports a maximum of 10,000 card holders. Expansion components enable the Superterm to support up to 20,000 card holders (256K version) or a maximum 200,000 card holders (2MB version).

The standard Superterm uses an onboard 7AmpHour (AH) backup battery to carry out full access control functions for a period of four hours in the event of an AC power supply loss. The expanded Superterm features an onboard 12AH backup battery to operate system devices for the same length of time (four hours).

In addition, an internal lithium battery protects the on-board database and programmed operating instructions from loss for a period of ten months. In the event of a total failure of the AC power supply *and* the backup battery, the Superterm would immediately be ready for full operating capability once a source of operating power is re-established.

For enhanced site access control requirements, multiple Superterm units (a maximum of 32) may be networked together or with other Continental Instruments products including Smarterm, Miniterm, and Microterm. A Superterm network may be configured to operate in a repeater mode or in a multidrop mode, using the RS-422 communications protocols.

A single host computer may be used to manage and program one Superterm or a fully developed network of Superterms, saving equipment and installation costs, database entry/deletion procedures, and monitoring individual access usage.

Changes or upgrades to the Superterm operating software are readily downloadable from the host computer to either one specific Superterm or an entire network of Superterms, eliminating the risky practice of physically changing the ROM chips inside the unit(s).

4-Door Version

The Superterm is available as a 4-door version. The 4-door version shares the same cabinet and main circuit board as the 8-door version, but with fewer components.

The 4-door version of the Superterm supports four door connectors, nine relays and 16 alarms. Installation procedures for the 4-door version are the same as the 8-door version.

REGULATORY CONSIDERATIONS

Regulatory Considerations for Superterm Installations

The Superterm has been designed to meet UL standards.

The Superterm is Listed to UL 294 specifications.

Installer Responsibilities (General)

All wiring must conform to all National Electric Code (NEC) specifications, where designated.

All wiring must conform to National Fire Protection Association (NFPA) schedule 70 specifications, where designated.
All wiring must conform to any and all local building electrical codes.
Furthermore,
The transient protection circuits built into the unit will protect the Superterm and most of the connected equipment *only* when the chassis of the Superterm unit is effectively grounded.

The ratings and limitations declared on the Superterm ETL label must not be exceeded.

No more than one DI/DO (relay expansion) board may be installed in the standard Superterm version because an excess current load may be drawn from the on-board power supply when all of the relays are activated.
In UL294-compliant installations, a maximum of two DI/DO boards may be installed in the expanded version of the Superterm when the optional 12V power supply is installed.

Installer Responsibilities UL294 General

No more than one DI/DO board may be installed in the standard Superterm unit. Two DI/DO boards may be installed in the expanded version when the optional 12V power supply and the optional 12AH battery are used.

UL294 requires that the product be able to operate under back-up power for four hours under the worst-case situation. This condition will be met with continuous activation of all accessory relays when one DI/DO board is installed in the standard Superterm and when two DI/DO boards are installed in the expanded Superterm version.

Card Readers, Supervised Alarm Boards, and other accessory equipment powered by the built-in backup power may add loads that must not exceed the panel's ratings. See **Capacities** (Page 10).

There are no special restrictions on which model Host Computer is used or which version of software is installed.

CONFIGURATION

Standard Version

Capacities

The standard version Superterm provides access control functions for up to eight doors and eight card readers. 5V or 12V terminals on the reader connectors (DR1-DR8) normally power badge readers.

The DI/DO board adds 16 accessory relay outputs to the access control relay outputs provided on the main board, and 8 unsupervised inputs using plain contacts. The DI/DO board is rated 12V at 380mA, and is normally powered from the Auxiliary Power (12V) terminals on the lower right of the PCB.

Each of the 24 alarm inputs on the main board may be configured as supervised alarms (requiring termination resistors), or standard alarms (requiring plain electrical contacts). Each Supervised Alarm Board added to the Superterm increases the number of supervised alarm inputs by 16. Three Supervised Alarm Boards may be added to the standard Superterm unit. The Supervised Alarm Board is rated 12V at 50mA, and is normally powered from the Auxiliary Power (12V) terminals on the lower-right of the PCB.

To assure backup power lasts the expected four hours and that the panel will operate correctly under mains "brownout" conditions, the accessory load must not exceed 800mA *total* from the 12 volt and 5 volt power outputs.

EXAMPLE: If one DI/DO Board and two Supervised Alarm Boards are installed, the drain will be 480mA for these devices. Badge readers connected to the +5 volt terminals must draw 320mA or less (800mA – 480mA). Eight badge readers rated 35mA each would add a load of 280mA, bringing the total load to 760mA, and thus *meeting* the load rating (1 x 380) + (2 x 50) + (8 x 35) = 760 mA.

EXAMPLE: If three Supervised Alarm Boards are installed, the drain will be 150mA for these devices. Seven standard badge readers rated 35mA at 12 volts may added, with one long-range reader rated 100mA at 12 volts, for a net 12 volt drain of (3 x 50) + (7 x 35) + (1 x 200) = 495mA.

EXAMPLE: Six Wiegand readers rated 35mA are powered from the 5V Pin on the DRx terminals. The 5V drain is acceptable (6 x 35 = 210mA). Two passive-infrared (PIR) sensors rated 50mA at 12V provide the request-to-exit signal in lobby/reception areas. Two long-range proximity readers rated 200mA at 12V are used in the parking areas. The net drain is (6 x 35) + (2 x 50) + (2 x 200) = 710mA (acceptable). The 12V drain is (2 x 50) + (2 x 200) = 500mA (acceptable).

All 12V accessories receive power from the backup battery when the equipment is operating during a power failure. Battery-backed power supplies carrying UL294 or UL603 markings must power accessory devices that are not powered directly from the panel.

NOTE: Adding more than 1 expansion board prevents the use of software virtual inputs.

Expanded Version

The expansion power option is bundled with a larger backup battery allowing the unit to meet the standby power requirements of UL294 when two DI/DO boards are installed with all relays activated at a 100% duty cycle.

Memory Configurations

The basic memory configuration provides resources for downloadable firmware, as well as for the cardholder database and a transaction buffer. The nominal 256K memory expansion provides 256K for the card database as well as expanded firmware and transaction buffer space. The 2MB Expansion Board allows the Superterm to meet the requirements of managing large cardholder populations.

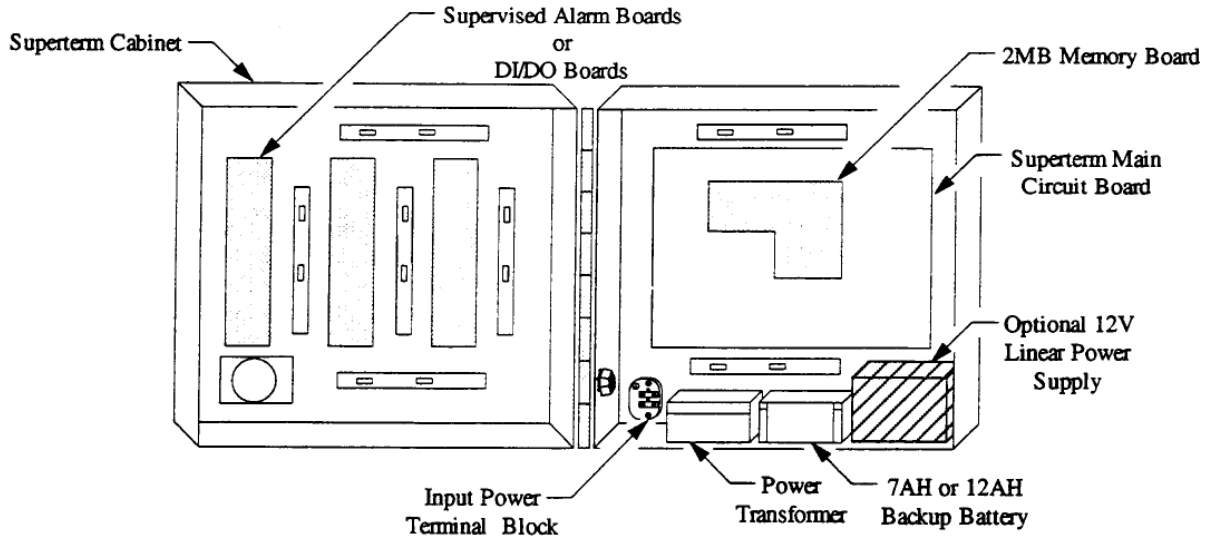


Figure 2 - Superterm Components

Expansion Boards and Accessories

Memory Expansion

- **Standard Memory**: The standard version uses a static 128K x 8 RAM (U61) to support downloadable code, to provide working RAM, and to support the card database.
- **256K Expansion**: Static RAM (U61) expands to 512K x 8 for support of 20,000 card holders. Downloadable code is also expanded by this option.
- **2 MB Expansion**: An optional 2MB of RAM may be added to the Superterm, providing support for a maximum 200,000 card holders (see Figure 2).

NOTE: Standard RAM (128K x 8) must be installed along with the 2MB expansion board.

Digital Input/Digital Output (D1/DO) Board

The DI/DO Board supports up to eight, non-supervised inputs and provides 16 relay outputs to devices controlled by two state signals (see Figure 2).

Supervised Alarm Board

The Supervised Alarm Board supports 16 supervised alarms, with each alarm having five states (normal, abnormal, open, short, and ground fault).

Battery Backup

During power interruptions, the Superterm continues operating for a maximum of 4 hours via an on-board 7AmpHour back-up battery (standard version) or a 12AmpHour back-up battery (expanded version).

The backup battery provides DC power for all Superterm access control and alarm monitoring functions. After charging for 48-hours, the battery carries the rated load for four or more hours. A low-voltage battery sensing circuit protects the Superterm by disconnecting the battery from the main circuit if the battery discharges too much current.

To provide adequate power for a minimum of four hours, the standard Superterm 7AmpHour battery allows the installation of only one DUDO board.

The expanded Superterm version includes a 12AH-backup battery to provide adequate power for two DI/DO boards for a minimum of four hours.

Power Transformer

The step-down transformer provides 14VAC to the on-board linear power supply. An AC power terminal block and grounding screw provide connection points for the three incoming 120VAC service lines.

INSTALLATION

Only qualified service personnel familiar with all local building codes should attempt this installation. Take appropriate safeguards to avoid unintentional operation by employees and maintenance personnel working about the premises.

The installation of each Superterm system should be completed and tested on its own before connecting into a network. Any possible wiring or installation problems are magnified many times by the complexity of the network.

Once an individual system has been tested and found operating satisfactorily, it can then be safely brought into the network.

The following warnings are designed for the safety of the Superterm install/service technician and for the continued proper function of the Superterm unit.

About This Manual

This manual describes the installation of the Superterm Access Control Unit and the specific accessories that connect to it.

NOTES: Notes are included with a procedure informing the technician about related material.

CAUTION  Cautions indicate that a particular process requires special attention.

WARNING  Warnings indicate that a particular process exposes the technician to live circuits or that making wrong connections can lead to equipment failure.

CAUTION  Do not place accessory circuit cables in the same conduit sections containing power cables.

CAUTION  Prevent the risk of a fire by replacing ALL fuses with the same type and rating (see page 81, Backup Battery Inline Fuse Replacement). The main fuse protects the linear power supply circuit against excessive currents and short circuits. Failure of the linear power supply (other than a blown fuse) usually indicates a fault in a power supply component. There are no user-serviceable parts in the Superterm cabinet. The power supply must be replaced if it fails.

WARNING  The linear power supply has exposed terminals (see page 8). DO NOT probe the Superterm cabinet and expose yourself to high voltage and a shock hazard.

WARNING  The risk of a serious electrical shock exists if the wiring harness power connector is removed from the Superterm circuit board, but AC power remains live at the AC Input Terminal Block (see Figure, page 8).

WARNING  Prevent shock during servicing when the POWER ON lamp is disconnected. To determine if power is present, check the status of the Superterm's top LED (see page 52, LED Diagnostics). The top LED will be illuminated if power is present.

Installation Preparation

First, select a mounting location within a secure, limited access area (see Figure 3). Ensure that an "earth ground" connection is available near the Superterm installation site. Note the type of wall construction that the enclosure will be secured to.

- Determine that adequate space is available for mounting the Superterm cabinet on a wall with no interference from wires, pipes, or other obstructions.

- Proper installation of the Superterm cabinet requires an area of free space measuring:

21.5 inches high (546mm)
X
21.25 inches wide (540mm)
X
7.0 inches deep (178mm)

- Confirm that adequate free space exists on both sides of the Superterm cabinet for cabling conduit entering and exiting the cabinet.

- Determine the directions of the cabling conduit exiting the Superterm cabinet. Confirm sufficient access to ceilings and/or walls before fitting the conduit lengths.

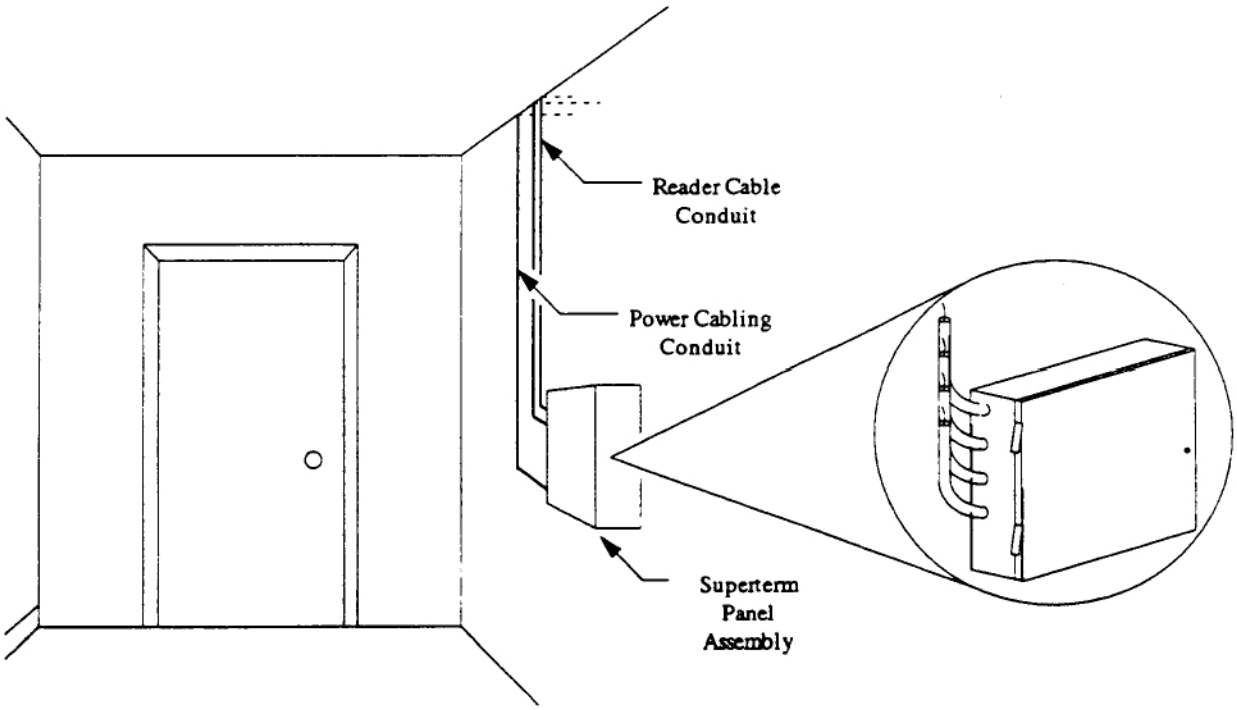


Figure 3 - Superterm Installation Location

Cabinet Mounting

Inspect the mounting surface around the proposed installation site. The mounting surface must be capable of supporting 55 pounds (25Kg) plus any additional weight of the installation hardware.

CAUTION
Use only suitable mounting hardware for the type of wall construction encountered.

1. Determine the Superterm cabinet mounting location.

2. Mark the four mounting holes against the mounting surface using the Superterm cabinet as a template or using the measurements provided in Figure 4.

NOTE: Mark the small oval portion of the cabinet screw holes (see Figure 5, Detail A).

3. Place the Superterm cabinet out of the way.

4. Drill pilot holes to the required depth and size for the mounting screws.

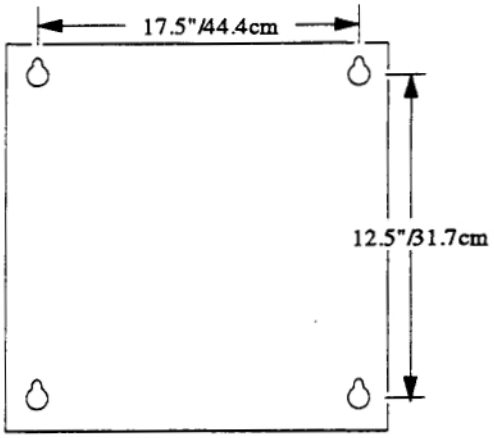


Figure 4 - Superterm Cabinet Mounting Hole Dimensions

5. Insert the mounting screws into the wall. Leave approximately one quarter of the screw's length protruding from the wall.

NOTE: Do not tighten screws completely at this time.

6. Place the Superterm cabinet over the mounting screws.

7. Secure the Superterm cabinet to the mounting surface and tighten the remaining length of the screws.
   Secure the Superterm cabinet to the mounting surface using the two lower screws, and then tighten the remaining length of the screws.
   Note: Use all 4 mounting screws to secure cabinet to wall. For mounting to 3/4" thick plywood, use four minimum 1/4" x 3/4" wood screws. For mounting to sheetrock, use four minimum 1/4" toggle bolts.

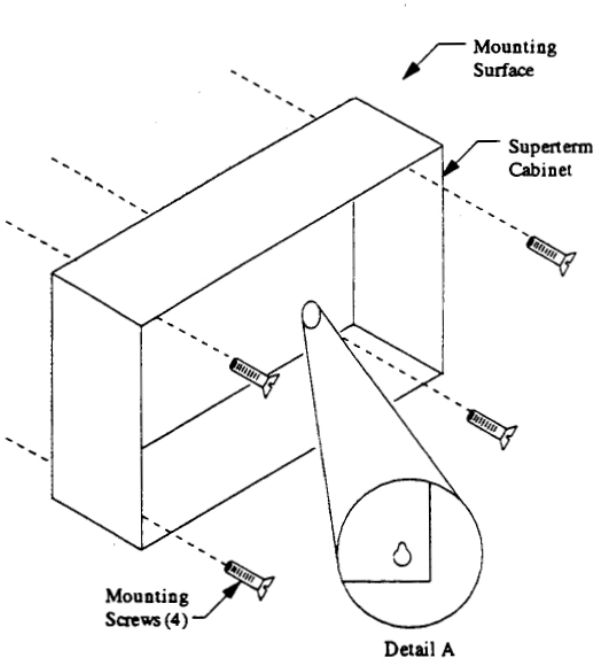


Figure 5 - Superterm Mounting Screws

Cable Routing

All associated cabling for the Superterm is divided into two categories:

- **Power Cables and Accessory Relay Devices**
  This category contains all the power cables servicing the Superterm and any accessory relay controlled devices connected to it.

- **Communication Cables**
  This category contains all the communication cabling between the Superterm and all communication devices, all alarm devices, and all card reader devices.

NOTE: For proper operation of the Superterm, route EACH category of cabling in SEPARATE conduit (i.e., DO NOT mix alarm communication cables in the same conduit as relay power cables).

Incoming Power Conduit Knockout

The Superterm System requires 120VAC, 60 Hz voltage to the AC Input Power Terminal Block (see Page 10). The power cabling is delivered to the Superterm through a knockout located on the lower center of the left side cabinet wall (see Figure 6). The knockout accepts EIA standard 1-inch or 3/4 inch conduit connectors.

NOTE: All wiring must conform to National Electric Code (NEC), NFPA 70, as well as any local building codes.

Accessory Conduit Knockouts

All cabling for the Superterm is routed through EIA standard two-size knockouts located on the left and right sides of the cabinet (see Figure 6). The outer knockout size accepts EIA standard 1-inch conduit connectors and the inner knockout accepts EIA standard 3/4-inch conduit connectors.

Grounding Accessory Drain and Shield Wires

Ensure electromagnetic compatibility and reliable performance by keeping all accessory drain and shield wires as short as possible.

All accessory drain and shield wires (except RS-232) connect to ground posts mounted along the knockout strips on both sides of the Superterm cabinet (see Figure 6).

The following procedures assure proper installation of all drain and shield wires.

- Carefully remove the cable jacket after the cable enters the Superterm cabinet.
- Place the drain and shield wires under the ground post screw.
- Verify a good connection and tighten the ground post screw.
- Connect the accessory wires to the appropriate terminal strip on the Superterm circuit board.

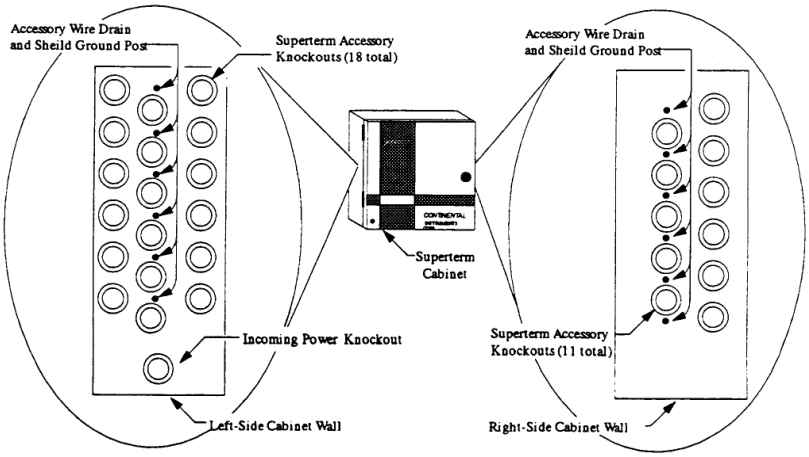


Figure 6 - Cabling Conduit Knockouts

POWER CONNECTIONS

AC Power Source Grounding

The Superterm main circuit board has built-in surge suppression devices. The surge suppressors require a good earth ground connection to operate effectively.

Check the DC resistance between the 120VAC power ground terminal and a known earth ground such as a metal water pipe or structural steel building component

CAUTION

DC resistance between the 120VAC power ground terminal and a known earth ground must be no greater than 50 ohms.

If the DC resistance is acceptable, install the 120VAC power cabling using the ground terminal as the earth ground.

120VAC Power

The Superterm system requires 120VAC, 60 Hz voltage. The incoming 120VAC source voltage connects to the AC Input Power Terminal Block located in the lower left-hand corner of the Superterm cabinet (see Figure 7).

NOTE: Use of a dedicated, unswitched 120VAC power source results in optimal performance with minimum interference. Superterm units with optional **220VAC** power are available where required for use outside of North America. This feature not evaluated by ETL.

WARNING

Verify that the AC source voltage is switched off at the breaker panel before proceeding with connections.

Table I lists the incoming 120VAC source voltage connections to the AC Input Power Terminal Block.

Table 1- AC Input Power Terminal Block Connections		
Incoming 120VAC	Wire Color	AC Input Terminal Block
Line	Black	L
Neutral Ground	White Green	⏚

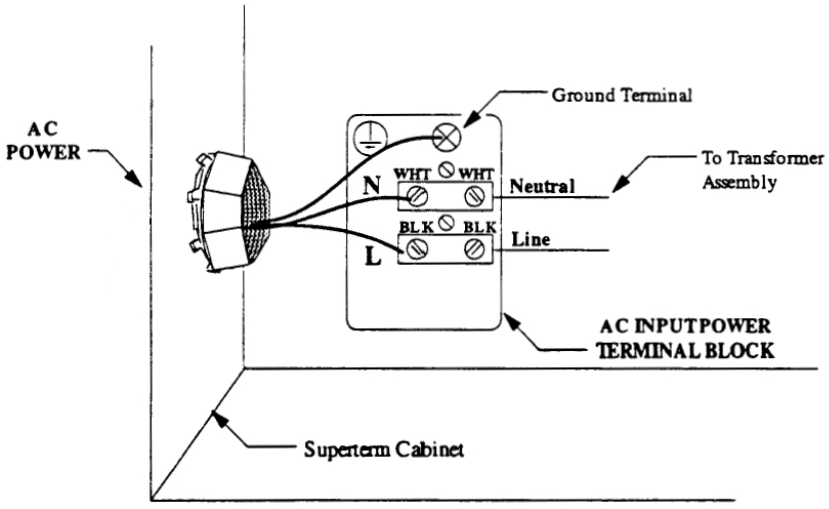


Figure 7 - AC Input Power Terminal Block

Superterm Circuit Board Layout

The Superterm circuit board (see Figure 8) provides wiring terminal strips for external access control devices (card readers, keypads, alarms, etc.).

The following descriptions in this manual reference the Superterm main circuit board, shown below, and use cutaway drawings to identify specific locations on the circuit board.

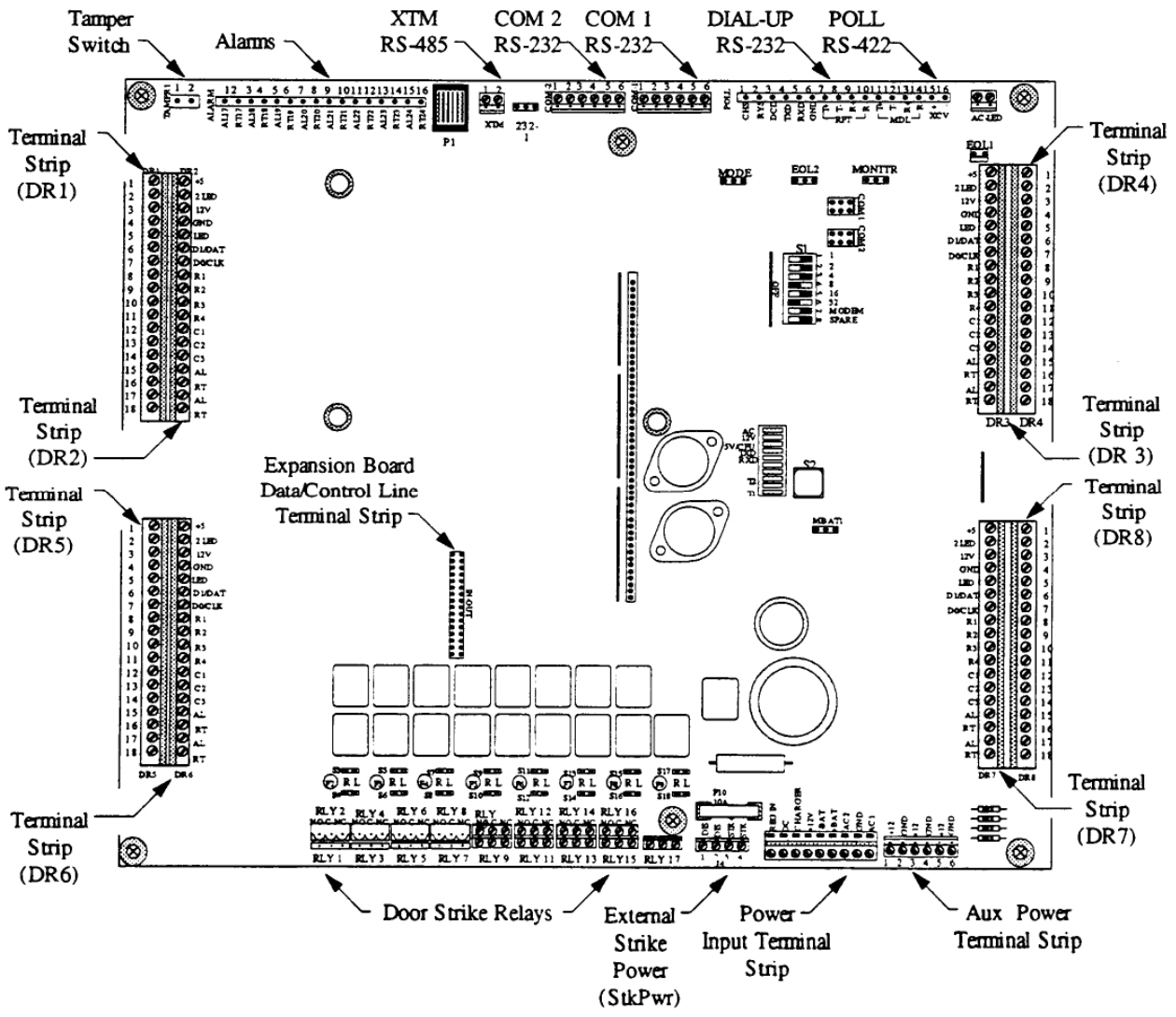


Figure 8 - Superterm Circuit Board Layout

Step-Down Transformer Connection

The Superterm circuit board is powered from an internal power supply driven by a separate step-down transformer. The step-down transformer is mounted on the bottom ledge of the Superterm cabinet (see Figure 2, page 5, Superterm Components).

The Step-Down transformer connects to the Superterm circuit board through the Power Input terminal strip (see Figure 8, page 11, Superterm Circuit Board Layout).

Table 2 lists the connections between the Step-Down Transformer and the Superterm Power Input terminal strip. Refer to Figure 9, page 13, while reading Table 2 for Step Down Transformer to Superterm Circuit Board connections.

NOTES: If the Superterm is NOT using the optional Expansion Power Supply, leave the female Molex connector from the transformer unconnected.
If the Superterm is equipped with an Expansion Power Supply, connect the female Molex connector from the Expansion Power Supply to the male Molex connector of the Transformer Assembly (see Figure 9).

Power Input Terminal Strip Jumpers

Pins 1, 2, and 3 of the standard Superterm (with no Expansion Power Supply) must be jumped together. Table 3 lists the pin connections on the Power Input terminal strip that require jumpers. Refer to Figure 9, page 13 while reading Table 3 for Power Input terminal strip jumper connection.

NOTE: If using an Expansion Power Supply, pin 1 must be open, and pins 2 and 3 must be jumpered together. Refer to CAUTION on page 13.

Battery Backup Connection

During power interruptions, the Superterm continues operating for a maximum of 4 hours via an on-board 7A-hour back-up battery (standard version) or a 12A-hour back-up battery (expanded version).

Table 4 lists the connections from the Battery Backup to the Superterm Power Input terminal strip. Refer to Figure 9, page 13, while reading Table 3 for Battery Backup to Superterm Circuit Board connections.

WARNING
Do NOT connect the Backup Battery or provide AC source voltage to the Superterm until all accessory cabling is completed.

Table 2 - Connection Table for Step-Down Transformer

Power Input Terminal Strip		Transformer Assembly	
Pin #	**Function**	**Wire Color**	**Function**
1	REG IN		
2	DC		
3	CHARGER		
4	+12V		
5	-BAT		
6	+BAT		
7	AC2	Black	AC Power
8	GND	Yellow	GND
9	AC1	White	AC Power

Table 3 - Connection Table for Terminal Strip

Power Input Terminal Strip		Backup Battery
Pin #	Function	Jumper
1	REG IN	Jump to Pin 2 (DC)
2	DC	Jump to Pin 1 (REG IN) &3 (CHARGER)
3	CHARGER	Jump to Pin 2 (DC)
4	+12V	
5	-BAT	
6	+BAT	
7	AC2	
8	GND	
9	AC1	

Table 4 - Connection Table for Backup Battery

Power Input Terminal Strip		Backup Battery
Pin #	Function	Function
1	REG IN	
2	DC	
3	CHARGER	
4	+12V	
5	-BAT	Neg (-) post
6	+BAT	
7	AC2	Pos (+) post
8	GND	
9	AC1	

Expansion Power Supply Connection

The Superterm circuit board provides +12V power for accessories via an expansion power supply.

Table 5 lists the connections from the Expansion Power Supply to the Power Input terminal strip (see Figure 9).

NOTE: Connect the female Molex connector from the Expansion Power Supply to the male Molex connector of the Transformer Assembly (see Figure 9).

CAUTION
Using the Expansion Power Supply requires placing a jumper between pins 2 and 3 of the Power Input terminal strip (see Figure 9 and Table 5).

NOTE: Pin 1 must remain OPEN.

Table 5 - Connection Table for Expansion Power Supply

Power Input Terminal Strip		Expansion Power Supply	
Pin #	Function	Wire Color	Function
1	REG IN		
2	DC	Jumper to pin 3 (CHARGER)	
3	CHARGER	Jumper to pin 2 (DC)	
4	+12V	Red	Pos (+) post
5	-BAT	Black	Neg (-) post
6	+BAT		
7	AC2		
8	GND		
9	AC1		

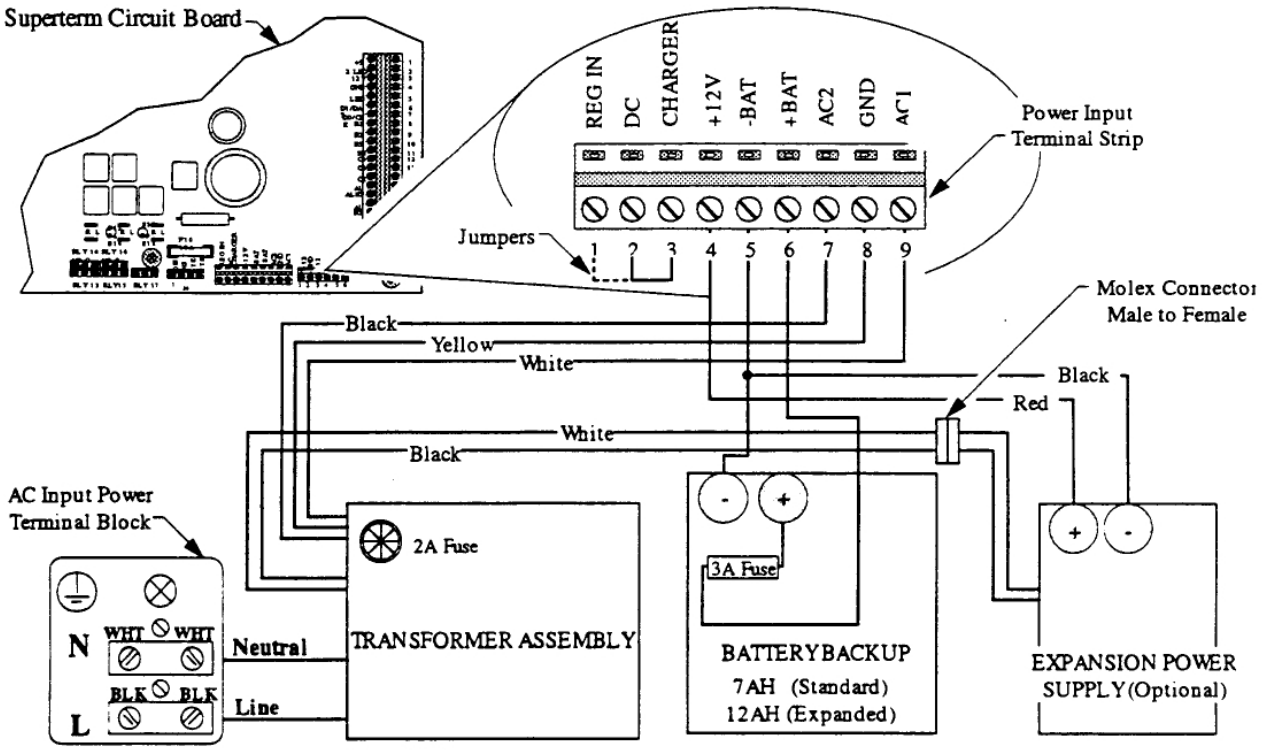


Figure 9 - Connecting Transformer, Battery and Power Supply to Superterm Circuit Board

DOOR CONNECTIONS

Inputs from Card Readers, Keypads and Door Alarms connect to the Superterm via eight terminal strips (labeled DR1, DR2, DR3, DR4, DR5, DR6, DR7, and DR8).
NOTE: The terminal strips are grouped in pairs on one connector block.

- Terminal strips DR1 and DR2 are paired together on the same connector block located in the upper left-hand comer of the Superterm Circuit Board (see page 11, Superterm Circuit Board Layout).
- Terminal strips DR3 and DR4 are paired together on the same connector block located on the lower left-hand comer of the Superterm Circuit Board.
- Terminal strips DR5 and DR6 are paired together on the same connector block in the upper right-hand corner of the Superterm Circuit Board.
- Terminal strips DR7 and DR8 are paired together on the same connector block located on the lower right-hand side of the Superterm Circuit Board.

Wiegand/Proximity Reader Connections

Wiegand/Proximity Readers connect to terminal strips DR1 through DR8 (see Figure 10). Terminal strips DRI through DR8 follow the same connection procedures.

Table 6 lists the connections between the DR1 through DR8 terminal strips and the Wiegand/Proximity Readers.

Table 6 - Connection Table for Wiegand /Proximity Reader

DRx Terminal Strip		
Pin #	**Function**	**Wire Color**
1	+5VDC	Red*
3	+12VDC	Red*
4	Ground	Black
5	LED	Brown
6	Data-1/DAT	White
7	Data-0/CLK	Green

*Proximity Reader may be powered by either +5VDC or +12VDC.

EXAMPLE: Four 5VDC Readers draw 35mA each. 4 x 35 = 140mA (acceptable). Four 12VDC Readers draw 100mA each. 4 x 100 = 400mA (acceptable). Net 5VDC and 12VDC draw is 140mA + 400mA = 540mA, which is less than 800mA (acceptable).

Wiegand/Proximity Reader Cable Requirements

Wiegand/Proximity Readers require a 5-conductor cable between the Superterm and the particular unit (see Figure 10).

NOTES: DO NOT use twisted pair cables.

Take into account that the Reader and Accessory load on the standard Superterm must not exceed a total of 800mA for 5V and 12V devices, and the load on each power output (5V or 12V) must not individually exceed 500mA.

Table 7 lists the cable gauge-vs-length requirements for proper operation of the Superterm and a Wiegand/Proximity Reader.

Table 7 - Cable Requirements for Wiegand/Proximity Readers

Unit	**Distance**	**Wire Gauge**
	(maximum)	
Wiegand		
Reader	1000ft/305m	22AWG Shielded w/drain**
Proximity		
Reader	1000ft/305m	18AWG Shielded w/drain

** 500ft/153m maximum for unbuffered Wiegand units.

CAUTION
Keep all drain and cable shield wires between the Superterm and any Wiegand/Proximity Readers short. Connect drain and cable shield wires to the ground posts located on both sides of Superterm cabinet. DO NOT ground drain wires and cable shields at any other point.

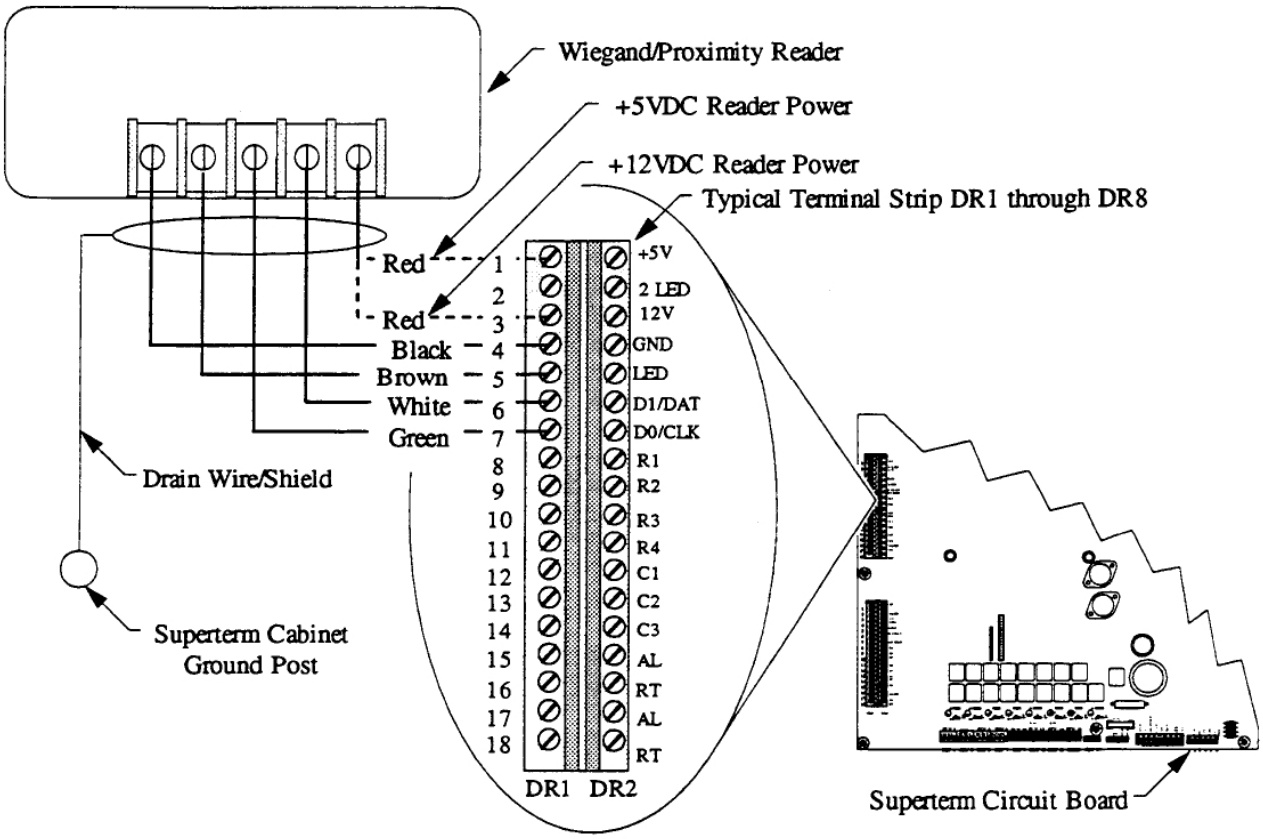


Figure 10 - Wiegand/Proximity Reader Connection to Superterm Board

Magnetic Stripe Reader Connection

Magnetic Stripe Readers connect to terminal strips DR1 through DR8 (see Figure 11). Terminal strips DR I through DR8 follow the same connection procedures.

Table 8 lists the connections between the DR1 through DR8 terminal strips and the Magnetic Stripe Reader.

Table 8 - Connection Table for Magnetic Stripe Reader	
DRx Terminal Strip	
Pin #	Function
1	+5VDC
4	Ground
5	LED
6	Data-1/DAT
7	Data-0/CLK

Magnetic Stripe Reader Cable Requirements

Magnetic Stripe Readers require a 5-conductor cable between the Superterm and the particular unit (see Figure 11).
NOTES: DO NOT use twisted pair cables.

If the Magnetic Stripe Reader does not feature an LED indicator, substitute with a 4-conductor cable.

Table 9 lists the cable gauge-vs-length requirements for proper operation of the Superterm and Magnetic Stripe Readers.

Table 9 - Cable Requirements for Magnetic Stripe Reader		
Unit	Distance	Wire Gauge
Magnetic Stripe Reader	(maximum) 1000ft/305m	22AWG Shielded w/drain

CAUTION
Keep all drain and cable shield wires between the Superterm and Magnetic Stripe Readers short. Connect drain and cable shield wires to the ground posts located on both sides of Superterm cabinet. DO NOT ground drain wires and cable shields at any other point.

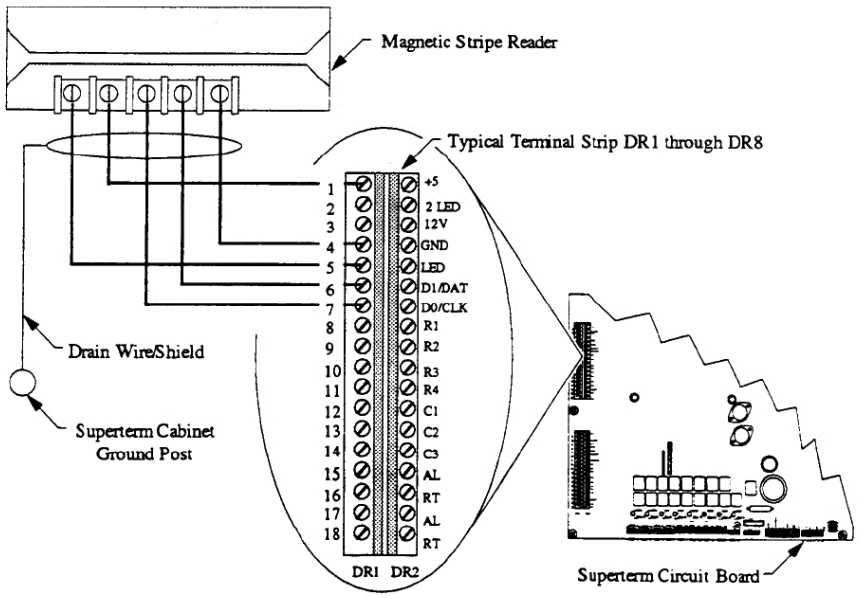


Figure 11 - Magnetic Stripe Reader Connection to Superterm Board

Keypad Connection

Twelve-position Keypads connect to terminal strips DR 1 through DR8 (see Figure 12). Terminal strips DR1 through DR8 follow the same connection procedures.

Table 10 lists the connections between the DR 1 through DR8 terminal strips and the Keypad.

Table 10 - Connection Table for Keypad Reader		
DRx Terminal Strip Pin #	Function	Wire Color
8	Row 1	Brown
9	Row 2	Red
10	Row 3	Orange
11	Row 4	Yellow
12	Column 1	Green
13	Column 2	Blue
14	Column 3	Violet

Keypad Cable Requirements

Keypads require a 22AWG, 7-conductor, stranded, shielded, cable with drain wire between the Superterm and the particular unit (see Figure 12).

NOTE: DO NOT use twisted pair cables.

Table 11 lists the cable gauge-vs-length requirements for proper operation of the Superterm and the Keypad.

Table 11- Cable Requirements for Keypads		
Unit	Distance (maximum)	Wire Gauge
Keypad	1000ft/305m	22AWG Shielded w/drain

CAUTION

Keep all drain and cable shield wires between the Superterm and Keypads short. Connect drain and cable shield wires to the ground posts located on both sides of Superterm cabinet. DO NOT ground drain wires and cable shields at any other point.

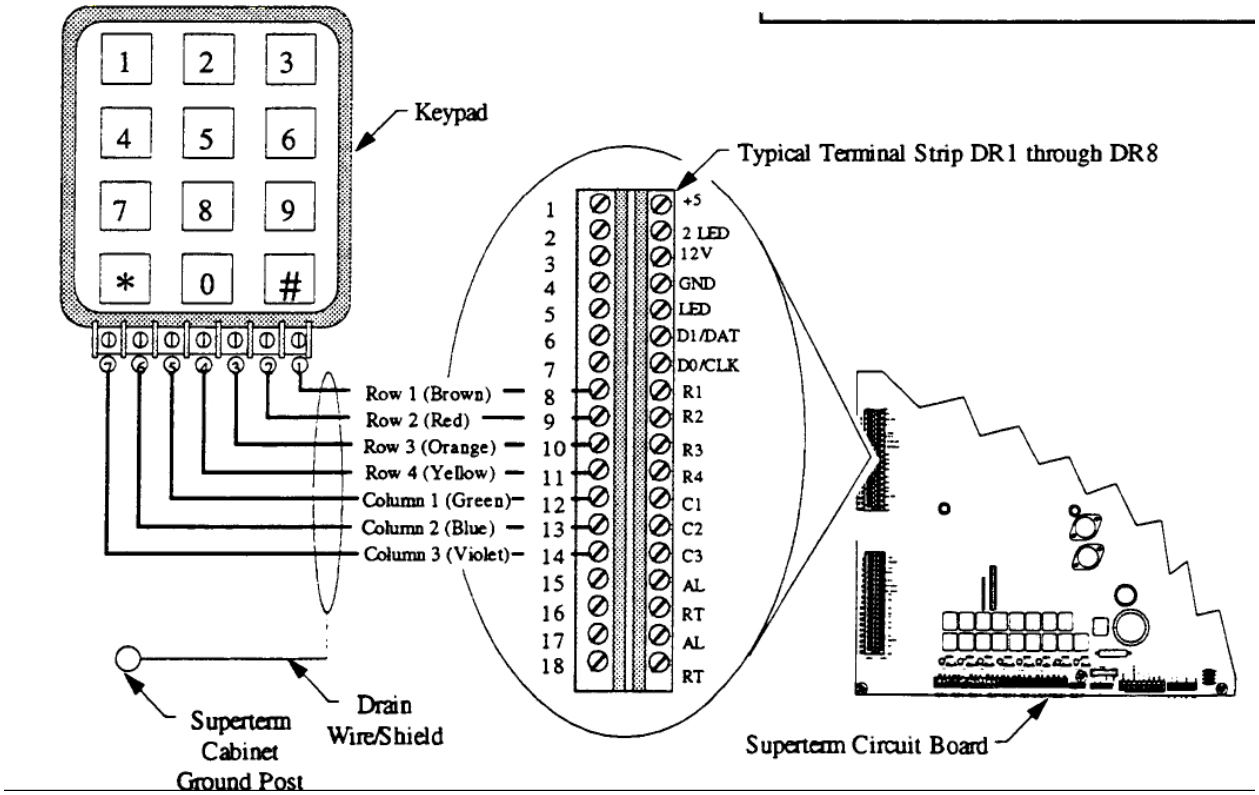


Figure 12 - Keypad Connection to Superterm Board

Door Status Sensor Connection

Door Status sensors connect to the Superterm through eight terminal strips labeled DR 1 through DR8 (see Figure 13).

Table 12 lists the connections between the DR1 through DR8 terminal strips and the Door Status sensor.

Table 12 - Connection Table for Door Status Sensor		
DRx Terminal Strip	Signal	Door Status
Pin #		Sensor Function
15	Alarm	Positive
16	Return	Negative

NOTES: Refer to page 32, Alarm Connection, to configure Door Status sensors as supervised alarms.
Door Status sensor connections to the Superterm are not sensitive to polarity.

Door Status Sensor Cable Requirements

Door Status sensors require a 22AWG, 2-conductor, stranded, shielded, cable with drain wire between the Superterm and the particular unit (see Figure 13).

NOTE: DO NOT use twisted pair cables.

Table 13 lists the cable gauge-vs-length requirements for proper operation of the Superterm and the Door Status sensor.

Table 13 - Cable Requirements for Door Status Sensor		
Unit	Distance	Wire Gauge
Door Status	1000ft/305m	22AWG Shielded w/drain
Sensor		

CAUTION
Keep all drain and cable shield wires between the Superterm and Keypads short. Connect drain and cable shield wires to the ground posts located on both sides of Superterm cabinet. DO NOT ground drain wires and cable shields at any other point.

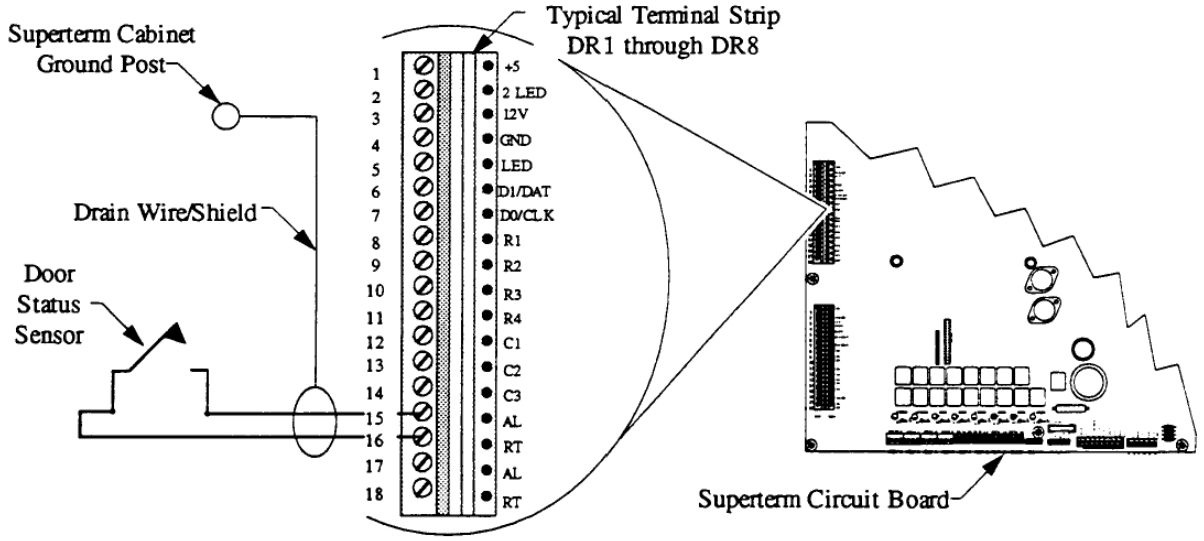


Figure 13 - Door Status Sensor to Superterm Connections

Request-to-Exit (Bypass) Sensor Connection

Request-to-Exit sensors (also known as Bypass sensors) work in conjunction with Door Status Sensors to provide complete facility entry and exit control. The Request-to-Exit sensor input connects to the same Superterm terminal strip (DR1 through DR8) that the associated Door Status Sensor connects to (see Figure 14).

Table 14 lists the connections between the DR1 through DR8 terminal strips and the associated Request-to-Exit sensor.

Table 14 - Connection Table for Request-to-Exit Sensor

DRx Terminal Strip	Signal	Request-to-Exit
Pin #		Sensor Function
17	Alarm	Positive
18	Return	Negative

NOTE: Request-to-Exit sensor connections to the Superterm are not sensitive to polarity.

Request-to-Exit Sensor Cable Requirements

Request-to-Exit sensors require a 22AWG, 2-conductor, stranded, shielded, cable with drain wire between the Superterm and the particular unit (see Figure 14).

NOTE: DO NOT use twisted pair cables.

Table 15 lists the cable gauge-vs-length requirements for proper operation of the Superterm and the Request-to-Exit sensor.

Table 15 - Cable Requirements for Request-to-Exit Sensor

Unit	Distance	Wire Gauge
Request-to-Exit Sensor	(maximum) 1000ft/305m	22AWG Shielded w/drain

CAUTION

Keep all drain and cable shield wires between the Superterm and Keypads short. Connect drain and cable shield wires to the ground posts located on both sides of Superterm cabinet. DO NOT ground drain wires and cable shields at any other point.

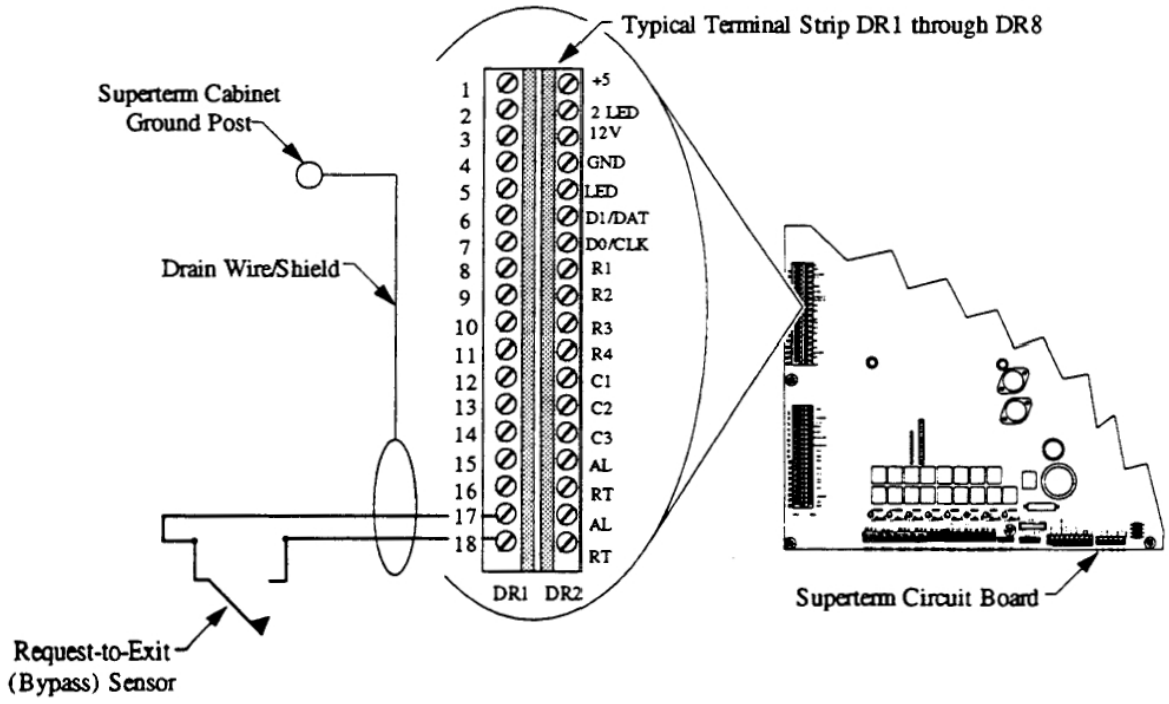


Figure 14 - Request-to-Exit Sensor to Superterm Connection

RELAY CONNECTIONS

Description

The Superterm provides 17 Form C relays to control door strikes, door alarm shunts, alarms, cameras, etc.

The relays are divided into three categories:

- **Door Strike Relays**
- **Auxiliary Relays**
- **Console Relay**

Door Strike Relays

Eight relays are designated as door strike relays and work in conjunction with card readers and keypads to control access at particular door sites.

The door strike relays are the first bank of relay terminal strips labeled, from left to right, RLY 1, RLY 3, RLY 5, RLY 7, RLY 9, RLY 11, RLY 13, and RLY 15, located on the bottom of the Superterm Circuit Board (see Figure 15).

Auxiliary Relays

Eight relays are designated as auxiliary relays and may be used for access control functions such as door alarm shunts.
The auxiliary relays are the second bank of relay terminal strips labeled, from left to right, RLY 2, RLY 4, RLY 6, RLY 8, RLY 10, RLY 12, RLY 14, and RLY 16, located on the Superterm Circuit Board (see Figure 15).

Console Relay

The Console Relay may be linked to specific events such as invalid door access, alarm input, and tamper switch input. The console relay is linked to an event through software.
The console relay is labeled RLY 17 and is located on the far right hand side of the first bank of relay terminal strips of the Superterm Circuit Board (see Figure 15).

Relay Characteristics

The relays on the Superterm Circuit Board all share the following characteristics:
Form C relay with a contact rating of 2A at 28VDC.
The Normally Open (NO) and the Normally Closed (NC) contacts are the default state of non-energized relays.
Metal oxide varistors (MOVs) are placed across the contacts to reduce electrical noise. The MOVs limit any noise caused by the strike coil to 56 volts.

NOTES: Installing a 56 volt MOV at the strike coil further reduces possible noise input. Because of this noise, door strike wiring MUST NOT be put in the same conduit with other wiring.

Using door strikes with a coil voltage greater than 28VDC or 28VAC requires using external relays that can be driven by Superterm relays.

Additional MOV's are available form Continental Instruments as part number 480-1048 (RV0005).

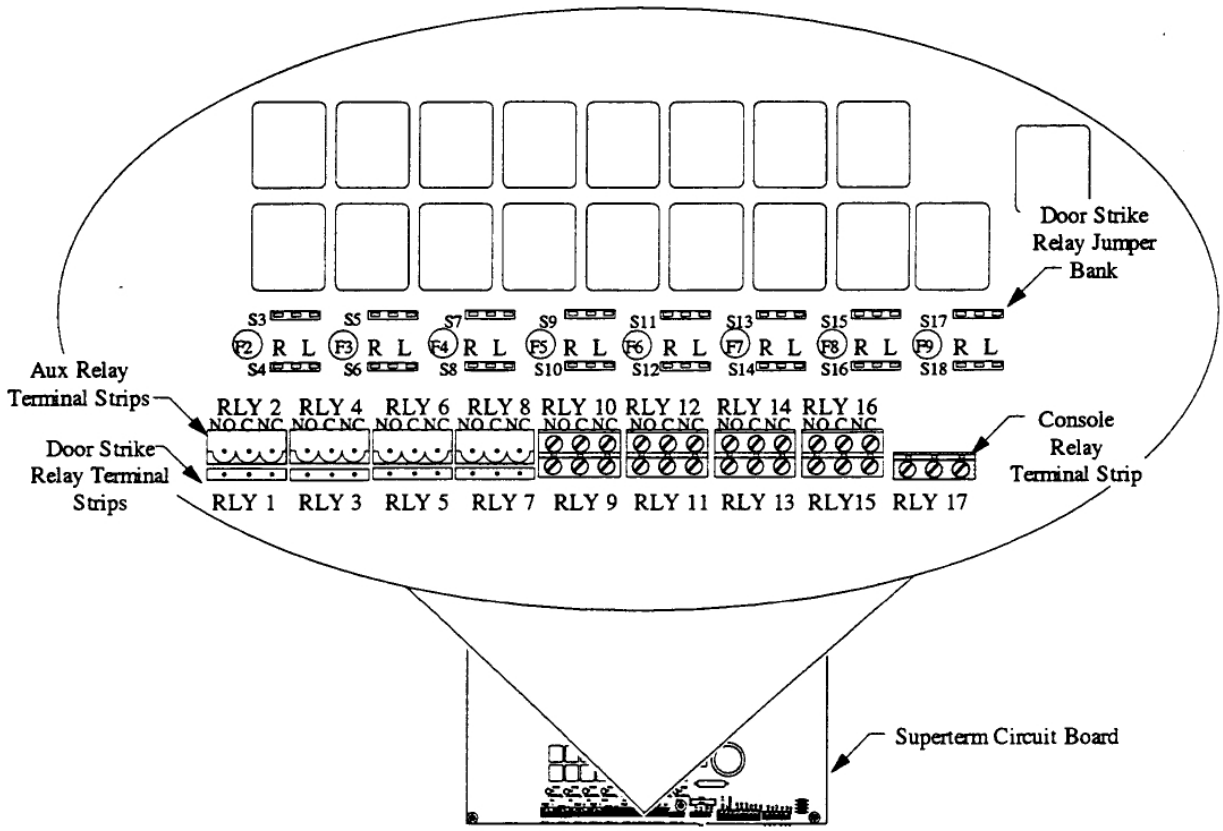


Figure 15 - Superterm Circuit Board Relay Location

Door Strike Relay Operation

The Superterm offers two configurations for controlling power to each door strike circuit:

The LOCAL strike power configuration simplifies wiring at the site by using a single power source to operate several door control circuits (see Figure 16). This option is selected by setting a pair of jumpers on the Superterm printed circuit board.

All 12V accessories powered directly from the panel are battery-backed so the equipment will continue to operate during a power failure. Battery-backed power supplies carrying UL 294 or UL 603 markings are available from third parties that may serve as a Local Lock Power Supply and meet the requirements of Electromagnetic (EM) Locks or Electric Strikes.

The REMOTE strike power configuration provides conventional dry-contact outputs, typically controlling a circuit where the power source for the electric lock is near the door controlled by the relay (see Figure 16).

NOTES:

- Both LOCAL and REMOTE strike power configurations may be mixed on the same Superterm panel.
- Operating door strike relays in either the LOCAL or the REMOTE mode requires setting two jumpers per relay. The default settings of the jumpers, as shipped from the factory, are the REMOTE power mode. Refer to page 72 for specific information about setting the door strike jumpers.
- Relay circuits in the REMOTE configuration are isolated from one another and isolated from the Superterm power supply.

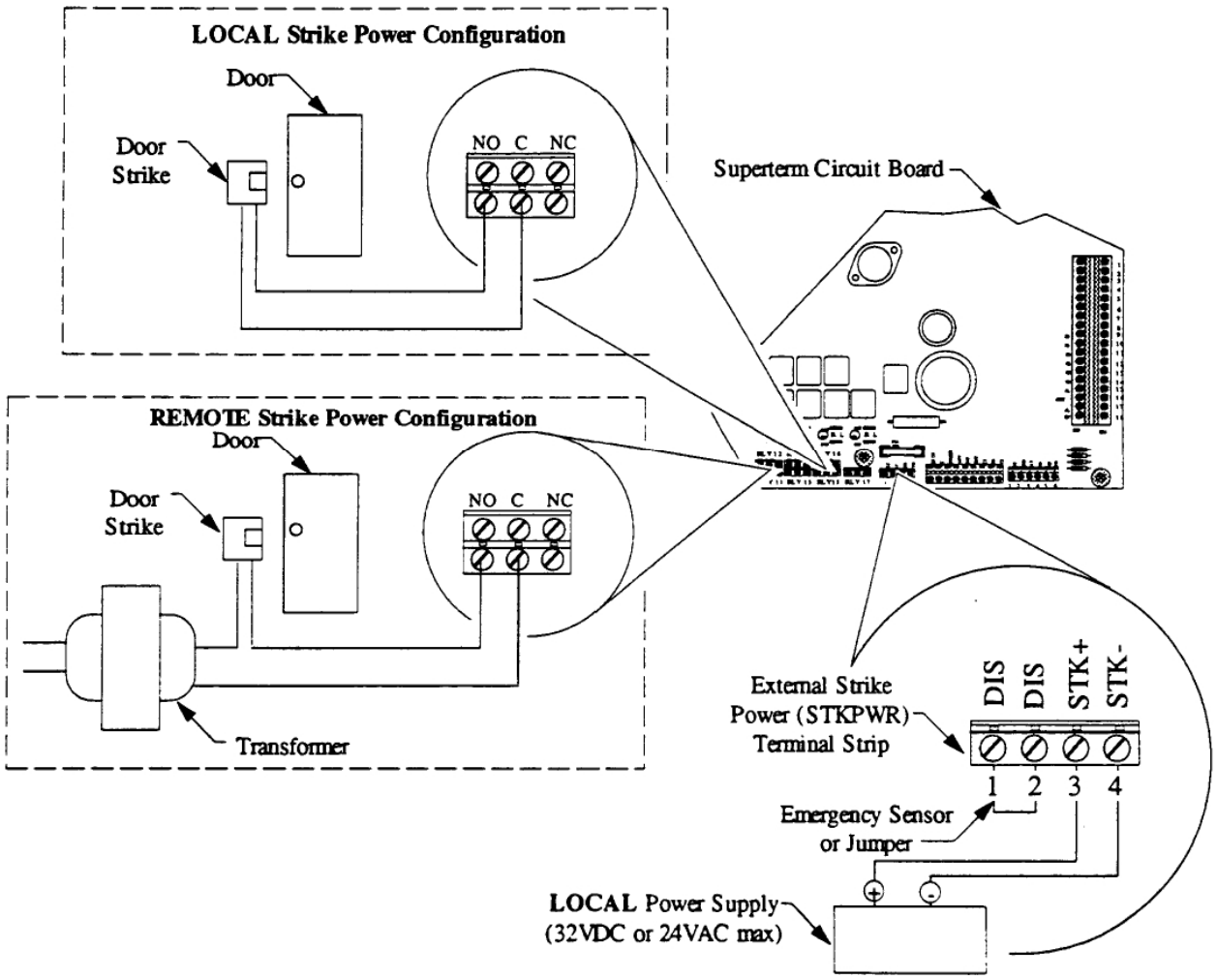


Figure 16 - LOCAL and REMOTE Power Configurations

LOCAL Power Connection

In LOCAL power mode, a single, external power supply (28VDC or 28VAC max.) is mounted outside of and adjacent to the Superterm cabinet. This supply provides power to a maximum of eight Superterm door strike relays through the STKPWR terminal strip located on the lower edge of the Superterm circuit board (see Figure 17).

Strike power is routed through the Superterm circuit board to the individual relay connectors, thus eliminating the need for separate power supplies at each door.

- The STK- input (STKPWR - Pin 4) is routed to the COMMON (C) relay connection (RLY #X - Pin 2).
- The STK+ input (STKPWR - Pin 3) is routed through the DIS pins (1 and 2) to the Normally Open (NO, RLY #X - Pin 1) or the Normally Closed (NC, RLY #X - Pin 3), depending on the state of the relay.

A Normally Closed (NC) emergency switch may be used in conjunction with the Local power mode to disconnect the strike power upon an emergency situation.

NOTE: Operating a door strike relay in the LOCAL mode requires setting two jumpers per relay. Refer to page 72 for specific information about setting the door strike jumpers.

All door strike relays connected in the LOCAL power configuration operate from the same power source and must have the same voltage rating.

All strike relay circuits (odd numbered relays) are individually fuse protected in both the LOCAL or the REMOTE configuration.

If an emergency sensor is not used, install a jumper between Pin 1 (DIS) and Pin 2 (DIS) on the STKPWR terminal strip.

Table 16 lists the connections between the STKPWR terminal strip and the external power supply (see Figure 17).

Table 16 - Connection Table for External Power Supply

Power Supply	STKPWR Terminal Strip
Positive ((B)	Pin # 3
Negative (-)	Pin #4

Emergency Sensor Connection

An external emergency sensor may be used to disconnect the LOCAL strike power supply if an emergency condition is detected.

The emergency sensor is placed in series with the STK+ signal by connecting it between Pin 1 and Pin 2 of the STKPWR terminal strip (see Figure 18).

NOTES: The emergency sensor must be a Normally Closed (NC) switch and the strike relays must be wired in a Normally Closed (NC) configuration (refer to page 26, LOCAL Power Door Strike Connection).

If an emergency sensor is not used, place a jumper between Pin 1 and Pin 2 on the STKPWR terminal strip (see Figure 17).

Table 17 - Connection Table for Emergency Sensor and External Power Supply

Device	STKPWR Terminal Strip
Emergency Sensor	Pin #1 (DIS)
Emergency Sensor	Pin #2 (DIS)
Power Supply Positive (0)	Pin #3 (STY, +)
Power Supply Negative (-)	Pin #4 (STK -)

NOTE: Normally Closed (NC) emergency sensor connections are not sensitive to polarity.

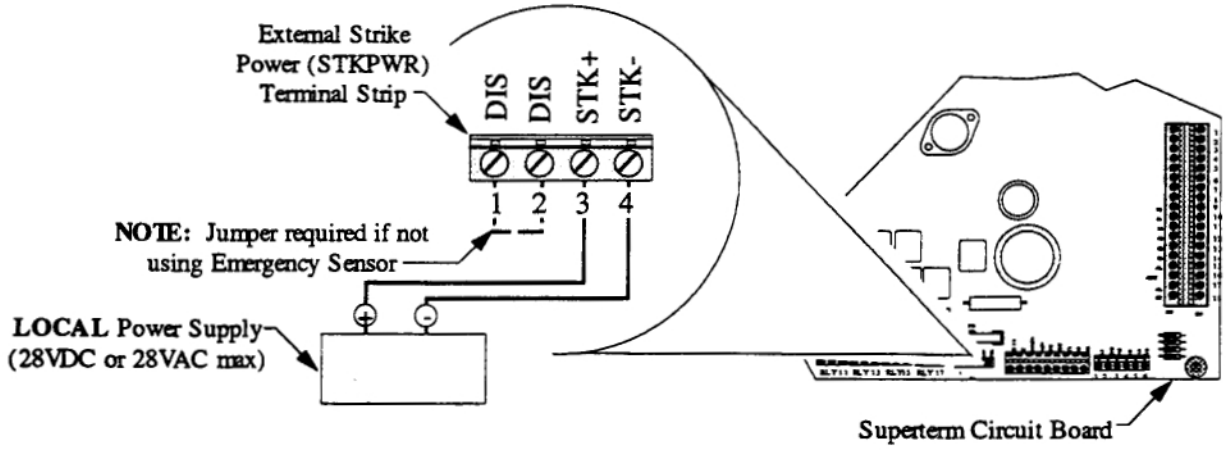


Figure 17 - LOCAL Power Supply Connection

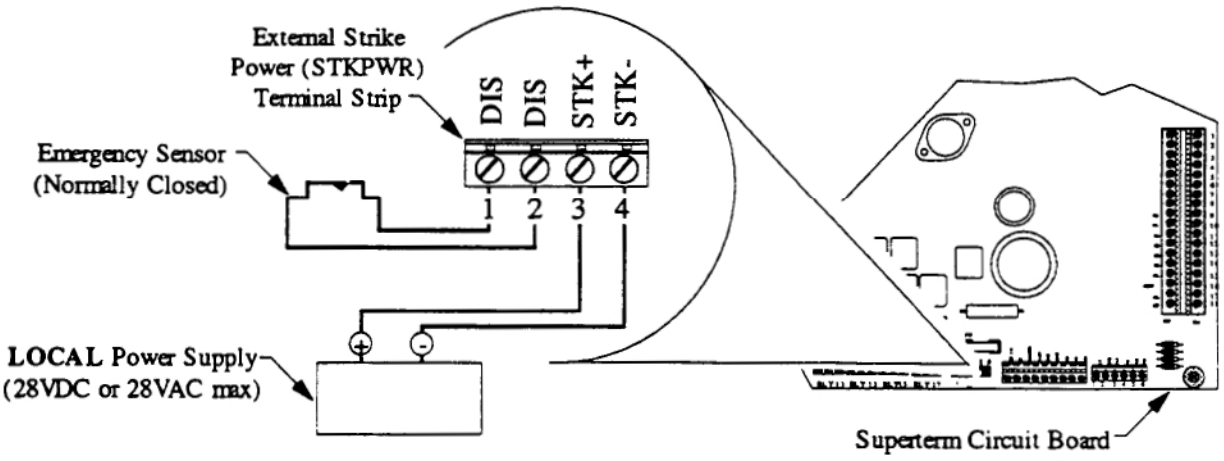


Figure 18 - Emergency Sensor Connection

LOCAL Power Door Strike Connection

All door strike relays operating in LOCAL power mode distribute strike power from the LOCAL power supply. However, each relay may be configured in one of two specific ways.

1) A door strike relay set in a Normally Closed (NC) configuration holds a door strike circuit closed until an event triggers the relay and releases the door strike.

2) A door strike relay set in a Normally Open (NO) configuration keeps a door strike circuit open until an event triggers the relay and engages the door strike.

NOTE: Operating the door strike relays with an emergency sensor requires Normally Closed (NC) conditions (power is disconnected from the door strike in emergency situations).

Door Strike Relay Connection - Normally Open

Table 18 lists the connections between the RLY#x terminal strip and the associated door strike for a Normally Open (NO) condition (see Figure 19).

Table 18 - Connection Table for Door Strike Relay - Normally Open (NO) Condition

Door Strike Signal	RLY#x Pin
Positive (+)	Pin 1
Common (-)	Pin 2

NOTE: Operating door strike relays on LOCAL power requires setting two jumpers per relay. Refer to page 72, Door Strike Jumper Settings, for specific information about setting the jumpers.

Door Strike Relay Connection - Normally Closed

Table 19 lists the connections between the RLY#x terminal strip and the associated door strike for a Normally Closed (NC) condition (see Figure 20).

Table 19 - Connection Table for Door Strike Relay - Normally Closed (NC) Condition

Door Strike Signal	RLY#x Pin
Positive (+)	Pin 3
Common (-)	Pin 2

NOTE: Operating door strike relays on LOCAL power requires setting two jumpers per relay. Refer to page 72, Door Strike Jumper Settings, for specific information about setting the jumpers.

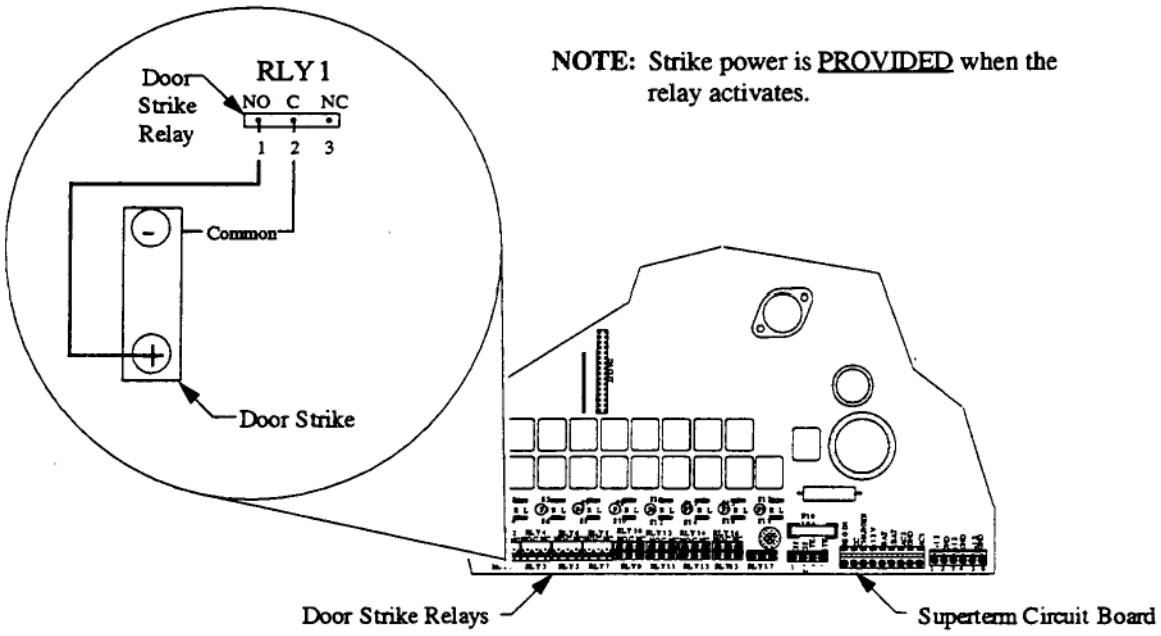


Figure 19 - LOCAL Power Door Strike Relay Connection - Normally Open (NO) Condition

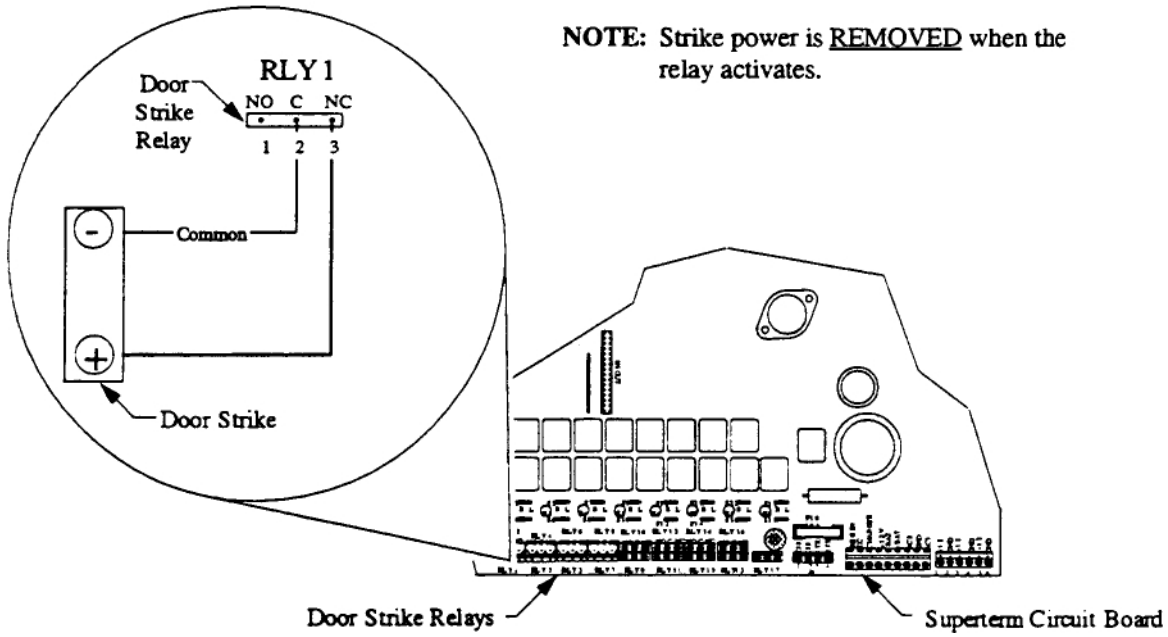


Figure 20 - LOCAL Power Door Strike Relay Connection - Normally Closed (NC) Condition

REMOTE Power Mode

In REMOTE power mode, each door strike operates from an individual power supply (typically a transformer mounted at the door site). In the REMOTE power mode, the door strike relays operate as conventional dry contacts and may be configured as Normally Open (NO) or Normally Closed (NC).

NOTES: Door strike relays operating in the REMOTE mode do not respond to an emergency sensor.

Operating a door strike relay in the REMOTE mode requires setting two jumpers per relay. Refer to page 72 for specific information about setting the door strike jumpers.

Door Strike Relay Connection - Normally Open

Table 20 lists the connections between the RLY#x terminal strip and the door strike for a Normally Open (NO) relay condition (see Figure 21).

Table 20 - Connection Table for Door Strike Relay - Normally Open (NO) Condition

Door Strike Signal	RLY#x
Positive (+)	Pin 1
Common (-)	Pin 2

NOTE: Operating door strike relays on REMOTE power requires setting two jumpers per relay. Refer to page 72, Door Strike Jumper Settings, for specific information about setting the jumpers.

Door Strike Relay Connection - Normally Closed

Table 21 lists the connections between the RLY#x terminal strip and the door strike for a Normally Closed (NC) relay condition (see Figure 22).

Table 21 - Connection Table for Door Strike Relay - Normally Closed (NC) Condition

Door Strike Signal	RLY#x
Positive (+)	Pin 3
Common (-)	Pin 2

NOTE: Operating door strike relays on REMOTE power requires setting two jumpers per relay. Refer to page 72, Door Strike Jumper Settings, for specific information about setting the jumpers.

Auxiliary Relay Connection

The Superterm supports eight auxiliary relays for controlling external devices including, door alarm shunts, cameras, temperature controls, intercoms, area lighting or any other device using electrical inputs to change the status of a control circuit.

Auxiliary devices only connect to even-numbered Superterm relays. The eight relays are located on the bottom center of the Superterm circuit board above the door strike relays.

The eight auxiliary relays are labeled: RLY 2; RLY 4; RLY 6; RLY 8; RLY 10; RLY 12; RLY 14; RLY 16.

Auxiliary Relay Power Requirements

The Superterm does not provide on-board power to the eight auxiliary relays. Each auxiliary relay may be used to switch an external signal.

Auxiliary Relay Connection - Normally Open (NO)

Table 22 lists the connections for an Auxiliary relay in a normally open configuration.

Table 22 - Connection Table for Auxiliary Relay - Normally Open (NO) Condition

Signal	RLY#x
Normally Open	Pin 1
Common	Pin 2

Aux Relay Connection - Normally Closed (NC)

Table 23 lists the connections for an Auxiliary relay in a normally closed configuration.

Table 23 - Connection Table for Auxiliary Relay - Normally Closed (NC) Condition

Signal	RLY#x
Normally Closed	Pin 3
Common	Pin 2

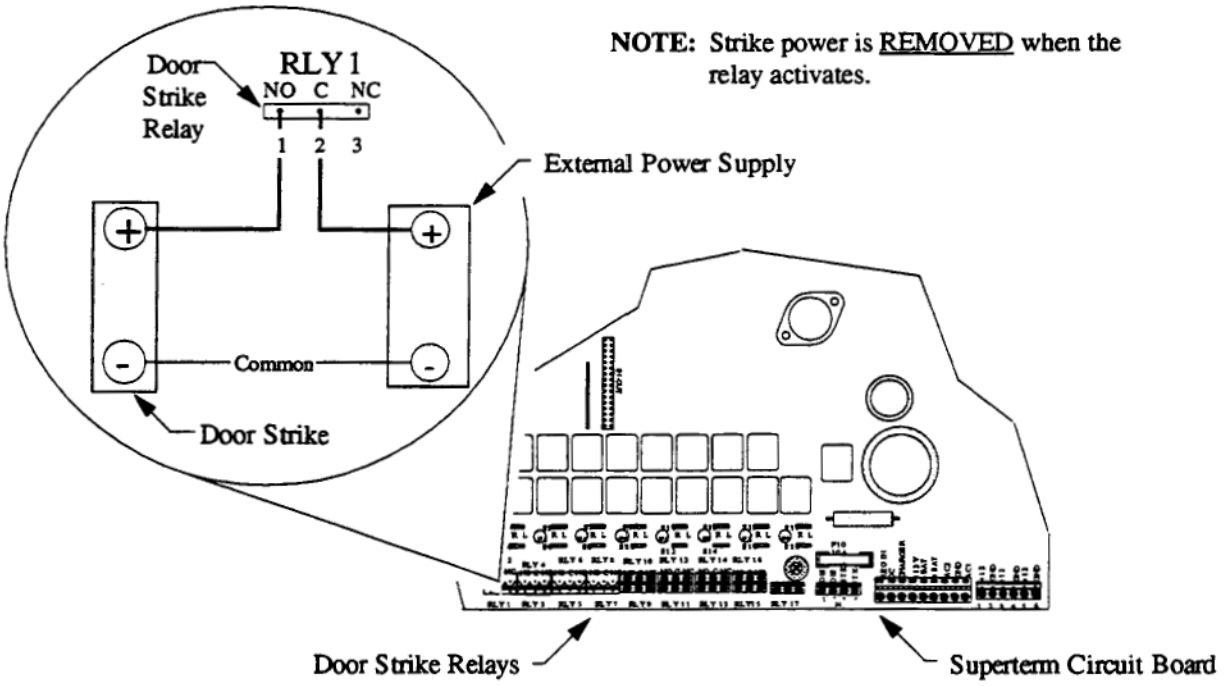


Figure 21 - REMOTE Power Door *Strike* Relay Connection - Normally Open (NO) Condition

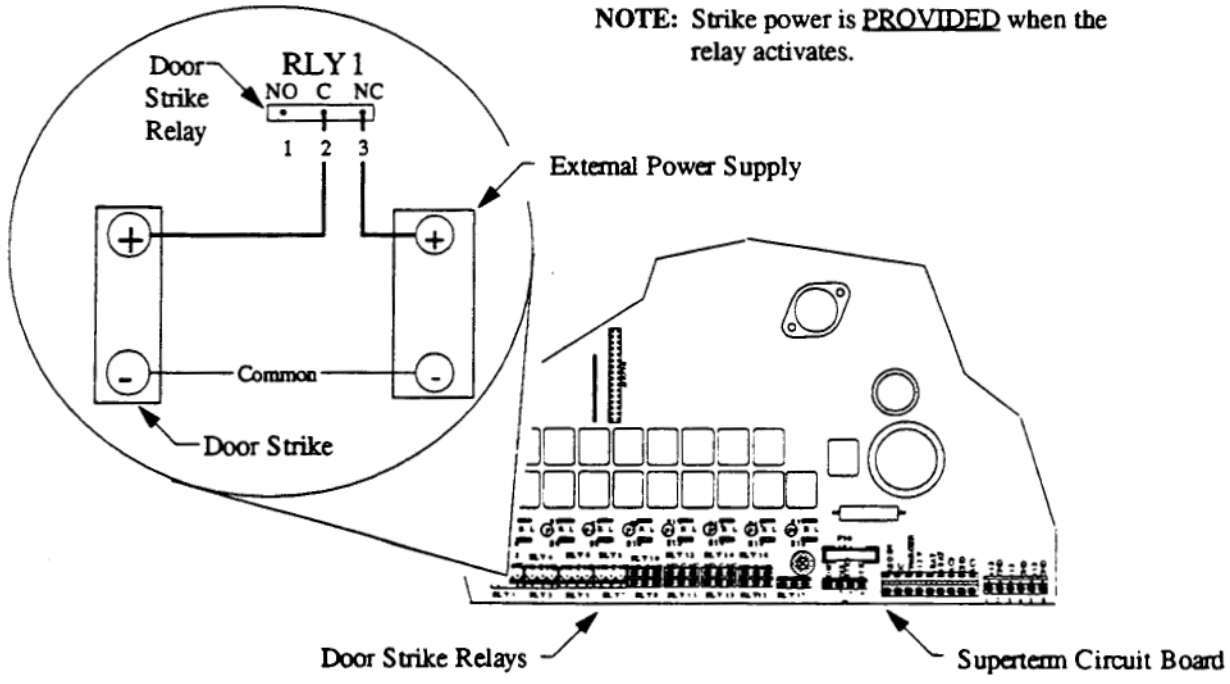


Figure 22 - REMOTE Power Door Strike Relay Connection - Normally Closed (NC) Condition

AUXILIARY POWER

The AUX POWER terminal strip (labeled12_V) provides +12VDC power outlets for a maximum of three expansion UO option boards or auxiliary devices. The AUX POWER terminal strip is located in the lower right-hand corner of the Superterm circuit board (see Figure 23). For specific information regarding expansion boards, refer to page 50, Expansion Input/Output Boards.

Table 24 lists the AUX POWER terminal strip pin numbers and their associated functions.

Table 24 - AUX POWER (12_V) Terminal Strip Functions

Pin	Function
1	+12
2	GND
3	+12
4	GND
5	+12
6	GND

NOTE: Combined 5VDC and 12VDC accessory current draw is limited to a total maximum value of 0.80 Amps for the basic Superterm version (without Expansion Power Supply). Please see **Capacities**, Page 10.

In the expanded Superterm Version, 12VDC current draw is limited to a maximum of 1 Amp (with Expansion Power Supply).

WARNING
Verify that the main power to the Superterm circuit board is OFF before connecting any optional devices.

WARNING
Observe Positive and Negative wire polarity between option boards and the Superterm.

Additional +12VDC Power Outlets

The third pin (Pin 3) of the DR1 through DR8 terminal strips provides +12VDC to suitable access control accessories (see Figure 24).

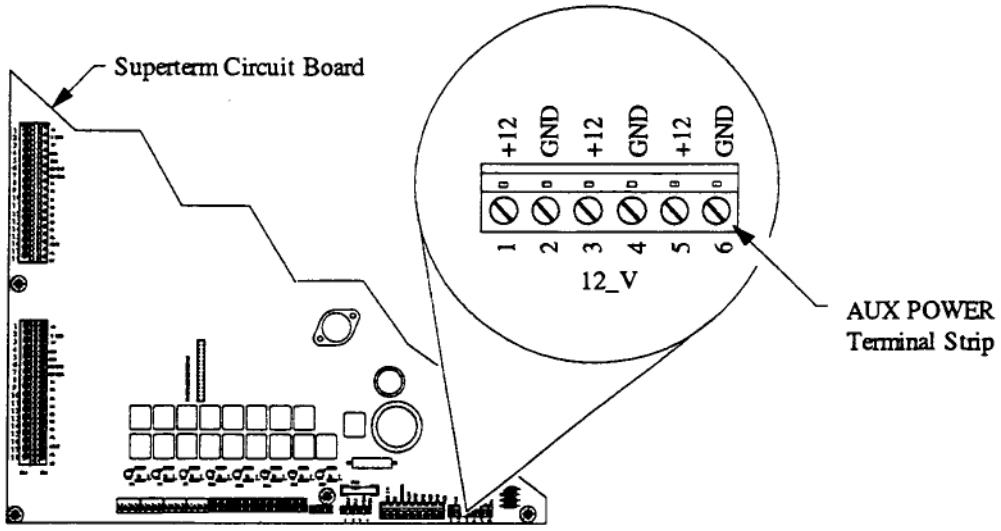


Figure 23 - Onboard +12VDC Power Supply Outlets

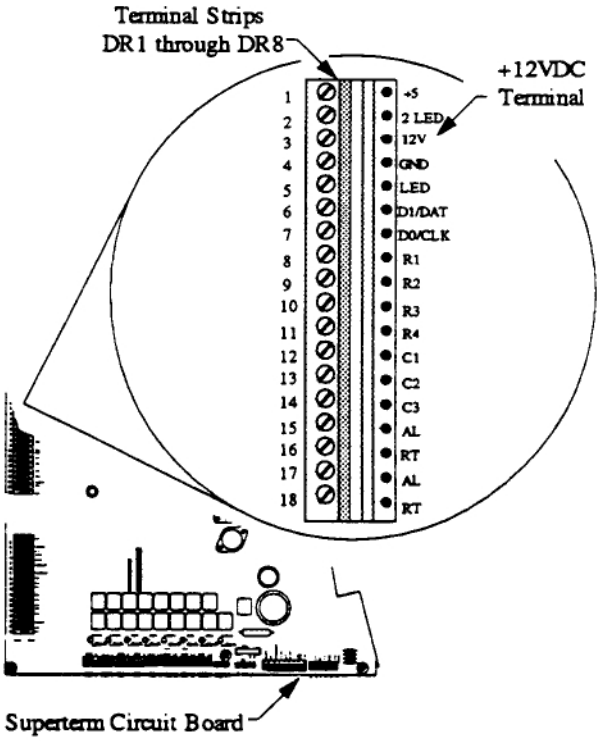


Figure 24 - Additional +12VDC Power Supply Outlets

ALARM CONNECTION

The Superterm has a total of 24 supervised alarm inputs. Sixteen alarm inputs are located on the DR1 through DR8 terminal strips, and are used for Request-to-Exit and Door Status sensor functions (see pages 18 and 19).

An additional eight auxiliary alarm inputs are located on the ALARM terminal strip located on the upper left-hand comer of the Superterm circuit board (see Figures 25 and 26). These auxiliary alarm inputs may be used for dry contact type inputs (unsupervised) or supervised alarms.

Supervised Alarms

Supervised alarms provide monitoring of alarm inputs for fault or tamper conditions. Three additional alarm states may be detected by installing two-1K Ohm) resistors near the alarm contacts.
In addition to the standard Normal and Abnormal alarm conditions, the supervised alarms report Open, Closed, and Fault conditions.

- An **Open** condition is the result of a cut wire.
- A **Closed** condition is the result of shorting the alarm contacts together.
- A **Fault** condition is the result of grounding one of the alarm wires.

Configuring an Alarm in the Supervised Condition

1) Use two 1K Ohm, 1/4W, ±5% carbon film resistors per alarm.
2) Install R 1 in parallel with the alarm contacts (see Figure 26).
3) Install R2 in series with the alarm input conductor.

NOTE: For maximum protection, install the resistors close to the alarm contacts and embed them in epoxy.

Table 25 lists the ALARM terminal strip pin numbers and the respective signals.

Table 25 - ALARM Terminal Strip Input Pins

Pin	Signal
1	AL 17
2	RT17
3	AL18
4	RT18
5	AL 19
6	RT19
7	AL20
8	RT20
9	AL21
10	RT21
11	AL22
12	RT22
13	AL23
14	RT23
15	AL24
16	RT24

Alarm Cable Requirements

Connecting alarm sensors to the Superterm board requires 22 AWG, stranded, shielded, cables with drain wires.

NOTE: DO NOT use twisted pair wires.

CAUTION
Keep all drain and cable shield wires between the Superterm and Keypads short. Connect drain and cable shield wires to the ground posts located on both sides of Superterm cabinet. DO NOT ground drain wires and cable shields at any other point.

Tamper Switch

The Superterm cabinet has a built-in tamper switch. The tamper switch is factory wired and requires no adjustment.

NOTE: When the Tamper Switch closes, all LEDs will extinguish (except AC on LBD1). Refer to page 74, LED Diagnostics, for more specific information.

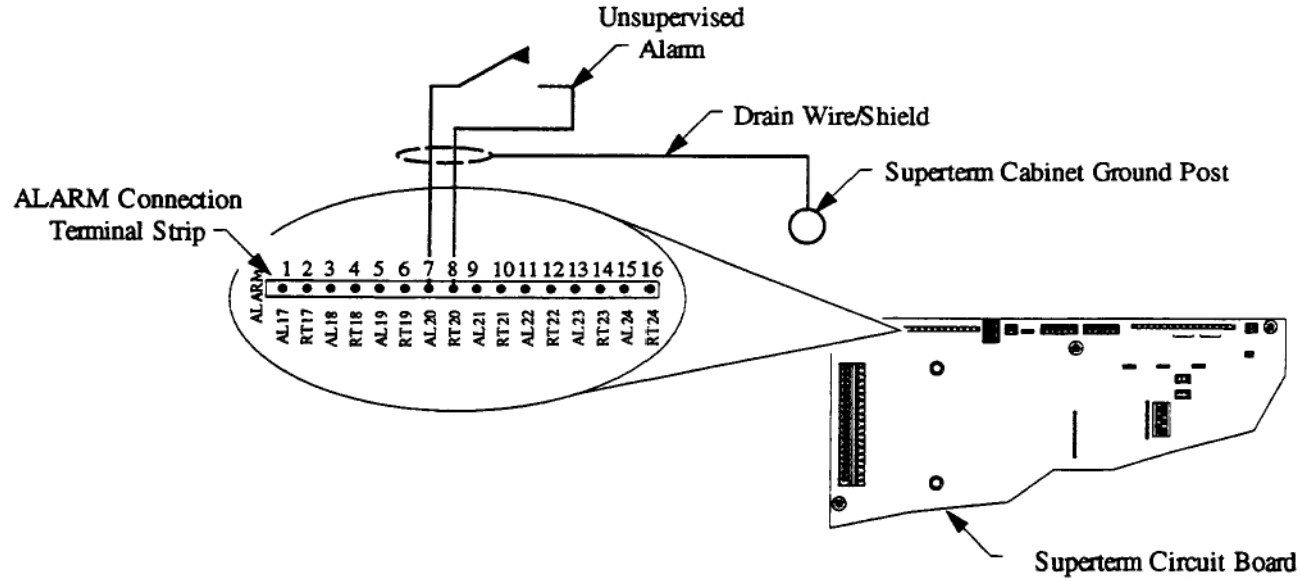


Figure 25 - ALARM Terminal Strip - Unsupervised Alarm Condition

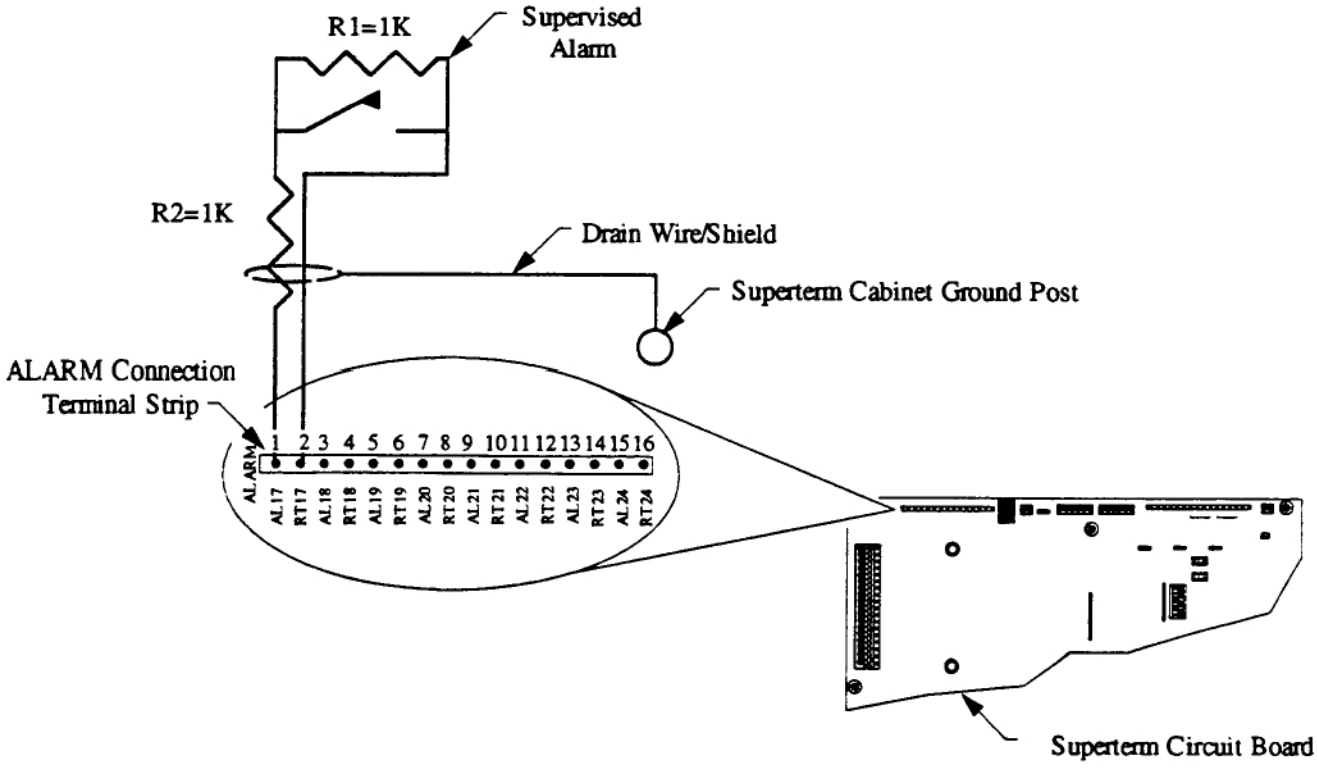


Figure 26 - ALARM Terminal Strip - Supervised Alarm Condition

COMMUNICATION CONNECTION

RS-232 Communications - Host Computer/Modem

Operating as a stand-alone system, the Superterm communicates with a host computer (directly or through a modem) through the RS-232 channel.

Proper RS-232 communications require observing the EIA standard pin definitions of Data Terminal Equipment (DTE) and Data Control Equipment (DCE).

NOTE: All RS-232 equipment made by Continental Instruments LLC, including the Superterm, are configured as DTE devices.

RS-232 Cable Requirements

RS-232 communications between the Superterm and a host computer/modem require stranded, 3 conductor, 22 AWG cable with shielding and a drain wire.
NOTE: DO NOT use twisted pair wires.

Table 26 lists the cable gauge-vs-length requirements for proper operation of the Superterm and the host computer.

Table 26 - RS-232 Cable Gauge-vs-Length

Unit	Distance	Wire Gauge
Host Computer/ Modem	50ft (15.2m) (Maximum)	22AWG Shielded w/Drain

NOTES: A host computer is typically connected to the RS-232 cable using either a DB9-S or a DB25-S connector. Modems are typically connected to the RS-232 cable using a DB25-P connector.

RS-232 Jumper Settings

RS-232 communications between the Superterm and a host computer require setting the 232-1 jumper on the Superterm board. Refer to page 72, 232-1 Jumper Setting, for specific information.

Address Setting

Operating the Superterm on the RS-232 channel requires setting a board address on DIP switch S 1 (address zero is not valid). Refer to page 36, Network Address Setting, For specific information.

Superterm to Host Computer/Modem Connection

Figure 27 shows a direct Superterm-to-host computer connection.

Figure 28 shows a Superterm-to-host computer connection through a modem.

NOTE: Set switch position 7 of Dip Switch S 1 on the Superterm to OFF when using a modem. Refer to page 36, for specific instructions on setting the S 1 DIP switch.

1) Connect the **Transmit** pin of the RS-232 device to POLL terminal strip pin number 5 (labeled RxD) (see Figure 28).
2) Connect the **Receive** pin of the RS-232 device to POLL terminal strip pin number 4 (labeled TxD).
3) Connect the **Ground** pin of the RS-232 device to POLL terminal strip pin number 6 (labeled GND).
4) Connect the RS-232 cabling drain wire/shield to GROUND at the host computer/modem end of the cable. ***Do Not*** connect the drain wire at the Superterm end of the cable.

Table 27 lists the connections between the POLL terminal strip and a host computer.

Table 27 - Connection Table for Host Computer

Signal	Superterm POLL Pin #	Host Computer DB9-S pin	Host Computer DB25-S pin
TXD	4	2	3
RXD	5	3	2
GND	6	5	7

Table 28 lists the connections between the Superterm POLL terminal strip and a modem.

Table 28 - Connection Table for Modem

Signal	Superterm POLL Pin#	Modem DB25-P
TXD	4	2
RXD	5	3
GND	6	7

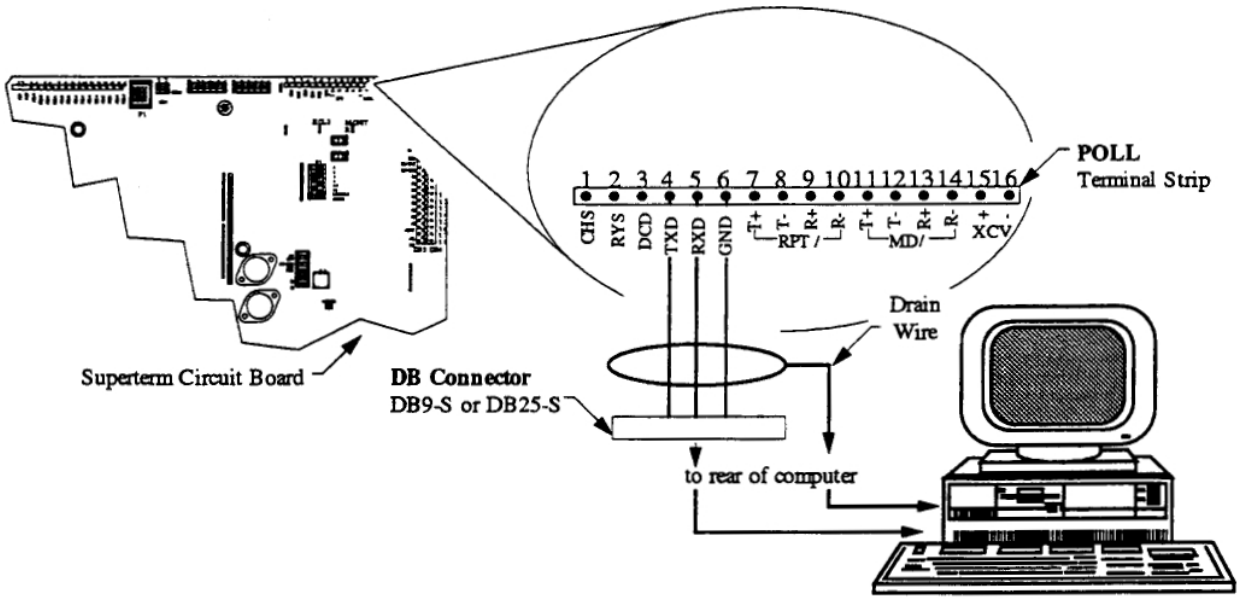


Figure 27 - Superterm-to-Host Computer Connection

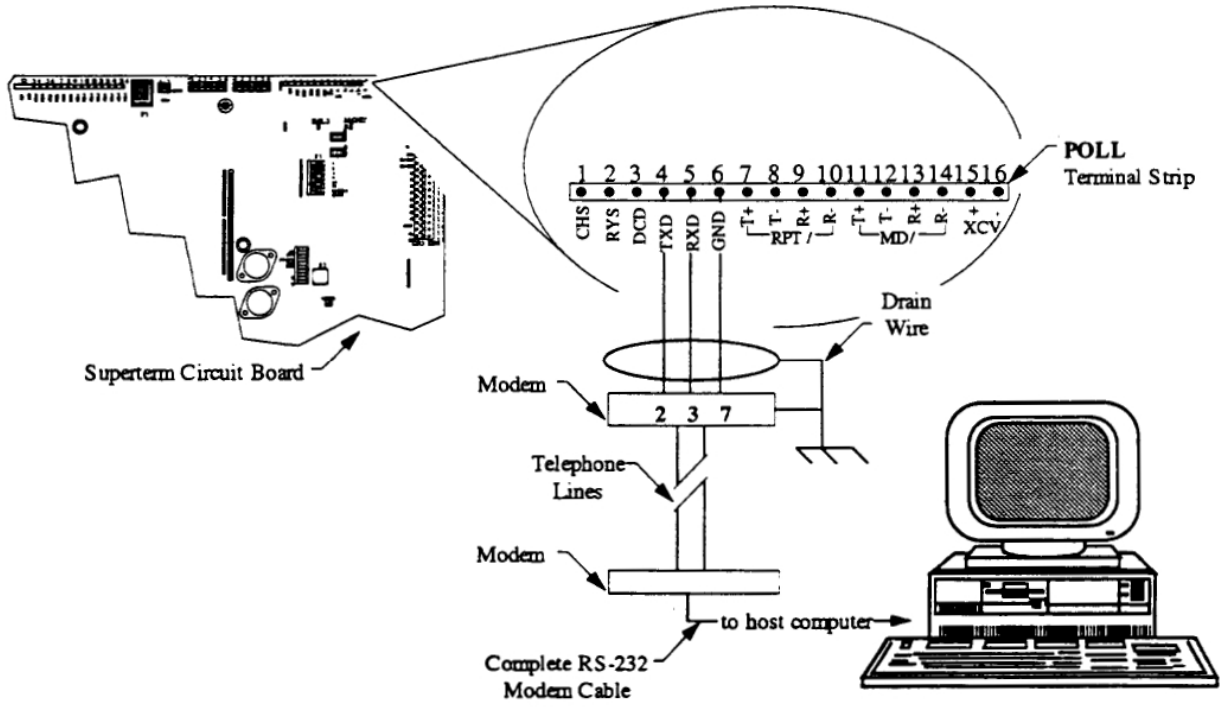


Figure 28 - Superterm-to-Modem-to-Computer Connection

Networking

The Superterm can be networked with a maximum of 62 other Superterm units or other Continental Instruments access control devices (Smarterm, Miniterm, Microterm). **NOTE:** Multidrop networks are limited to 32 access control devices.
The following network configurations are possible:

RS-232 to RS-422 Networks
RS-232 to RS-422 REPEAT Network
RS-232 to RS-422 MULTIDROP Network

RS-422 to RS-422 Networks
RS-422 to RS-422 REPEAT Network
RS-422 to RS-422 MULTIDROP Network

NOTES: If the first Superterm in the network is *less than 50* feet (15.2m) from the host computer, the first Superterm in the network may be used to convert the RS-232 polling signal to RS-422 for the remainder of the network.
If the first Superterm in the network is *more than 50* feet (15.2m) from the host computer, an RS-422 polling line converter is required.

Network Jumper Settings

The MODE1 and the EOL2 jumpers on each Superterm must be set depending on the type of network configuration.

Refer to page 66 for specific information regarding the EOL2 jumper.

Refer to page 70 for specific information regarding the MODE 1 jumper.

Network Cable Requirements

Networking multiple Superterms requires 4-conductor cable (2-two wire twisted pair), stranded, 22AWG, with shielding, and drain wire.

For REPEAT network configurations, cable length between EACH Superterm is restricted to a maximum length of 4000 feet (1220m).

For MULTIDROP network configurations, total cable length is restricted to a maximum of 4000 feet (1220m) between the FIRST Superterm and the LAST Superterm in the network.

Network Address Settings

Operating the Superterm with a host computer, or in a network, requires that each Superterm (and other devices) have an individual, unique address other than zero.

An 8-position DIP switch labeled S 1 mounted on the Superterm Circuit Board determines each Superterm's address (see Figure 29).

Table 29 lists 63 Superterm address switch positions.

NOTES: Address switch (S I) positions 7 and 8 are not used for networks connected directly to a host computer. Set both switches to the ON position.
If the network is connected to the host computer through a modem, the first Superterm in the network must have switch position 7 (Modem) set to the OFF position. All other Superterm units in the network must have switch position 7 set to ON.
Addresses shown in Figure 29 are for example purposes only.

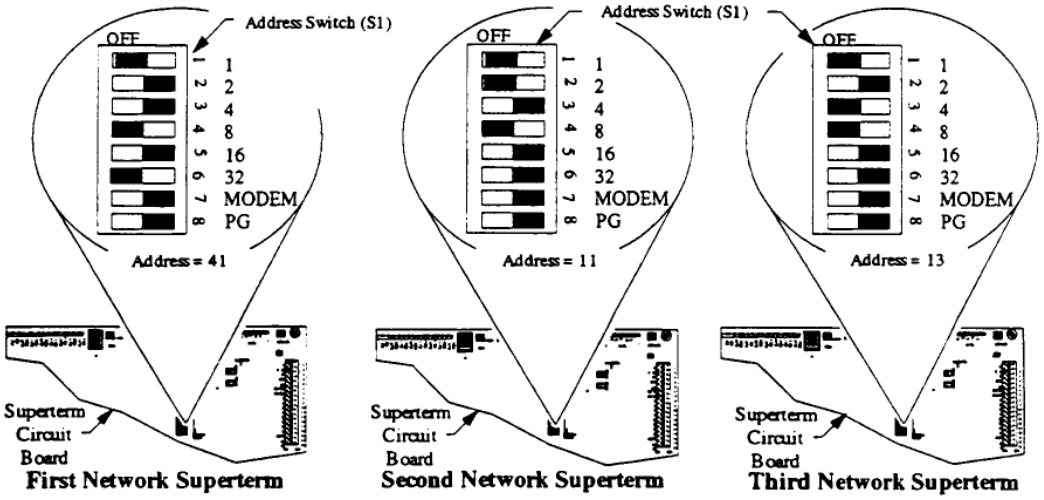


Figure 29 - Superterm Address Switch (S I) Location

Table 29 - Superterm Address Switch (S1) Positions						
Superterm Number	**Address Switch Position Number**					
	1	2	3	4	5	6
1	OFF	ON	ON	ON	ON	ON
2	ON	OFF	ON	ON	ON	ON
3	OFF	OFF	ON	ON	ON	ON
4	ON	ON	OFF	ON	ON	ON
5	OFF	ON	OFF	ON	ON	ON
6	ON	OFF	OFF	ON	ON	ON
7	OFF	OFF	OFF	ON	ON	ON
8	ON	ON	ON	OFF	ON	ON
9	OFF	ON	ON	OFF	ON	ON
10	ON	OFF	ON	OFF	ON	ON
11	OFF	OFF	ON	OFF	ON	ON
12	ON	ON	OFF	OFF	ON	ON
13	OFF	ON	OFF	OFF	ON	ON
14	ON	OFF	OFF	OFF	ON	ON
15	OFF	OFF	OFF	OFF	ON	ON
16	ON	ON	ON	ON	OFF	ON
17	OFF	ON	ON	ON	OFF	ON
18	ON	OFF	ON	ON	OFF	ON
19	OFF	OFF	ON	ON	OFF	ON
20	ON	ON	OFF	ON	OFF	ON
21	OFF	ON	OFF	ON	OFF	ON
22	ON	OFF	OFF	ON	OFF	ON
23	OFF	OFF	OFF	ON	OFF	ON
24	ON	ON	ON	OFF	OFF	ON
25	OFF	ON	ON	OFF	OFF	ON
26	ON	OFF	ON	OFF	OFF	ON
27	OFF	OFF	ON	OFF	OFF	ON
28	ON	ON	OFF	OFF	OFF	ON
29	OFF	ON	OFF	OFF	OFF	ON
30	ON	OFF	OFF	OFF	OFF	ON
31	OFF	OFF	OFF	OFF	OFF	OFF
32	ON	ON	ON	ON	ON	OFF
33	OFF	ON	ON	ON	ON	OFF
34	ON	OFF	ON	ON	ON	OFF
35	OFF	OFF	ON	ON	ON	OFF
36	ON	ON	OFF	ON	ON	OFF
37	OFF	ON	OFF	ON	ON	OFF
38	ON	OFF	OFF	ON	ON	OFF
39	OFF	OFF	OFF	ON	ON	OFF
40	ON	ON	ON	OFF	ON	OFF
41	OFF	ON	ON	OFF	ON	OFF
42	ON	OFF	ON	OFF	ON	OFF
43	OFF	OFF	ON	OFF	ON	OFF
44	ON	ON	OFF	OFF	ON	OFF
45	OFF	ON	OFF	OFF	ON	OFF
46	ON	OFF	OFF	OFF	ON	OFF
47	OFF	OFF	OFF	OFF	ON	OFF
48	ON	ON	ON	ON	OFF	OFF
49	OFF	ON	ON	ON	OFF	OFF
50	ON	OFF	ON	ON	OFF	OFF
51	OFF	OFF	ON	ON	OFF	OFF
52	ON	ON	OFF	ON	OFF	OFF
53	OFF	ON	OFF	ON	OFF	OFF
54	ON	OFF	OFF	ON	OFF	OFF
55	OFF	OFF	OFF	ON	OFF	OFF
56	ON	ON	ON	OFF	OFF	OFF
57	OFF	ON	ON	OFF	OFF	OFF
58	ON	OFF	ON	OFF	OFF	OFF
59	OFF	OFF	ON	OFF	OFF	OFF
60	ON	ON	OFF	OFF	OFF	OFF
61	OFF	ON	OFF	OFF	OFF	OFF
62	ON	OFF	OFF	OFF	OFF	OFF
63	OFF	OFF	OFF	OFF	OFF	OFF

RS-232 to RS-422 REPEAT Network

If the first Superterm in the network is less than 50 feet (15.2m) from the host computer, it may be used to convert the RS-232 polling signal from the host to RS-422 for the remainder of the network.

- Connect the first Superterm to the RS-232 port of the host computer.
- Connect the remainder of the network using the Superterm's RS-422 ports.

Refer to Figure 30 for a typical REPEAT mode network connection diagram.
Table 30 lists the required connections for an RS-232 to RS-422 REPEAT network.

RS-232 to RS-422 REPEAT Jumper Setting

To convert an RS-232 signal to an RS-422 signal, the first Superterm unit in the network must be in REPEAT mode.

Operating a Superterm network in the REPEAT mode requires setting the MODEL and EOL2 jumpers.

Refer to page 70 for information regarding setting the MODE1 jumper.

Refer to page 66 for information regarding setting the EOL2 jumper

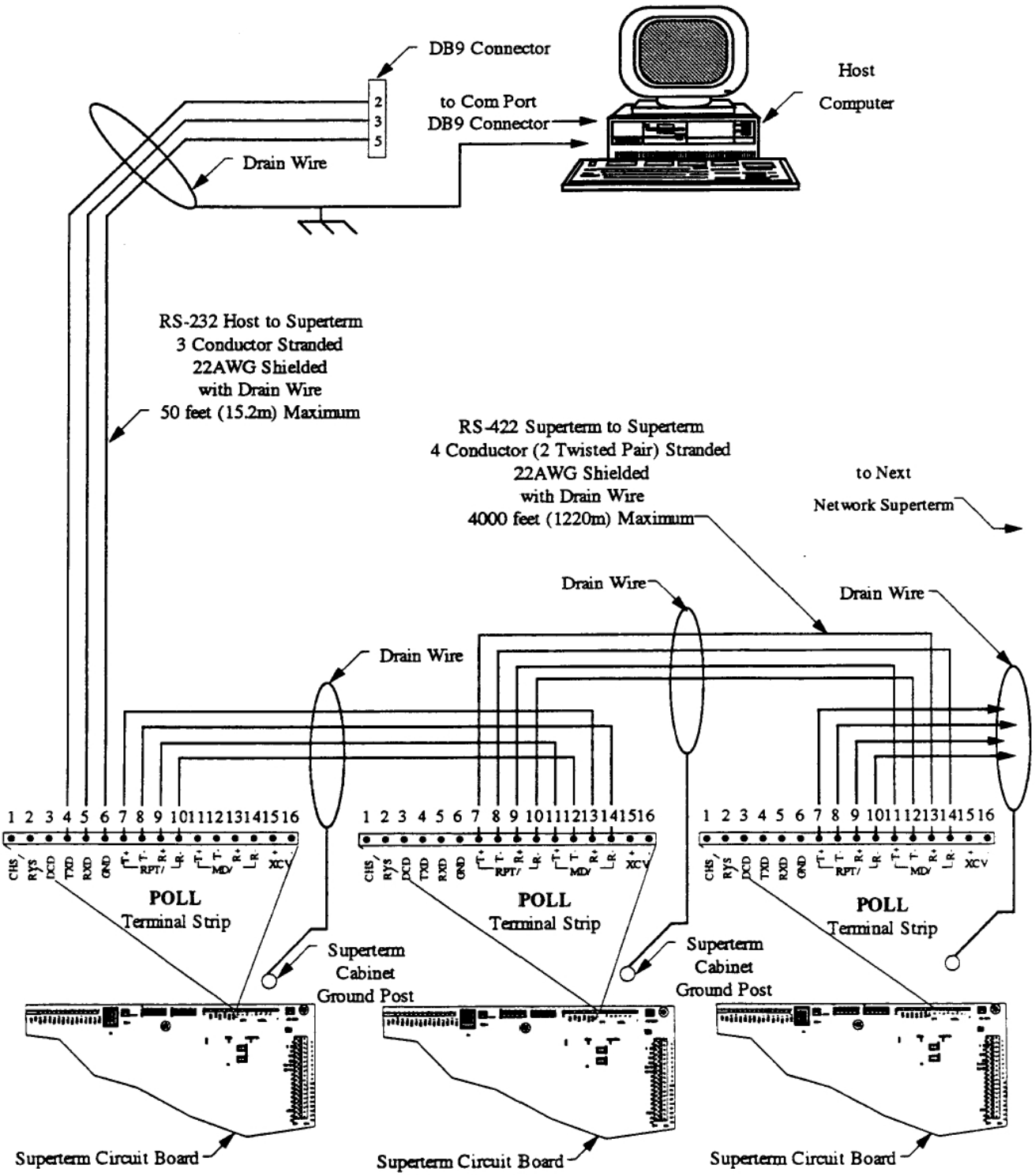
RS-232 to RS-422 REPEAT Drain Wires

The drain wires for all RS-422 cables in the network must be grounded to the individual Superterm's Cabinet Ground Post (see Figure 30). Ground RS-422 cables at the end closest to the host computer.

NOTE: Ground the drain wire for the RS-232 cables at the host computer end of the cable.

Table 30 - RS-232 to RS-422 REPEAT Network Connections

Host Computer	**Superterm #1 REPEAT**	**Superterm #2 REPEAT**	**Superterm 3# REPEAT**	**Superterm #4 REPEAT**	**to next Superterm REPEAT**
	EOL2 jumper = IN	EOL2 jumper = IN	EOL2 jumper = IN	EOL2 jumper = IN	EOL2 jumper = IN
Signal	Connector/Pin	Connector/Pin	Connector/Pin	Connector/Pin	Connector/Pin
RS-232 RXD	POLL 4 (TXD)				
RS-232 TXD	POLL 5 (RXD)				
RS-232 GND	POLL 6 (GND)				
	POLL 7 (RPT/T+)	POLL 13 (MD/R+)			
	POLL 8 (RPT/T-)	POLL 14 (MD/R-)			
	POLL 9 (RPT/R+)	POLL 11 (MD/T+)			
	POLL 10 (RPT/R-)	POLL 12 (MD/T-)			
		POLL 7 (RPT/T+)	POLL 13 (MD/R+)		
		POLL 8 (RPT/T-)	POLL 14 (MD/R-)		
		POLL 9 (RPT/R+)	POLL 11 (MD/T+		
		POLL 10 (RPT/R-)	POLL 12 (MD/T-)		
			POLL 7 (RPT/T+)	POLL 13 (MD/R+)	>>>>
			POLL 8 (RPT/T-)	POLL 14 (MD/R-)	>>>>
			POLL 9 (RPT/R+)	POLL 11 (MD/T+)	>>>>
			POLL 10 (RPT/R-)	POLL 12 (MD/T-)	>>>>



First Network Superterm
REPEAT Mode
MODE 1 Jumper = RPT (pins 1 and 2)
EOL2 Jumper= IN (pins 1 and 2)

Second Network Superterm
REPEAT Mode
MODE1 Jumper = RPT (pins 1 and 2)
EOL2 Jumper = IN (pins 1 and 2)

Third Network Superterm
REPEAT Mode
MODE 1 Jumper =RPT (pins 1 and 2)
EOL2 Jumper = IN (pins 1 and 2)

Figure 30 - Superterm RS-232 -to- RS-422 REPEAT Network Connection

RS-232 to RS-422 MULTIDROP Network

Figure 31 shows the required connections for an RS-232 to RS-422 MULTIDROP network.

- Connect the first Superterm to the RS-232 port of the host computer.
- Connect the remainder of the network using the Superterm's RS-422 ports.

Table 31 lists the required connections for an RS-232 to RS422 MULTIDROP network.

RS-232 to RS-422 MULTIDROP Drain Wires

The drain wires for all RS-422 cables in a MULTIDROP network must be connected together (isolated from the boards) and connected to the ground post at the FIRST Superterm in the network (the Superterm unit CLOSEST to the host computer).

RS-232 to RS-422 MUTIDROP Jumper Setting

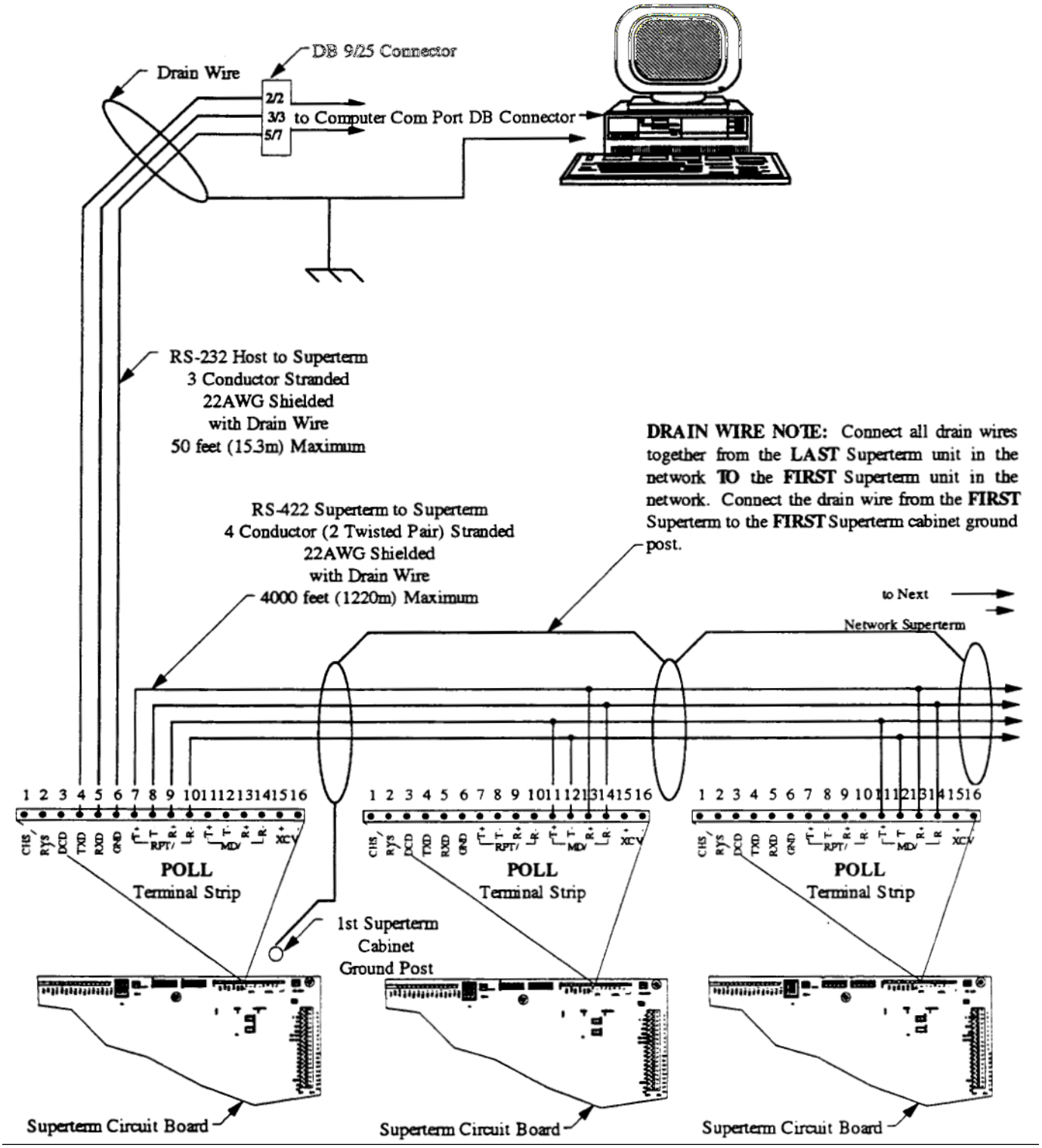
Operating a Superterm network in the MULTIDROP mode requires setting the MODE 1 and EOL2 jumpers.

Refer to page 70 for information regarding setting the MODE1 jumper.

Refer to page 66 for information regarding setting the EOL2 jumper.

Table 31- RS-232 to RS-422 MULTIDROP Network Connections

Host Computer	Superterm #1	Superterm #2	Superterm 3#	Last Superterm
	MODE1 jumper = RPT EOL2 jumper = IN	MODE1 jumper = MD EOL2 jumper = OUT	MODEL jumper = MD EOL2 jumper = OUT	MODE1 jumper = MD EOL2 jumper = IN
Signal	**Connector/Pin**	**Connector/Pin**	**Connector/Pin**	**Connector/Pin**
RS-232 RXD RS-232 TXD RS-232 GND	POLL 4 (TXD) POLL 5 (RXD) POLL 6 (GND)			
	POLL 7 (RPT/T+) POLL 8 (RPT/T-) POLL 9 (RPT/R+) POLL 10 (RPT/R-)	POLL 13 (MD/R+) POLL 14 (MD/R-) POLL 11 (MD/T+) POLL 12 (MD/T-)	POLL 13 (MD/R+) POLL 14 (MD/R-) POLL 11(MD/T+ POLL 12 (MD/T-)	>> POLL 13 (MD/R+) >> POLL 14 (MD/R-) >> POLL 11 (MD/T+) >> POLL 12 (MD/T-)



First Network Superterm
REPEAT Mode
MODE1 Jumper = RPT (pins 1 and 2)
EOL2 Jumper = IN (pins I and 2)

Second Network Superterm
MULTIDROP Mode
MODE 1 Jumper= MD (pins 2 and 3)
EOL2 Jumper = OUT (pins 2 and 3)

Third Network Superterm
MULTIDROP Mode
MODE1 Jumper= MD (pins 2 and 3)
EOL2 Jumper = OUT (pins 2 and 3)
NOTE: Set the EOL2 jumper for the last

Figure 31 - Superterm RS-232 -to- RS-422 MULTIDROP Network Connection

RS-422 to RS-422 REPEAT Network

If the first Superterm in a network is more than 50 feet (15.2m) from the host computer, the polling line from the host computer must use RS-422 standards.

A Continental Instruments RS-422 Polling Line Converter may be used at the host computer to convert RS-232 to RS-422.

Figure 32 shows the required connections for an RS-422-toRS-422 REPEAT network.

Table 32 lists the necessary connections between:

- A host computer and the first Superterm in the network,

and

- The first Superterm in the network and the remaining Superterm (62 maximum) in a network.

RS-422 to RS-422 REPEAT Drain Wires

Ground the drain wires for all RS-422 cables in the network at each individual Superterm in the network.

RS-422 to RS-422 REPEAT Jumper Setting

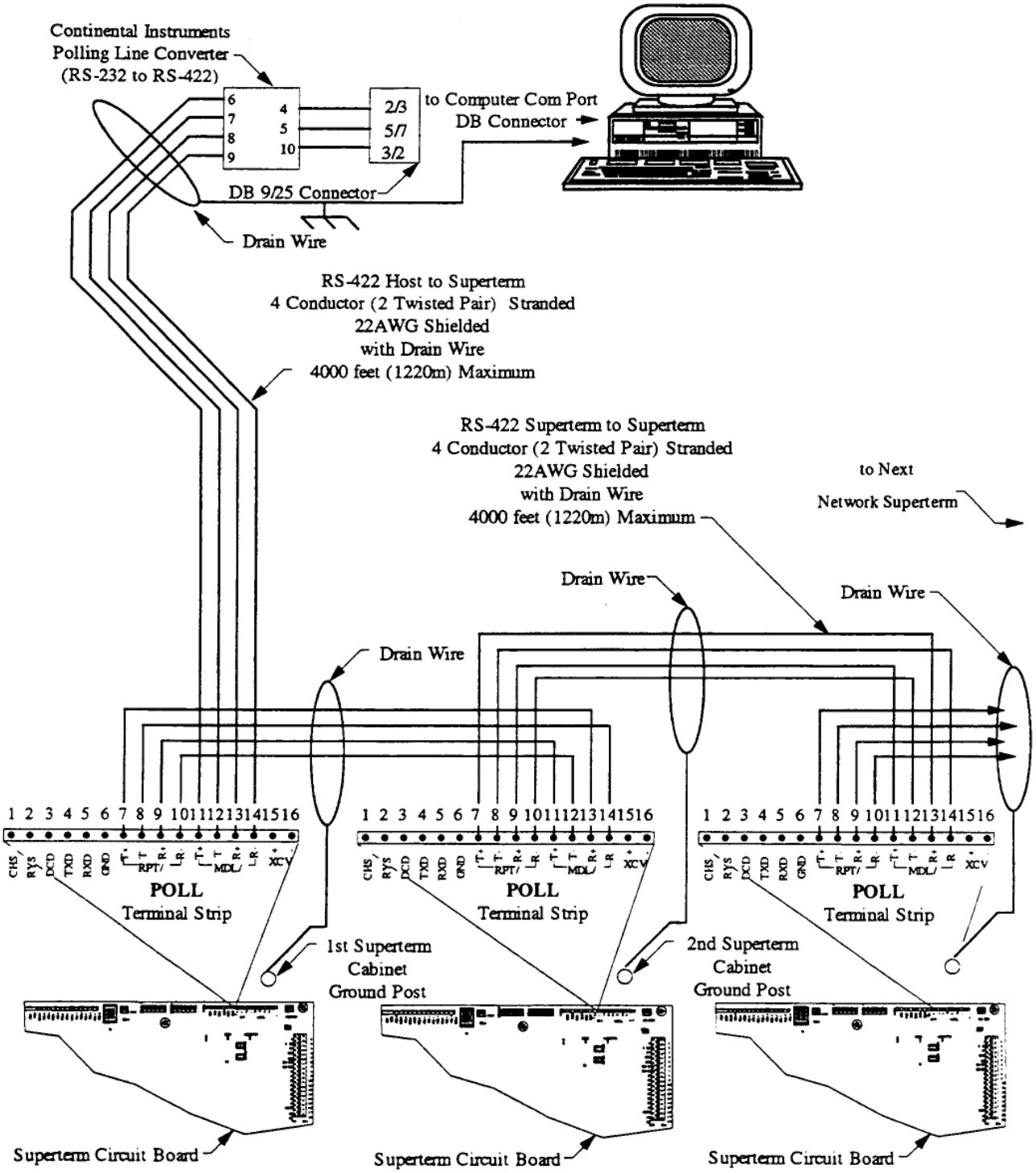
Operating a Superterm network in the REPEAT mode requires setting the MODE 1 jumper and the EOL2 jumper.

Refer to page 70 for information regarding setting the MODE1 jumper.

Refer to page 66 for information regarding setting the EOL2 jumper.

Table 32 - RS-422 to RS-422 REPEAT Network Connections

Host Computer	**Superterm #1**	**Superterm #2**	**Superterm 3#**	**Superterm #4**	**next Superterm**
	MODE1 jumper= RPT	MODE1 jumper= RPT	MODE1 jumper= RPT	MODE1 jumper= RPT	MODE1 jumper= RPT
Signal	EOL2 jumper = IN Connector/Pin	EOL2 jumper = IN Connector/Pin	EOL2 jumper = IN Connector/Pin	EOL2 jumper = IN Connector/Pin	EOL2 jumper = IN Connector/Pin
RS-422 TXD+ RS-422 TXD- RS-422 RXD+ RS-422 RXD-	POLL 13 (MD/R+) POLL 14 (MD/R-) POLL 11 (MD/T+) POLL 12 (MD/T-)				
	POLL 7 (RPT/T+) POLL 8 (RPT/T-) POLL 9 (RPT/R+ POLL 10 (RPT/R-)	POLL 13 (MD/R+) POLL 14 (MD/R-) POLL 11 (MD/T+) POLL 12 (MD/T-)			
		POLL 7 (RPT/T+) POLL 8 (RPT/T-) POLL 9 (RPT/R+) POLL 10 (RPT/R-)	POLL 13 (MD/R+) POLL 14 (MD/R-) POLL 11 (MD/T+ POLL 12 (MD/T-)		
			POLL 7 (RPT/T+) POLL 8 (RPT/T-) POLL 9 (RPT/R+) POLL 10 (RPT/R-)	POLL 13 (MD/R+) POLL 14 (MD/R-) POLL 11 (MD/T+) POLL 12 (MD/T-)	>>>> >>>> >>>> >>>>



Note: Polling Line Converter not evaluated by ETL.

First Network Superterm
REPEAT Mode
MODE1 Jumper = RPT (pins 1 and 2)
EOL2 Jumper = IN (pins 1 and 2)

Second Network Superterm
REPEAT Mode
MODEL Jumper = RPT (pins 1 and 2)
EOL2 Jumper = IN (pins 1 and 2)

Third Network Superterm
REPEAT Mode
MODE1 Jumper = RPT (pins 1 and 2)
EOL2 Jumper = IN (pins 1 and 2)

Figure 32 - Superterm RS-422 to RS-422 REPEAT Network Connection

RS-422 to RS-422 MULTIDROP Network

Figure 33 shows the required connections for an RS-422-toRS-422 MULTIDROP network.

Table 33 lists the necessary connections between:

- A host computer and the first Superterm in the network,

and

- The first Superterm in the network and the following Superterms (32 maximum) in a network.

RS-422 to RS-422 MULTIDROP Drain Wires

Ground the drain wires for all RS-422 cables in the network to the Superterm ground posts.

NOTE: Connect all drain wires together starting at the LAST Superterm in the network and working toward the FIRST Superterm in the network.

Connect the drain wire from the FIRST Superterm in the network to the drain wire at the Polling Line Converter (see Figure 33).
Connect the drain wire from the Polling Line Converter to the ground at the rear of the host computer.

RS-422 to RS-422 MULTIDROP Jumper Setting

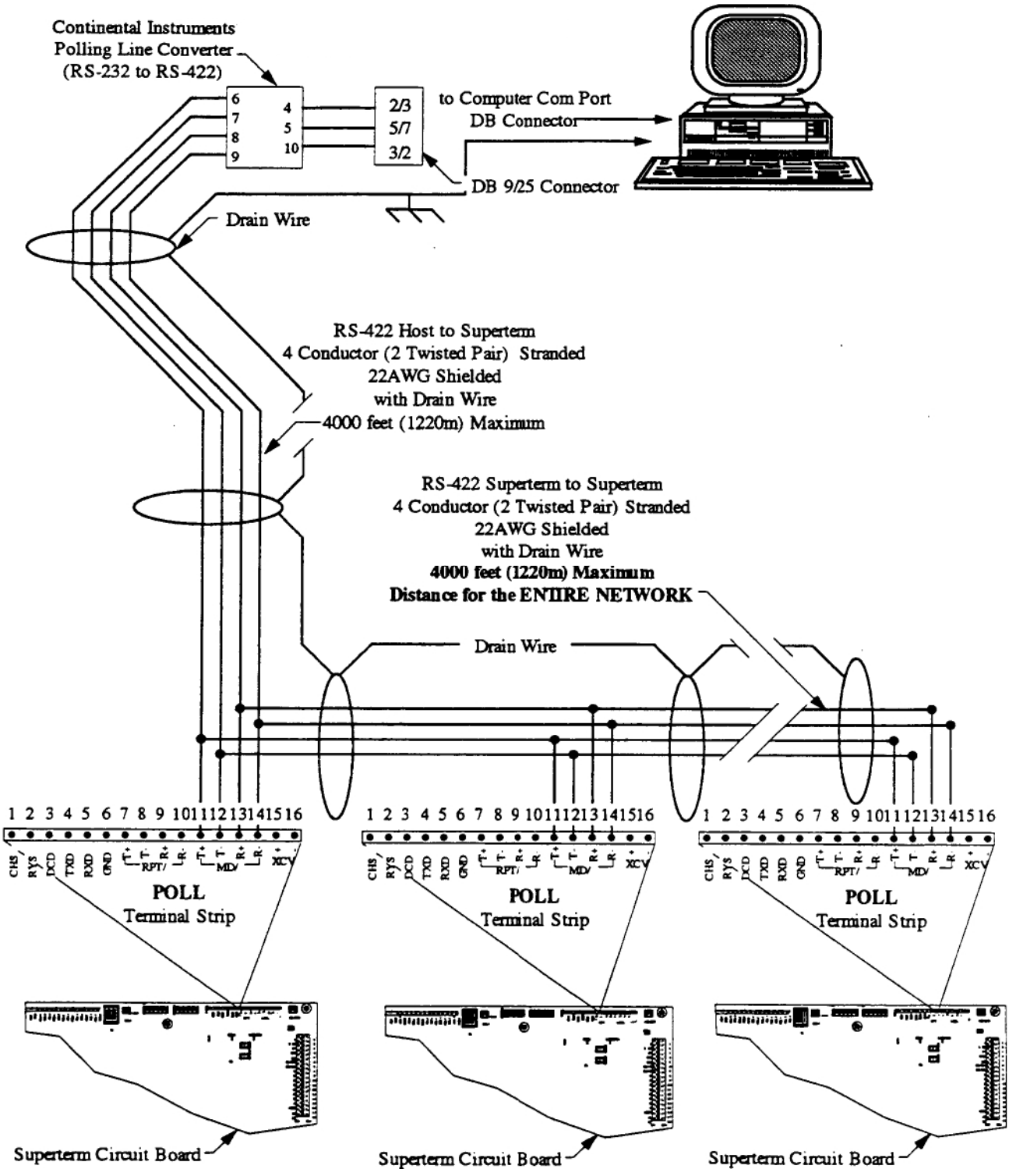
Operating a Superterm network in the MULTIDROP mode requires setting the MODE 1 and EOL2 jumpers.

Refer to page 70 for information regarding setting the MODE I jumper.

Refer to page 66 for information regarding setting the EOL2 jumper.

Table 33 - RS-422 to RS-422 MULTIDROP Network Connections

Host Computer	Superterm #1	Superterm #2	Superterm 3#	Superterm #4	Last Superterm
	MODE1 jumper= MD	MODE1 jumper= MD	MODE1 jumper= MD	MODE1 jumper= MD	MODE1 jumper= MD
	EOL2 jumper = OUT	EOL2 jumper = OUT	EOL2 jumper = OUT	EOL2 jumper = OUT	EOL2 jumper = IN
Signal	**Connector/Pin**	**Connector/Pin**	**Connector/Pin**	**Connector/Pin**	**Connector/Pin**
RS-422 TXD+	POLL 13 (MD/R+)	POLL 13 (MD/R+)	POLL 13 (MD/R+)	POLL 13 (MD/R+)	>> POLL 13 (MD/R+)
RS-422 TXD-	POLL 14 (MD/R-)	POLL 14 (MD/R-)	POLL 14 (MD/R-)	POLL 14 (MD/R-)	>> POLL 14 (MD/R-)
RS-422 RXD+	POLL 11 (MD/T+)	POLL 11 (MD/T+)	POLL 11 (MD/T+	POLL 11 (MD/T+)	>> POLL 11 (MD/T+)
RS-422 RXD-	POLL 12 (MD/T-)	POLL 12 (MD/T-)	POLL 12 (MD/T-)	POLL 12 (MD/T-)	>> POLL 12 (MDT-)



First Network Superterm
MULTIDROP Mode
MODE I Jumper= MD (pins 2 and 3)
EOL2 Jumper = OUT (pins 2 and 3)

Last Network Superterm
MULTIDROP Mode
MODE 1 Jumper = MD (pins 2 and 3)
EOL2 Jumper = IN (pins 1 and 2)

Second Network Superterm
MULTIDROP Mode
MODE I Jumper= MD (pins 2 and 3)
EOL2 Jumper = OUT (pins 2 and 3)

Figure 33- RS-422 to RS-422 MULTIDROP Network Connection

Auxiliary Communications Channels

The Superterm has three additional terminal strips for use with auxiliary RS-232 and RS-485 devices. The COM1 and COM2 terminal strips are RS-232 channels for use with printers, CRTs and other similar devices. The XTM port is used with RS-485 devices.

NOTE: Only two of the three auxiliary channels may be used at the same time. The COM 1 terminal strip is always enabled while the COM2 or the XTM terminal strip is selected via a jumper.

COM1 Terminal Strip Connection

A printer connects to the COM1 terminal strip via a DB25-P connector (see Figure 34).
Connect the COM1 RS-232 cable drain wire/shield to GROUND at the printer end of the cable. DO NOT connect the drain wire/shield at the Superterm end of the cable.

Table 34 lists the connections between the COM1 terminal strip and a printer.

Table 34 - Connection Table for COM1 Terminal Strip

COM1 Pin #	Function	DB-25P Pin #
4	TXD	3
5	RXD	2
6	GND	7

Printer Cable Requirements

Printer-to-Superterm connections require a 22AWG, 3 conductor, stranded, shielded cable with drain wire.

NOTE: Cable length between the Superterm and a printer is limited to a maximum of 50ft (15m).

Table 35 lists the cable gauge-vs-length requirements for proper operation of the Superterm and a printer.

Table 35 -- Cable Requirements for Printer Connection

Unit	Distance (maximum)	Wire Gauge
Printer	50 ft/15m	22AWG Shielded w/drain

Printer Setup Parameters

Proper operation between the Superterm and a printer requires that the printer be set to the following parameters:

Baud Rate:	9600
Parity:	None
Data Bits:	8
Stop Bits:	1

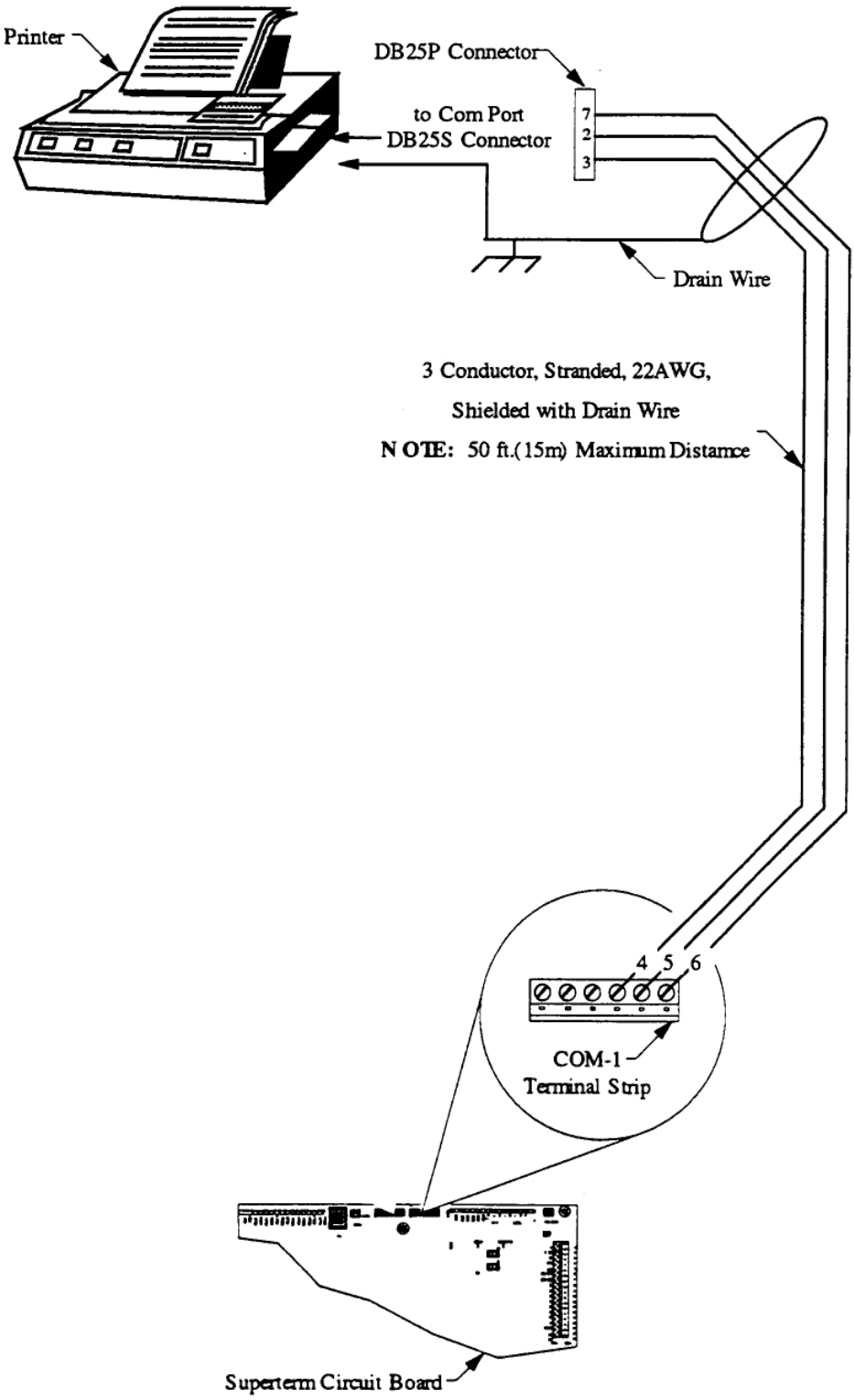


Figure 34- COM1 Terminal Strip Connection

COM2 Terminal Strip Connection

An auxiliary RS-232 device connects to the Superterm through the COM2 terminal strip (see Figure 35).

Table 36 lists the connections between the COM2 terminal strip and a RS-232 device.

Table 36 - Connection Table for COM2 Terminal Strip

COM2 Pin #	Function
4	TXD
5	RXD
6	GND

NOTE: Proper operation of the Superterm and an RS-232 device requires setting the COM2 jumper. Refer to page 68 for specific information regarding setting the COM2 jumper.

RS-232 Cable Requirements

RS-232 device connections to the COM2 terminal strip require a 22AWG, 3-conductor, stranded, shielded cable with drain wire.
NOTE: Cable length between the Superterm and an RS-232 device is limited to a maximum of 50 ft (15m).

Table 37 lists the cable gauge-vs-length requirements for proper operation of the Superterm and the RS-232 device.

Table 37 - Cable Requirements for RS-232 Connection

Unit	Distance (maximum)	Wire Gauge
RS-232 Device	50 ft/15m	22AWG Shielded w/drain

XTM Terminal Strip Connections

An auxiliary RS-485 device connects to the Superterm through the XTM terminal strip (see Figure 35).

Table 38 lists the connections between the XTM terminal strip and a RS-485 device.

Table 38 - Connection Table for XTM Terminal Strip

XTM Pin #	Function
1	XTM+
2	XTM-

NOTE: Proper operation of the Superterm and an RS-485 device requires setting the COM2 jumper. Refer to page 68 for specific information regarding setting the COM2 jumper.

RS-485 Cable Requirements

RS-485 connections to the XTM terminal strip require a 22AWG, 2-conductor, stranded, shielded cable with drain wire.

NOTES: The drain wire/shield connects to the Superterm cabinet ground post (see Figure 35).

Cable length between the Superterm and an RS-485 device is limited to a maximum of 4000 ft (1220m).

Table 39 lists the cable gauge-vs-length requirements for proper operation of the Superterm and the RS-485 device.

Table 39 -- Cable Requirements for RS-485 Connection

Unit	Distance (maximum)	Wire Gauge
RS-485 Device	4000 ft/1220m	22AWG Shielded w/drain

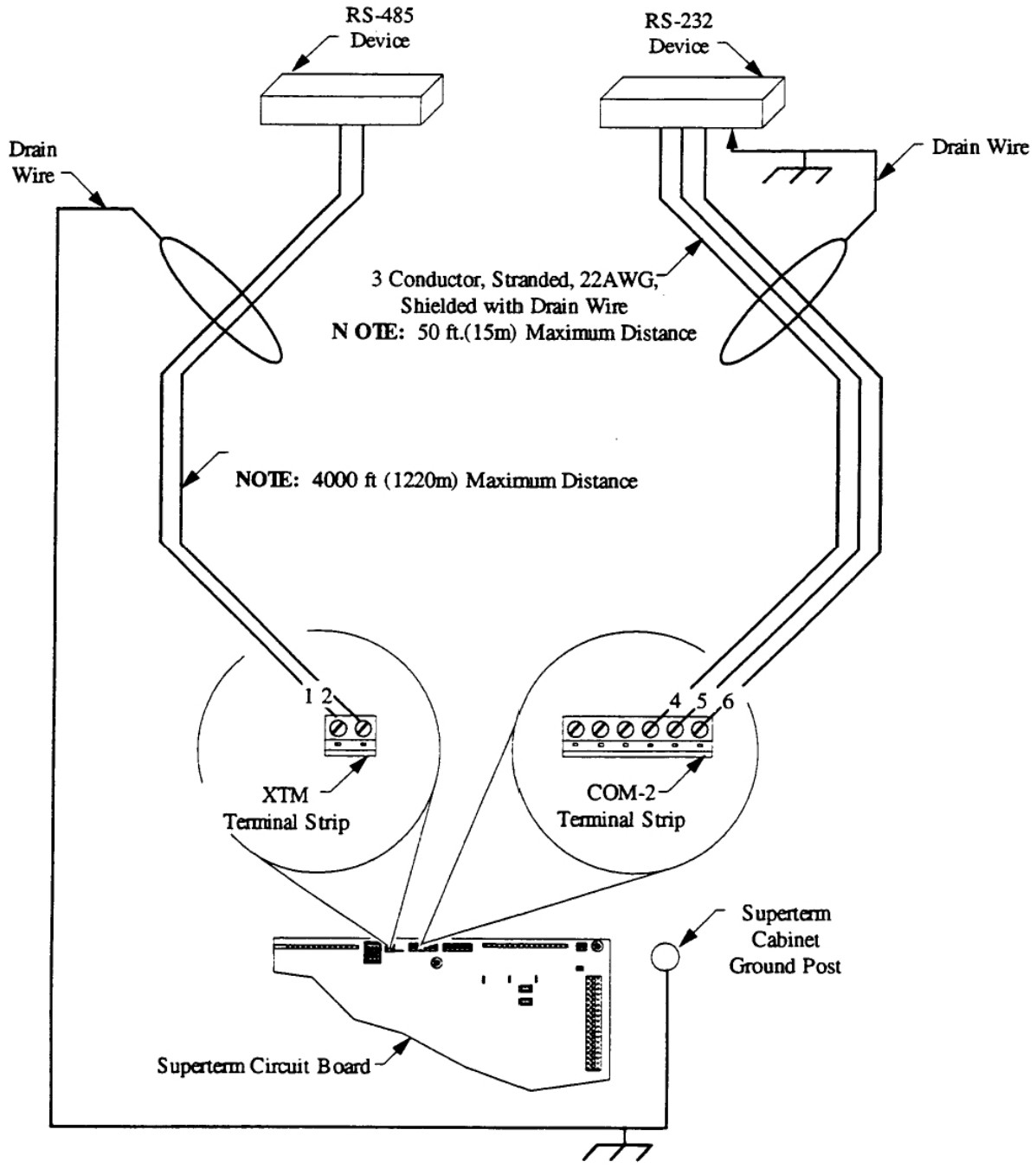


Figure 35 - Connecting Auxiliary RS-232 and RS-485 Devices to the Superterm

EXPANSION BOARD CONNECTIONS

Expansion Input/Output Boards

Expansion Input/Output (I/O) boards are used with the Superterm to increase the input and output capacity of the system. Expansion 1/O boards include a Supervised Alarm board and a Digital Input/Digital Output (DI/DO) board.

- Supervised Alarm boards have 16 Supervised alarm inputs.
- DI/DO boards have 8 non-supervised alarm inputs and 16 relay outputs.

A maximum of three boards may be added to the Superterm. These boards mount to the inside door of the Superterm cabinet (see Figure 36).

NOTE: Refer to page 4, Configurations, for allowed Expansion Board combinations.

Expansion Board Connections

Expansion boards require the following cables and wires:

Power wires between the Expansion boards and the Superterm main circuit board

Data/Control ribbon cable between Expansion boards and the Superterm main circuit board

1/O cables between Expansion boards and accessories

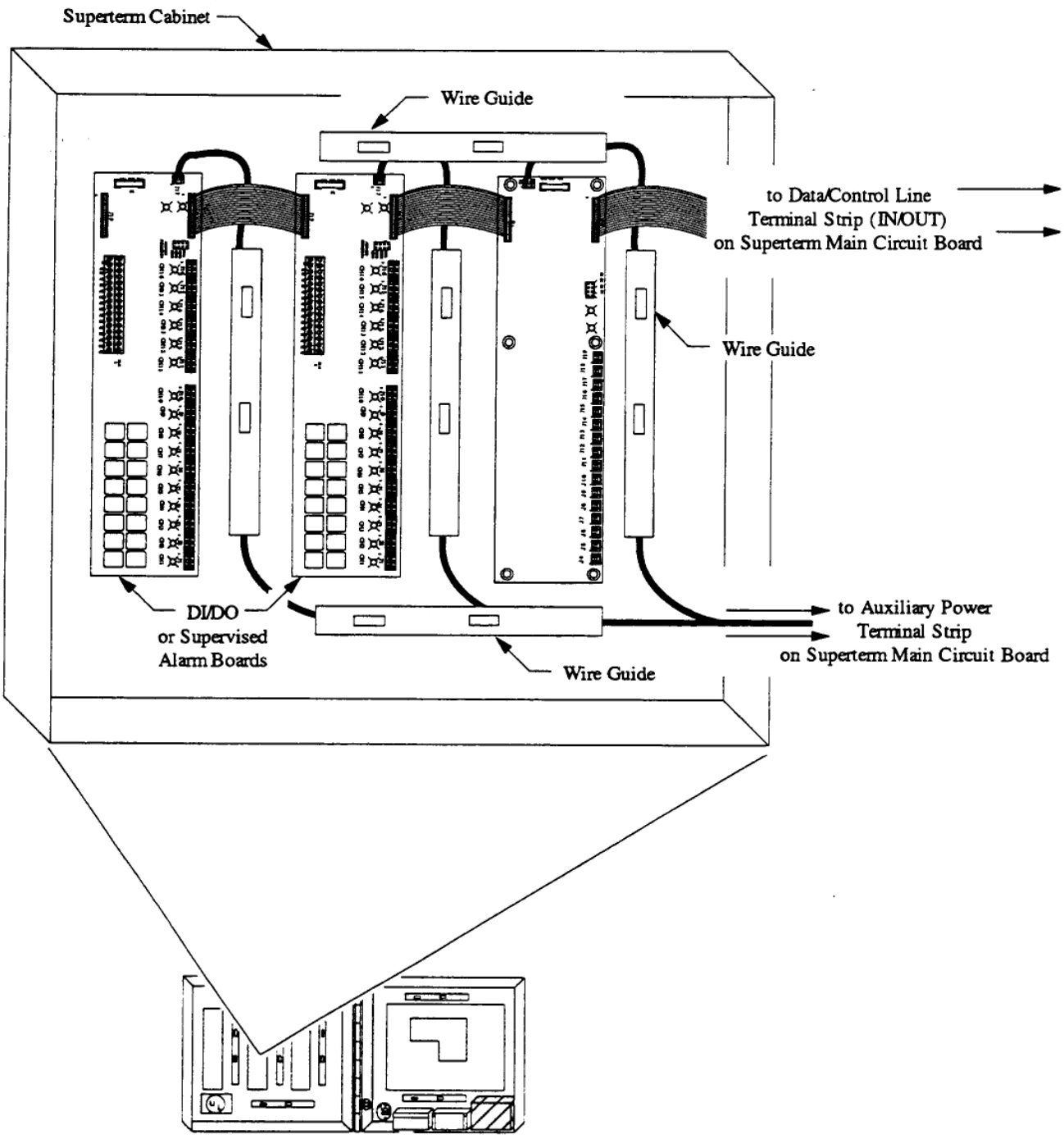


Figure 36 - Expansion Input/Output Board Layout in Superterm Cabinet

Supervised Alarm Board Installation

Supervised Alarm boards mount to any one of the three Expansion I/O board slots located on the side panel of the Superterm cabinet. The Supervised Alarm board is secured to the Superterm cabinet with three 6-32 screws (see Figure 37). The Supervised Alarm board receives addition mounting support from three snap standoffs affixed to the Superterm cabinet.

Supervised Alarm Board Power Connection

The Supervised Alarm board requires +12VDC for proper operation. Power for the Supervised Alarm board is supplied from the Auxiliary Power terminal strip located on the Superterm main circuit board (see Figure 38). NOTE: Route all cables between the Expansion I/O boards and the Superterm circuit board through the wire guides provided on the Superterm cabinet.

The Auxiliary Power terminal strip provides three sets of +12VDC connections for use with Expansion I/O boards.

Table 40 lists the connections between the Supervised Alarm board and the Auxiliary Power terminal strip.

Table 40 - Supervised Alarm Board Connection Table

Supervised Alarm Board Connector/Pin #	Function	Auxiliary Power Terminal Strip Pin #
J2 - 1	+12VDC	1, 3, or 5
J2 - 2	GND	2, 4, or 6

Supervised Alarm Board Power Cable Requirements

The Supervised Alarm board requires 18AWG stranded wire between the Input Power terminal strip (labeled J2) and the Auxiliary Power terminal strip on the Superterm main circuit board.

Data/Control Line Ribbon Cable Connections

The Supervised Alarm board communicates with the Superterm through a 34-pin ribbon cable. The Supervised Alarm board contains two identical 34-pin connectors (labeled P1 and P2).

The 34-pin connector labeled P1 is used for daisy-chaining other Expansion 1/O boards to the Supervised Alarm board (see Figure 37).

The 34-pin connector labeled P2 is used for connecting the Supervised Alarm board to other Expansion I/O boards (through daisy-chaining) or for connecting to the main circuit board of the Superterm.

NOTE: Pin 1 on the ribbon cable is indicated by a red wire and a notch (arrow) on the connector header. The ribbon cables must be installed with proper Pin 1 alignment.

All Expansion 1/O boards mounted on the Superterm cabinet are joined with either 5-inch ribbon cables or 18-inch ribbon cables.

- The 5-inch ribbon cables are used for inter-connecting (daisy-chaining) the Expansion 1/O boards mounted on the cabinet wall.
- The 18-inch ribbon cable is used to connect the innermost Expansion I/O board to the Superterm main circuit board at the Data/Control Line Input Terminal Strip.

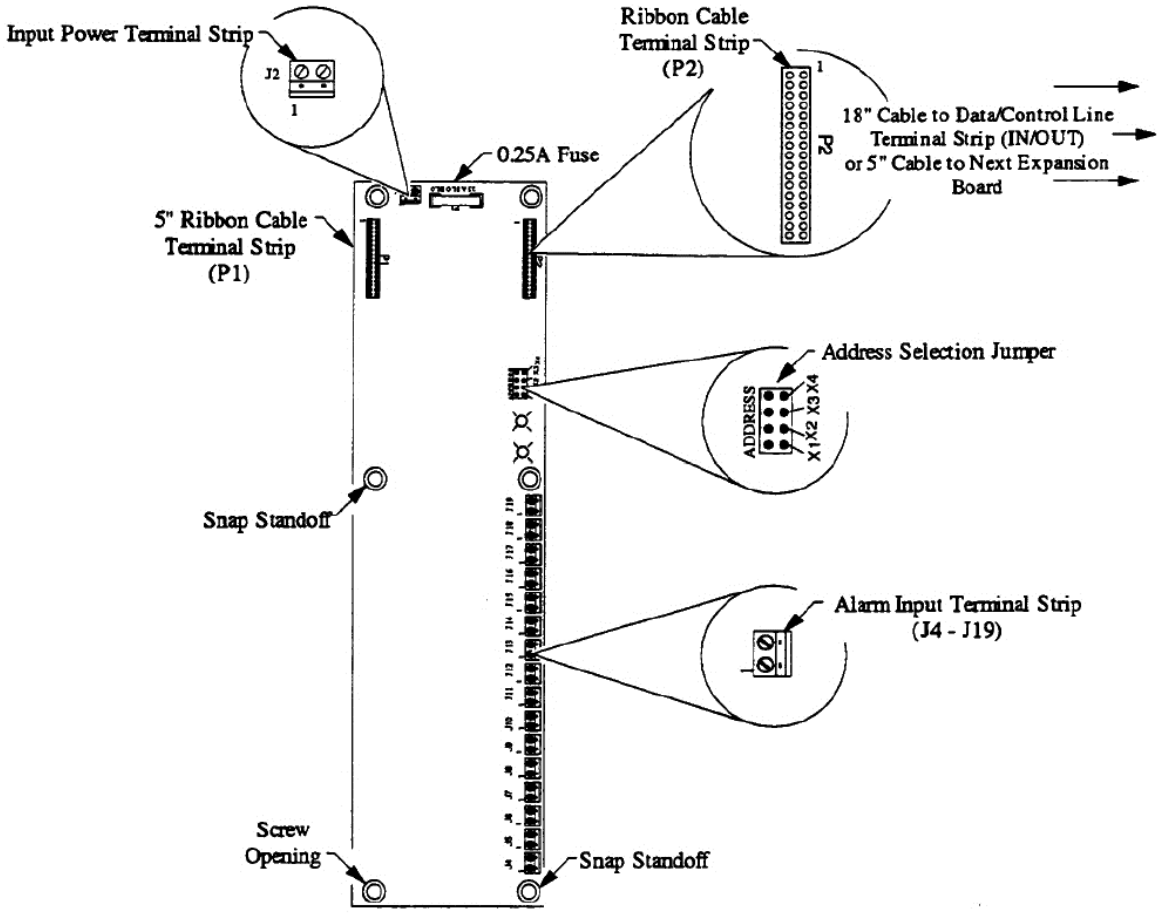


Figure 37 - Supervised Alarm Board Layout

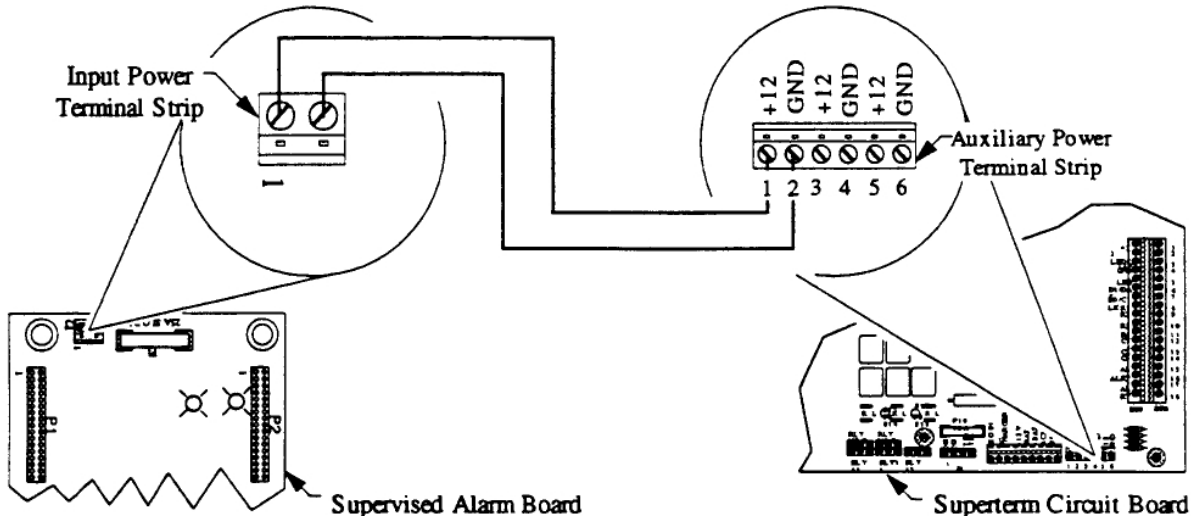


Figure 38 - Supervised Alarm Board-to-Superterm Power Connection

Supervised Alarm Board Accessory Connections

The Supervised Alarm board provides terminal strips for 16 alarm inputs. The alarm inputs are connected to the Supervised Alarm board using connectors J4 through J19 (see Figure 40).

NOTE: Route all cables between the Supervised Alarm boards and the accessory alarm inputs through the wire guides provided on the Superterm cabinet.

Table 41 lists the connections between the Supervised Alarm board and the alarm inputs.

Table 41 - Accessory Input Connection Table	
Supervised Alarm Board Connector J4-J19 Pin #	Function
1	Alarm Signal
2	Alarm Return

NOTE: Alarm connections are not sensitive to polarity.

CAUTION

A When powering-up the Superterm system, at least one of the supervised alarm inputs must be in a non-open condition. The Superterm will not be able to initialize the Supervised Alarm board if all of the inputs are open.

Supervised Alarm Cable Requirements

Alarm inputs require a 22AWG, 2-conductor, stranded, shielded cable with drain wire between the alarm sensor and the Supervised Alarm board. DO NOT use twisted pair cable.

Table 42 lists the cable gauge-vs-length requirements for proper operation of the Supervised Alarm board and the alarm sensor device.

Table 42 - Cable Requirements for Alarm Inputs		
Unit	Distance *(maximum)*	Wire Gauge
Supervised Alarm Input	1000 ft/305m	22AWG Shielded w/drain

NOTE: All alarm input cables must be grounded. Refer to the section on Grounding Accessory Drain and Shield Wires, Page 9.

Supervised Alarm Board Address Selection Jumper

Proper operation of the Superterm and any Expansion I/O boards requires that each Expansion 1/O board have a unique address.

The Supervised Alarm board has an on-board Address Selection jumper that identifies the board to the Superterm (see Figure 40).

Setting the Address Selection Jumper

The I/O signal definitions (numbers assigned to inputs and outputs) are determined by the Expansion 1/O board address settings. Refer to the section on 1/0 Signal Mapping, page 62).

1) Install all of the Expansion 1/0 boards in the Superterm Cabinet before setting the Address Selection jumper.
2) Determine the location of the Expansion I/O board in the order, *from right to left,* that the Expansion I/O boards are mounted (see Figure 40).
3) Set the Supervised Alarm board Address Selection jumper accordingly.

NOTES: The Address Selection jumper has four possible positions, X1, X2, X3, and X4. Position X4 is reserved for future use.
Do NOT use position X4 when setting the Address Selection jumper.

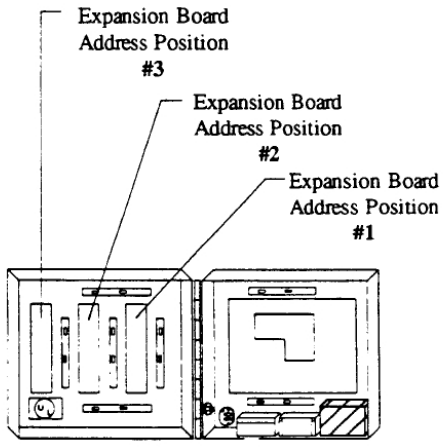


Figure 39 - Expansion Board Address Positions

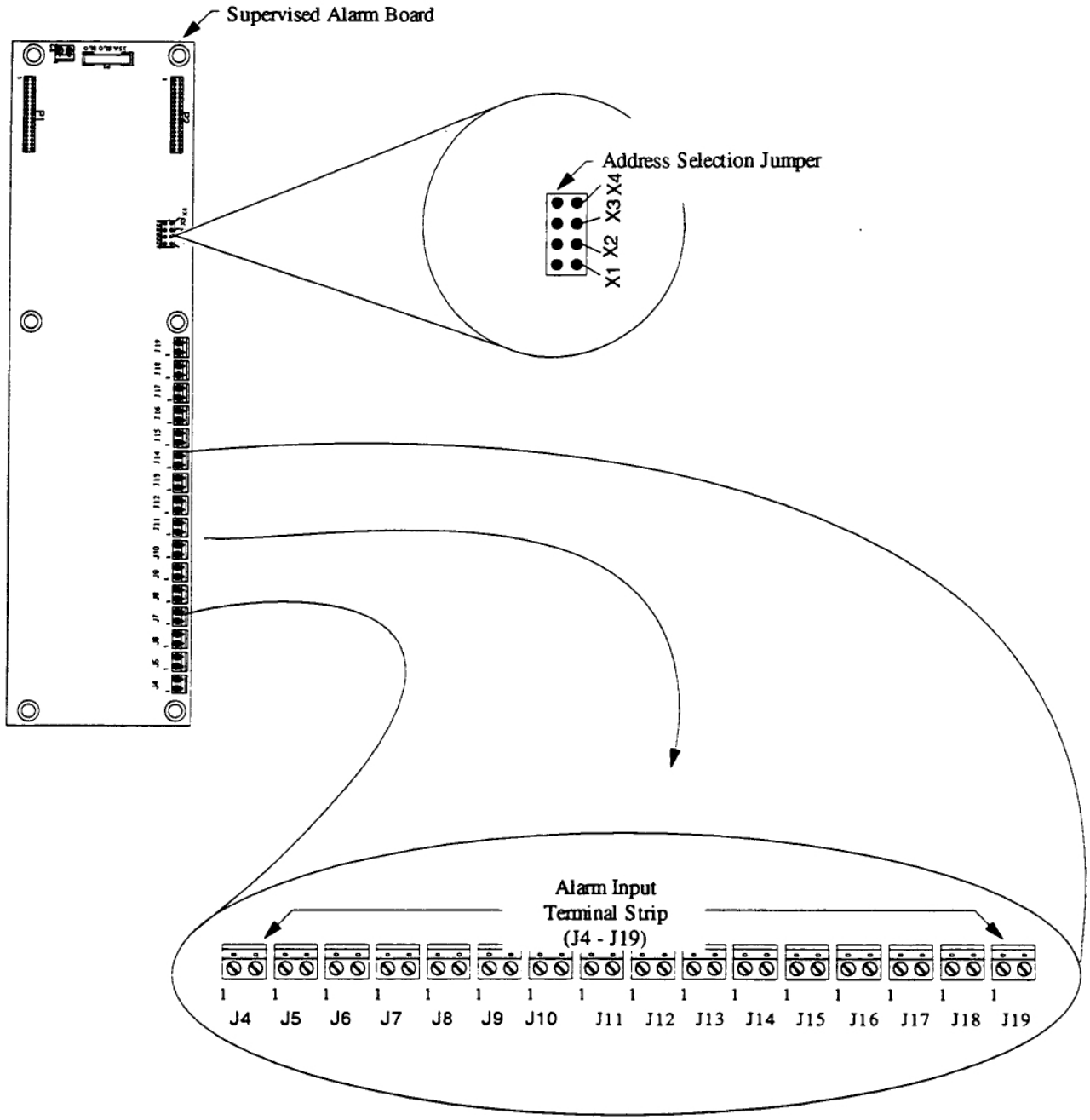


Figure 40 - Supervised Alarm Board Alarm Input Connections and Address Settings

DI/DO Board Connection

DI/DO boards mount to any one of the three Expansion I/O board slots located on the side panel of the Superterm cabinet. The DI/DO board is secured to the Superterm cabinet with three 6-32 screws (see Figure 41). The DI/DO board receives addition mounting support from three snap standoffs affixed to the Superterm cabinet.

DI/DO Board Power Connection

Normal operation of the DI/DO board can require continuous activation of all 16 relays on the board, thus the DI/DO board requires 500mA at 12VDC for proper operation (see CONFIGURATION, page 10). Power for the DI/DO board is supplied from the Auxiliary Power terminal strip located on the Superterm main circuit board (see Figure 42). **NOTE:** Route all cables between the Expansion 1/O boards and the Superterm circuit board through the wire guides provided on the Superterm cabinet.

The Auxiliary Power terminal strip provides three sets of +12VDC connections for use with DI/DO boards.

Table 43 lists the connections between the DI/DO board and the Auxiliary Power terminal strip.

Table 43 - DI/DO Board Connection Table

DI/DO Board	Function	Auxiliary Power
Connector - Pin #		Terminal Strip Pin #
J2 - 1	+12VDC	1, 3, or 5
J2 - 2	GND	2, 4, or 6

DI/DO Board Power Cable Requirements

The DI/DO board requires 18AWG stranded wire between the Input Power terminal strip (labeled J2) and the Auxiliary Power terminal strip on the Superterm main circuit board.

Data/Control Line Ribbon Cable Connections

The DI/DO board communicates with the Superterm through a 34-pin ribbon cable. The DI/DO board contains two identical 34-pin connectors (labeled J 18 and J 19).

The 34-pin connector labeled J19 is used for daisy-chaining other Expansion I/O boards to the DI/DO board (see Figure 41).

The 34-pin connector labeled J18 is used for connecting the DI/DO board to other Expansion 1/O boards (through daisy-chaining) or for connecting to the main circuit board of the Superterm.

NOTE: Pin 1 on the ribbon cable is indicated by a red wire and a notch (arrow) on the connector header. The ribbon cables must be installed with proper Pin 1 alignment.

All Expansion 1/0 boards mounted on the Superterm cabinet are joined with either 5-inch ribbon cables or 18-inch ribbon cables.

The 5-inch ribbon cables are used for inter-connecting (daisy-chaining) the Expansion 1/O boards mounted on the cabinet wall.

The 18-inch ribbon cable is used to connect the innermost Expansion I/O board to the Superterm main circuit board at the Data/Control Line Input Terminal Strip.

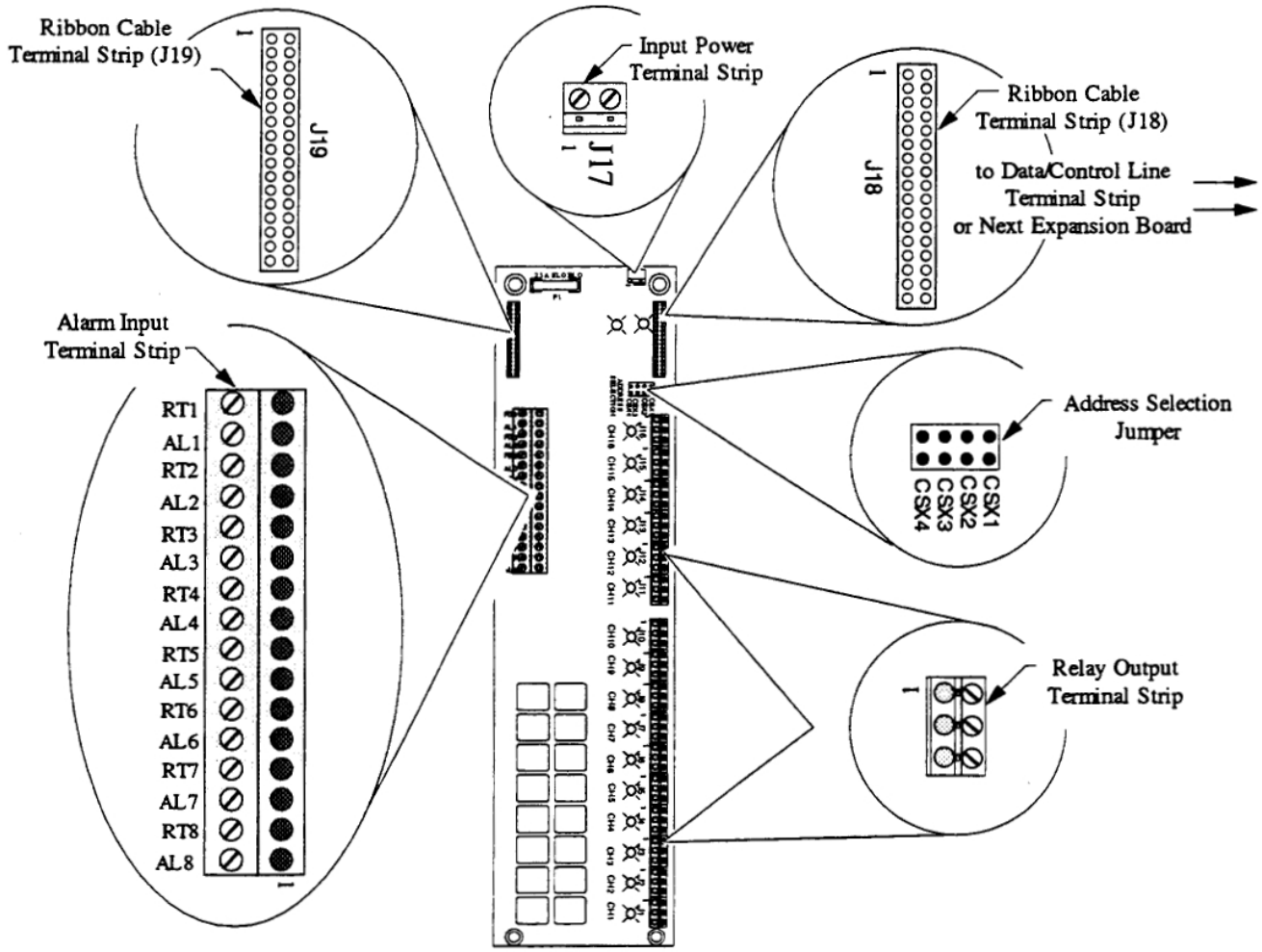


Figure 41 - DI/DO Board Layout

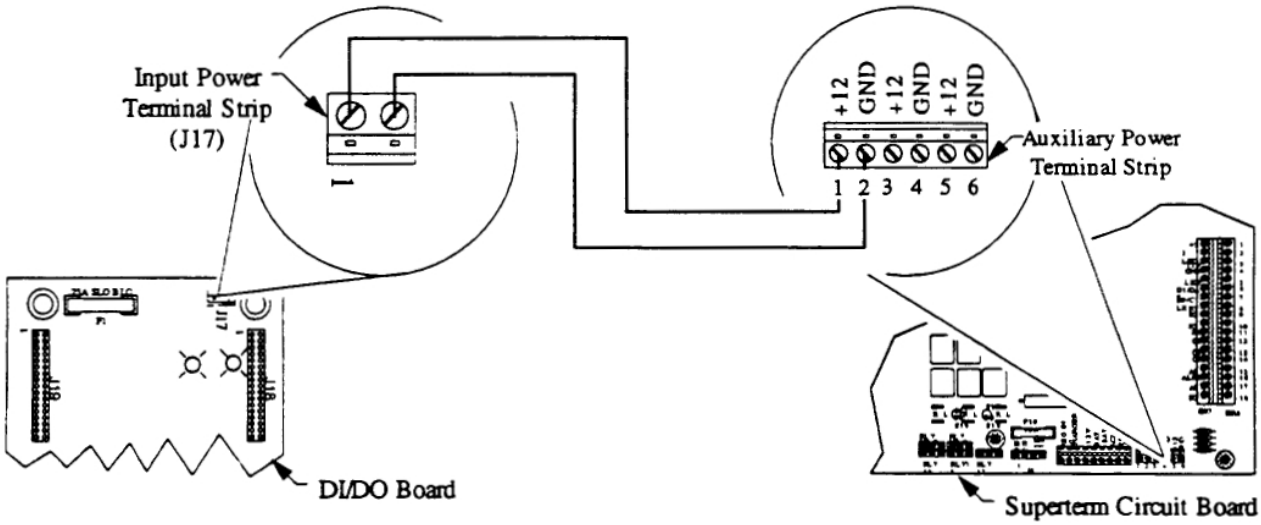


Figure 42 - DI/DO Board -to- Superterm Power Connection

DI/DO Alarm Input Connections

The DI/DO board provides eight non-supervised alarm inputs (see Figure 43).

The eight non-supervised alarm inputs are connected to the DI/DO board through the Alarm Input terminal strip.

Table 44 lists the connections to the Alarm Input terminal strip and the appropriate functions of each connection.

Table 44 - Alarm Input Terminal Strip Connection Table

Alarm Input Terminal Strip	
Pin #	**Function**
1	Alarm 8 Signal
2	Alarm 8 Return
3	Alarm 7 Signal
4	Alarm 7 Return
5	Alarm 6 Signal
6	Alarm 6 Return
7	Alarm 5 Signal
8	Alarm 5 Return
9	Alarm 4 Signal
10	Alarm 4 Return
11	Alarm 3 Signal
12	Alarm 3 Return
13	Alarm 2 Signal
14	Alarm 2 Return
15	Alarm 1 Signal
16	Alarm 1 Return

DI/DO Alarm Cable Requirements

Alarm inputs require 22AWG, 2-conductor, stranded, shielded cable with drain wire. DO NOT use twisted pair cables.

NOTES: Route all cables between the Expansion 1/O boards and the Superterm circuit board through the wire guides provided on the Superterm cabinet.

Cable length between the DI/DO board and an alarm device is limited to a maximum of 1000 ft (305m).

Table 45 lists the cable gauge-vs-length requirements for proper operation of the DI/DO board and the alarm device.

Table 45 -- Cable Requirements for Alarm Inputs

Unit	Distance (maximum)	Wire Gauge
Alarm Device	1000 ft/305m	22AWG Shielded w/drain

NOTE: All alarm input cables must be grounded. Refer to the Grounding Accessory Drain and Shield Wire section, Page 9.

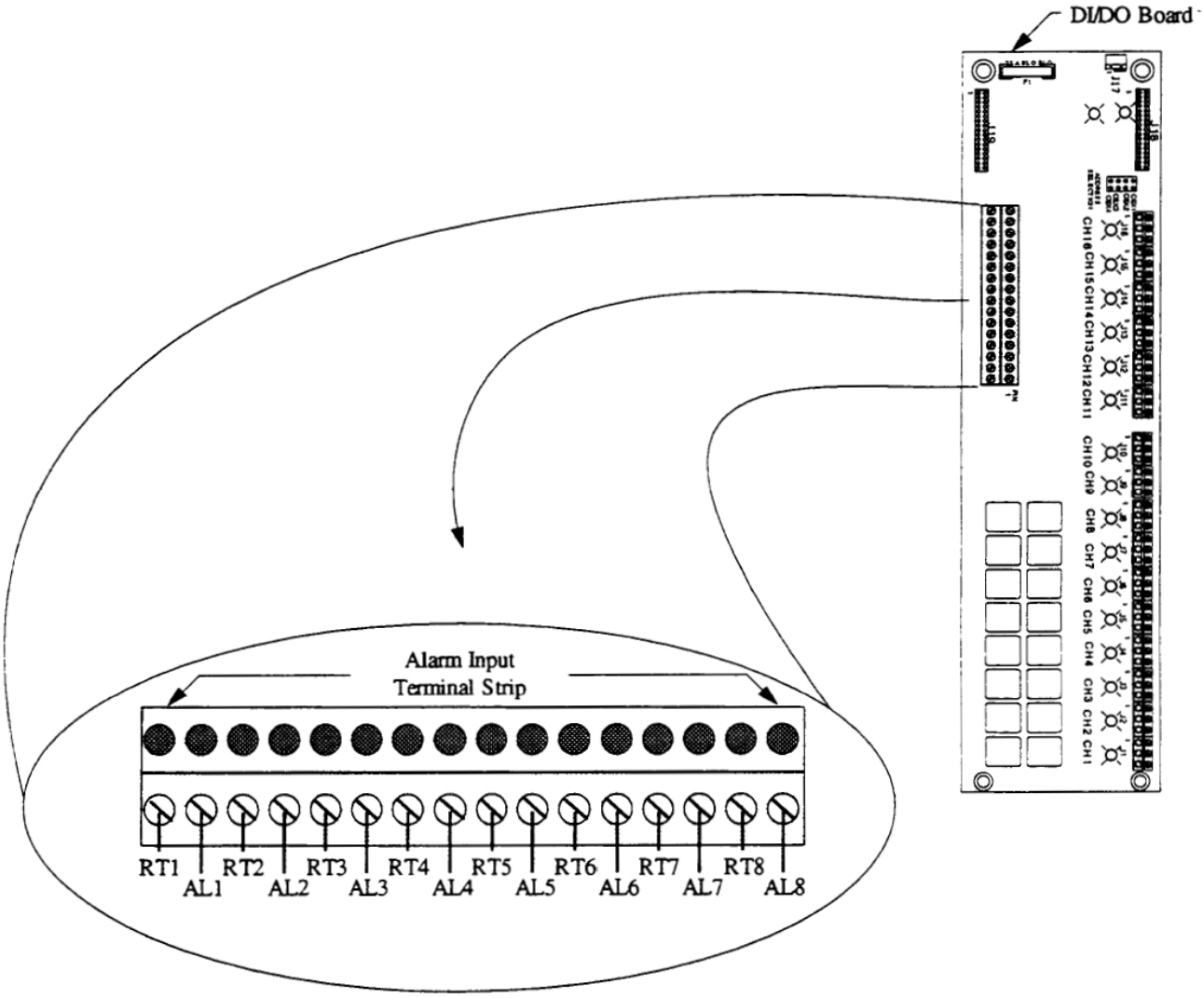


Figure 43 - DI/DO Board Alarm Input Terminal Strip

DI/DO Alarm Output Connections

The DI/DO board incorporates 16 relays (K1 through K16) that provide 16 "Form C" contact sets. Connections to these relays are made through the Alarm Output terminal strips labeled J 1 through J 16 (see Figure 45).

Each contact set consists of a normally open (NO), a common (C), and a normally closed (NC) connection point.
Where Jxx is to be interpreted as J1-J16,

- Jxx-1 = Normally Closed
- Jxx-2 = Common
- Jxx-3 = Normally Open

NOTE: The contact rating is 3 Amperes (resistive).

In order to reduce electrical noise generated by controlled devices such as electric door strikes or magnetic locks, a Metal-Oxide-Varistor (MOV) has been placed across each of the relay contact sets.

NOTE: These MOVs have a voltage rating of 56 Volts DC.

Maximum efficiency of the Superterm requires installing additional MOVs across each door strike or magnetic lock, as close to the device as is possible.

NOTE: Additional MOVs are available from Continental Instruments as part number *480-1048, Rv0005.*

CAUTION
Door strike wiring must not be placed in the cables, bundles, or conduit with other wiring. Transients produced by these wires may cause unreliable operation of the Superterm. Maintain a minimum of six inches distance between door strike wiring and all other input wiring.

DI/DO Alarm Board Address Selection Jumper

Proper operation of the Superterm and any Expansion I/O boards requires that each Expansion I/O board have a unique address.

The DI/DO Alarm board has an on-board Address Selection jumper that identifies the board to the Superterm (see Figure 45).

Setting the Address Selection Jumper

1) Install all of the Expansion I/O boards in the Superterm Cabinet before setting the Address Selection jumper.

2) Determine the location of the DI/DO Alarm board in the order, *from right to left*, that the Expansion 1/O boards are mounted (see Figure 44).

3) Set the DI/DO Alarm board Address Selection jumper accordingly.

NOTE: The Address Selection jumper has four possible positions, Xl, X2, X3, and *X4.* Position X4 is reserved for future use.

Do NOT use position *X4* when setting the Address Selection jumper.

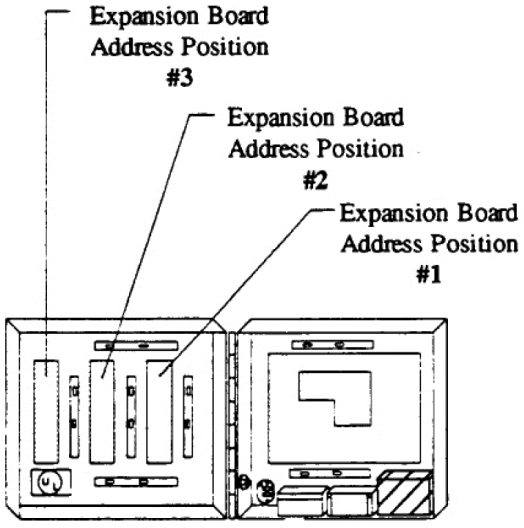


Figure 44 - Expansion Board Address Positions

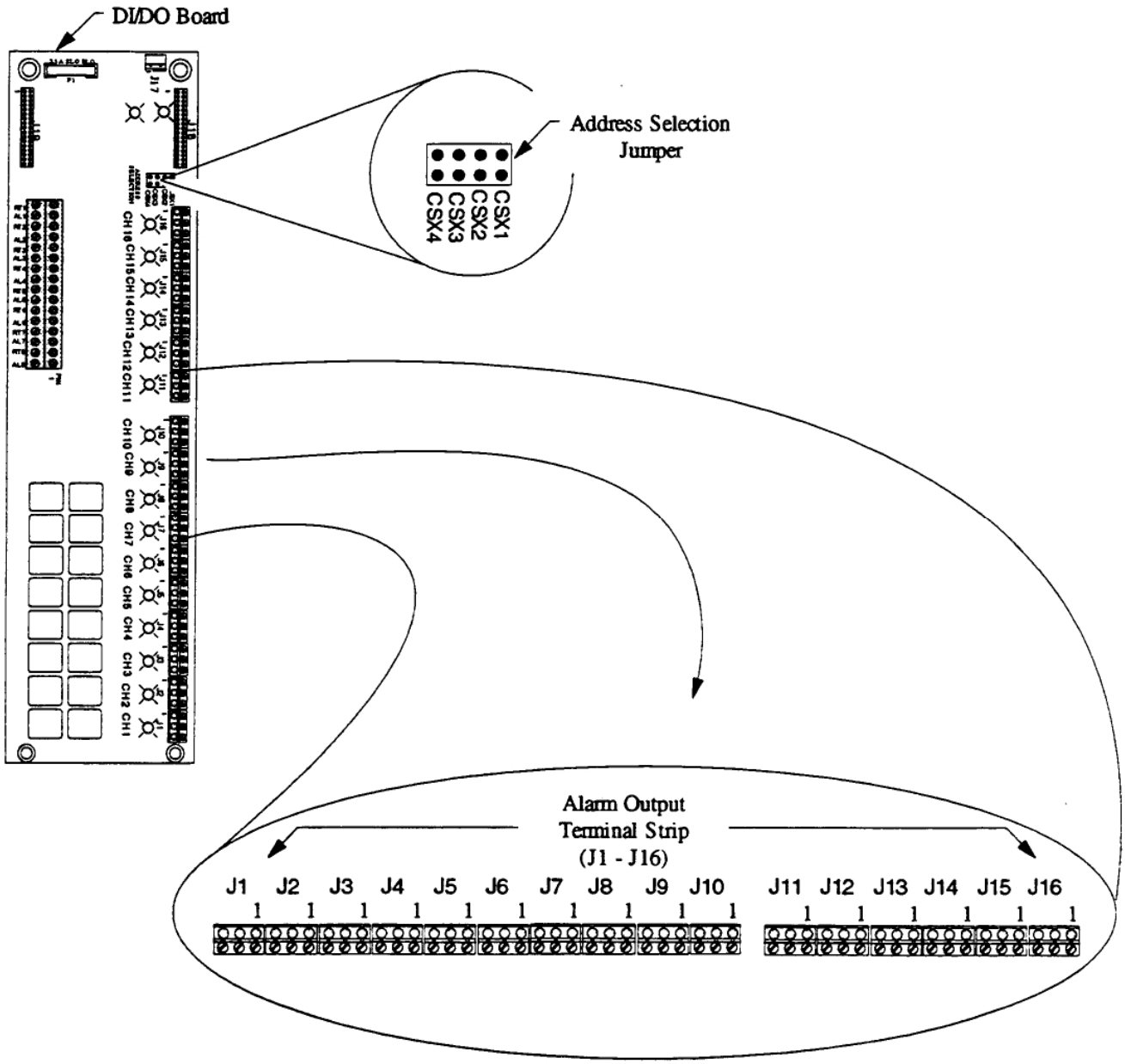


Figure 45 - DI/DO Board Relay Output Connections and Address Setting

I/O SIGNAL MAPPING

The alarm inputs and relay outputs for the Superterm board and for Expansion I/O boards are assigned specific numbers for use when programming and displaying signals with a host computer.

Superterm Main Circuit Board: 8-Reader Version

The 8-Reader version has 25 alarm inputs and 17 relay outputs. Table 46 defines the terminal strip, the associated pin number, the associated signal, and the associated input/output number.

Table 46 - 8-Reader I/O Signal Definition

INPUTS				OUTPUTS			
Connector	**Pin #**	**Signal**	**Input #**	**Connector**	**Pin #**	**Signal**	**Output #**
DR1	15,16	Door 1 Sensor	1	RLY_1	1, 2, 3	Door Strike 1	1
DR1	17,18	Door 1 Bypass	2				
				RLY_2	1, 2, 3	Door Shunt 1	2
DR2	15,16	Door 2 Sensor	3				
DR2	17,18	Door 2 Bypass	4	RLY_3	1, 2, 3	Door Strike 2	3
DR3	15,16	Door 3 Sensor	5	RLY_	1, 2, 3	Door Shunt 2	4
DR3	17,18	Door 3 Bypass	6				
				RLY_5	1, 2, 3	Door Strike 3	5
DR4	15,16	Door 4 Sensor	7				
DR4	17,18	Door 4 Bypass	8	RLY_6	1, 2, 3	Door Shunt 3	6
DR5	15,16	Door 5 Sensor	9	RLY_7	1, 2, 3	Door Strike 4	7
DR5	17,18	Door 5 Bypass	10				
				RLY_8	1, 2, 3	Door Shunt 4	8
DR6	15,16	Door 6 Sensor	11				
DR6	17,18	Door 6 Bypass	12	RLY_9	1, 2, 3	Door Strike 5	9
DR7	15,16	Door 7 Sensor	13	RLY_10	1, 2, 3	Door Shunt 5	10
DR7	17,18	Door 7 Bypass	14				
				RLY_11	1, 2, 3	Door Strike 6	11
DR8	15,16	Door 8 Sensor	15				
DR8	17,18	Door 8 Bypass	16	RLY_12	1, 2, 3	Door Shunt 6	12
				RLY_13	1, 2, 3	Door Strike 7	13
Alarm	1,2	Aux Alarm 17	17	RLY_14	1, 2, 3	Door Shunt 7	14
Alarm	3,4	Aux Alarm 18	18	RLY_15	1, 2, 3	Door Strike 8	15
Alarm	5,6	Aux Alarm 19	19	RLY_16	1, 2, 3	Door Shunt 8	16
Alarm	7,8	Aux Alarm 20	20				
Alarm	9,10	Aux Alarm 21	21	RLY_17	1, 2, 3	Console Relay	73
Alarm	11,12	Aux Alarm 22	22				
Alarm	13,14	Aux Alarm 23	23				
Alarm	15,16	Aux Alarm 24	24				
Tampr1	1,2	Tamper	81				

Superterm Main Circuit Board: 4-Reader Version

The 4-Reader version has 25 alarm inputs and 17 relay outputs. Table 47 defines the terminal strip, the associated pin number, the associated signal, and the associated input/output number.

Table 47 - 4-Reader I/O Signal Definition

INPUTS				OUTPUTS			
Connector	**Pin #**	**Signal**	**Input #**	**Connector**	**Pin #**	**Signal**	**Output #**
DR1	15,16	Door 1 Sensor	1	RLY_1	1, 2, 3	Door Strike 1	1
DR1	17,18	Door 1 Bypass	2				
				RLY_2	1, 2, 3	Door Shunt 1	2
DR2	15,16	Door 2 Sensor	3				
DR2	17,18	Door 2 Bypass	4	RLY_3	1, 2, 3	Door Strike 2	3
DR3	15,16	Door 3 Sensor	5	RLY_4	1, 2, 3	Door Shunt 2	4
DR3	17,18	Door 3 Bypass	6				
				RLY_5	1, 2, 3	Door Strike 3	5
DR4	15,16	Door 4 Sensor	7				
DR4	17,18	Door 4 Bypass	8	RLY_6	1, 2, 3	Door Shunt 3	6
				RLY_7	1, 2, 3	Door Strike 4	7
				RLY_8	1, 2, 3	Door Shunt 4	8
Alarm	1,2	Aux Alarm 17	17				
Alarm	3,4	Aux Alarm 18	18				
				RLY_17	1, 2, 3	Console Relay	73
Alarm	5,6	Aux Alarm 19	19				
Alarm	7,8	Aux Alarm 20	20				
Alarm	9,10	Aux Alarm 21	21				
Alarm	11,12	Aux Alarm 22	22				
Alarm	13,14	Aux Alarm 23	23				
Alarm	15,16	Aux Alarm 24	24				
Tampr1	1,2	Tamper	81				

Expansion I/O Boards

The Expansion I/0 Boards will have different I/O signal number assignments depending on the board address setting.

DI/DO Board

The DI/DO board has 8 alarm inputs and 16 relay outputs. Table 48 defines the terminal strip, the associated pin number, the associated signal, and the associated input/output number.

Table 48 - DI/DO Board I/O Signal Definition--INPUTS

			4-Door Superterm				8-Door Superterm			
		Signal	CSX1	CSX2	CSX3	CSX4	CSX1	CSX2	CSX3	CSX4
			Input #	Input #	Input #	Input #	Input #	Input #	Input #	Input #
Connector	Pin #									
J20	15,16	AL1, RT1	17	33	49	65	25	41	57	73
J20	13,14	AL2, R12	18	34	50	66	26	42	58	74
J20	11,12	AL3, RT3	19	35	51	67	27	43	59	75
J20	9,10	ALA RT4	20	36	52	68	28	44	60	76
J20	7,8	AL5, RT5	21	37	53	69	29	45	61	77
J20	5,6	AL6, RT6	22	38	54	70	30	46	62	78
J20	3,4	AL7, RT7	23	39	55	71	31	47	63	79
J20	1,2	AL8, RT8	24	40	56	72	32	48	64	80

Table 48 - DI/DO Board I/O Signal Definition--OUTPUTS

			4-Door or 8-Door Superterm			
Connector	Pin #	Signal	CSX1 Input#	CSX2 Input #	CSX3 Input #	CSX4 Input #
11	1, 2, 3	CH1	17	33	49	65
J2	1, 2, 3	CH2	18	34	50	66
J3	1, 2, 3	CH3	19	35	51	67
J4	1, 2, 3	CH4	20	36	52	68
J5	1, 2, 3	CH5	21	37	53	69
J6	1, 2, 3	CH6	22	38	54	70
J7	1, 2, 3	CH7	23	39	55	71
J8	1, 2, 3	CH8	24	40	56	72
J9	1, 2, 3	CH9	25	41	57	*
J10	1, 2, 3	CH10	26	42	58	*
J11	1, 2, 3	CH11	27	43	59	*
J12	1, 2, 3	CH12	28	44	60	*
J13	1, 2, 3	CH13	29	45	61	*
J14	1, 2, 3	CH14	30	46	62	*
J15	1, 2, 3	CH15	31	47	63	*
J16	1, 2, 3	CH16	32	48	64	*

*NOTE: Relay outputs are limited to a maximum of 72 (73 is reserved for the console relay). Address CSX4 supports no more than eight relay outputs.

Supervised Alarm Board

The Supervised Alarm board has 16 alarm inputs. Table 49 defines the terminal strip, the associated pin number, the associated signal, and the associated input/output number.

Table 49 - Supervised Alarm Board I/O Signal Definition

			INPUTS							
			4-Door Superterm				8-Door Superterm			
Connector	Pin #	Signal	X1 Input #	X2 Input #	X3 Input #	X4 Input #	X1 Input #	X2 Input #	X3 Input #	X4 Input #
J4	1, 2	AL1, RT1	17	33	49	65	25	41	57	73
J5	1, 2	AL2, RT2	18	34	50	66	26	42	58	74
J6	1, 2	AL3, RT3	19	35	51	67	27	43	59	75
J7	1, 2	AL4, RT4	20	36	52	68	28	44	60	76
J8	1, 2	AL5, RT5	21	37	53	69	29	45	61	77
J9	1, 2	AL6, RT6	22	38	54	70	30	46	62	78
J10	1, 2	AL7, RT7	23	39	55	71	31	47	63	79
J11	1, 2	AL8, RT8	24	40	56	72	32	48	64	80
J12	1, 2	AL9, RT9	25	41	57	73	33	49	65	*
J13	1, 2	AL10, RT10	26	42	58	74	34	50	66	*
J14	1, 2	AL11, RT11	27	43	59	75	35	51	67	*
J15	1, 2	AL12, RT12	28	44	60	76	36	52	68	*
J16	1, 2	AL13, RT13	29	45	61	77	37	53	69	*
J17	1, 2	AL14, RT14	30	46	62	78	38	54	70	*
J18	1, 2	AL15, RT15	31	47	63	79	39	55	71	*
J19	1, 2	AL16, RT16	32	48	64	80	40	56	72	*

* NOTE: Inputs are limited to a maximum of 80 (81 is reserved for the tamper switch). Address X4 allows no more than 8 alarm inputs.

SETTINGS

Jumper Settings

The Superterm circuit board functions with a variety of options. Proper circuit operation requires setting specific jumpers depending on the installed access control accessories, the installed system options, and any network configurations.

232-1 Jumper

The 232-1 jumper enables either the RS-232 communication lines connected to the COM2 terminal strip or the RS-422 communication lines connected to the XTM terminal strip.

COM2 Enabled

The COM2 port is enabled when the Superterm uses RS-232 communications protocol. Connections to the external device are made through the COM2 terminal strip.

- Set the jumper to contact the center post (pin 2) and the left hand post (pin 1) (see Figure 46).

XTM Enabled

The XTM port is enabled when the Superterm uses RS-422 communications protocol. Connections to the external device are made through the XTM terminal strip.

- Set the jumper to contact the center post (pin 2) and the right-hand post (pin 3).

EOL1 Jumper

When using the RS-485 communication protocol to network multiple Superterm units through the POLL terminal strip, the EOL1 jumper on the LAST unit in the communication network must be set to the TERMINATED position.

Superterm *TERMINATED*

Set the jumper to contact the center post (pin 2) and the left hand post (pin 1) (see Figure 46).

Superterm *NOT TERMINATED*

Set the jumper to contacting the center post (pin 2) and the right-hand post (pin 3).

EOL2 Jumper

When operating multiple Superterm units in a MULTIDROP RS-422 network, the EOL2 jumper on the LAST unit in the communication network must be set to the TERMINATED position.

NOTE: When operating multiple Superterm units in a REPEAT RS-422 network, the EOL2 jumper on *every* Superterm unit must be set to the TERMINATED position.

Superterm *TERMINATED*

Set the jumper to contact the center post (pin 2) and the left hand post (pin 1) (see Figure 46).

Superterm *NOT TERMINATED*

Set the jumper to contact the center post (pin 2) and the right-hand post (pin 3).

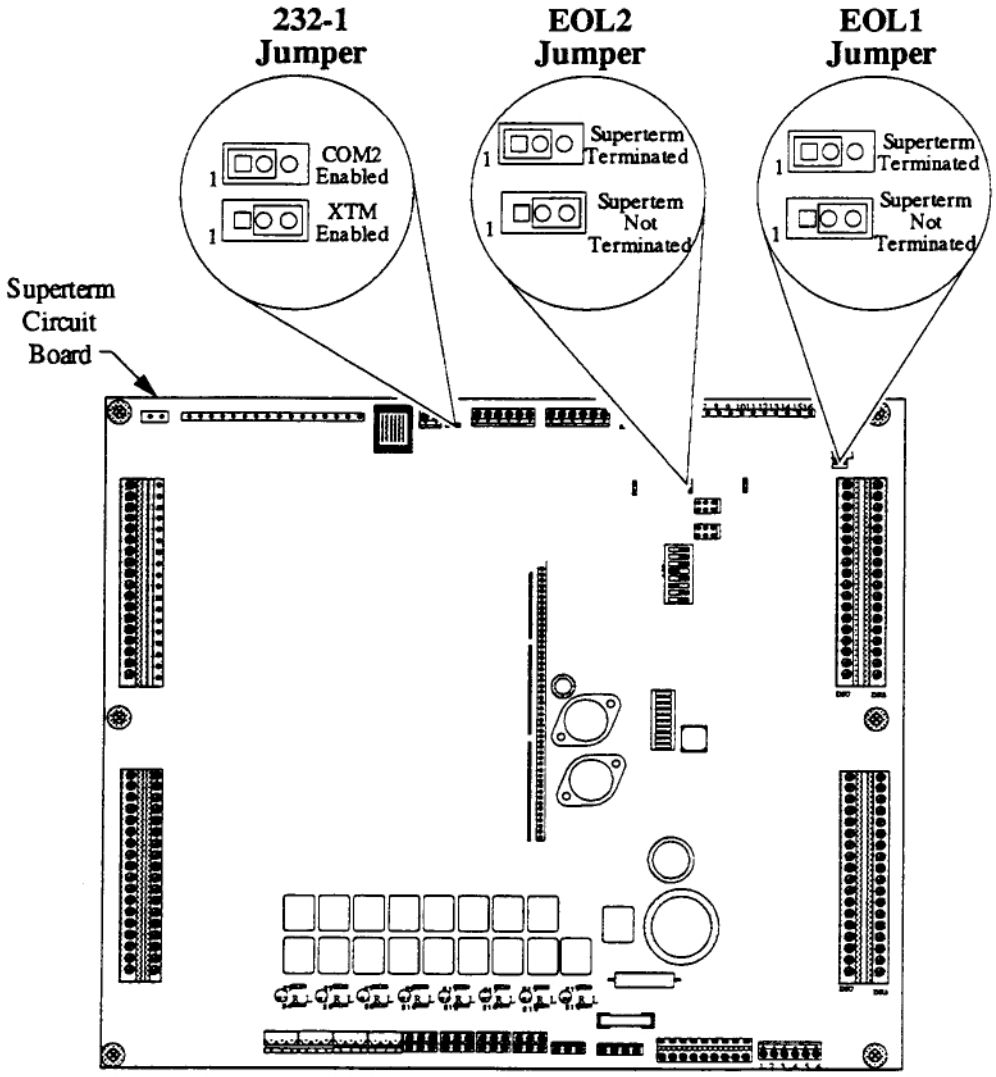


Figure 46 - 232-1, EOL1, and EOL2 Jumper Locations and Settings

COM1 Jumper

The COM1 jumper establishes the communication baud rates between the Superterm and external devices using the COM-1 terminal strip.

The available COM1 baud rate selections are:	
1200Kbps	Pins 7 and 8
2400Kbps	Pins 5 and 6
4800Kbps	Pins 3 and 4
9600Kbps	Pins 1 and 2

Determine the optimal communication rate between the Superterm and the peripheral communication device.

- Set the COM1 jumper to contact the two posts adjacent to the desired baud rate (see Figure 47).

COM2 Jumper

The COM2 jumper establishes the communication baud rates between the Superterm and external devices using the COM-2 input terminal strip.

The available COM2 baud rate selections are:	
1200Kbps	Pins 7 and 8
2400Kbps	Pins 5 and 6
4800Kbps	Pins 3 and 4
9600Kbps	Pins 1 and 2

Determine the optimal communication rate between the Superterm and the peripheral communication device.
Set the COM2 jumper to contact the two posts adjacent to the desired baud rate (see Figure 47).

MONITOR Jumper

The Superterm has the capability to output programming data to a dedicated monitor.

Hookup Monitor

Use the *Hookup* Monitor mode when a dedicated monitor is connected to the Superterm.

- Set the jumper to contact the center post (pin 2) and the left hand post (pin 1) (see Figure 47).

Do Not Hookup Monitor

Use the Do Not *Hookup* Monitor mode when no monitor is connected to the Superterm.

- Set the jumper to contact the center post (pin 2) and the right-hand post (pin 3) (see Figure 47).

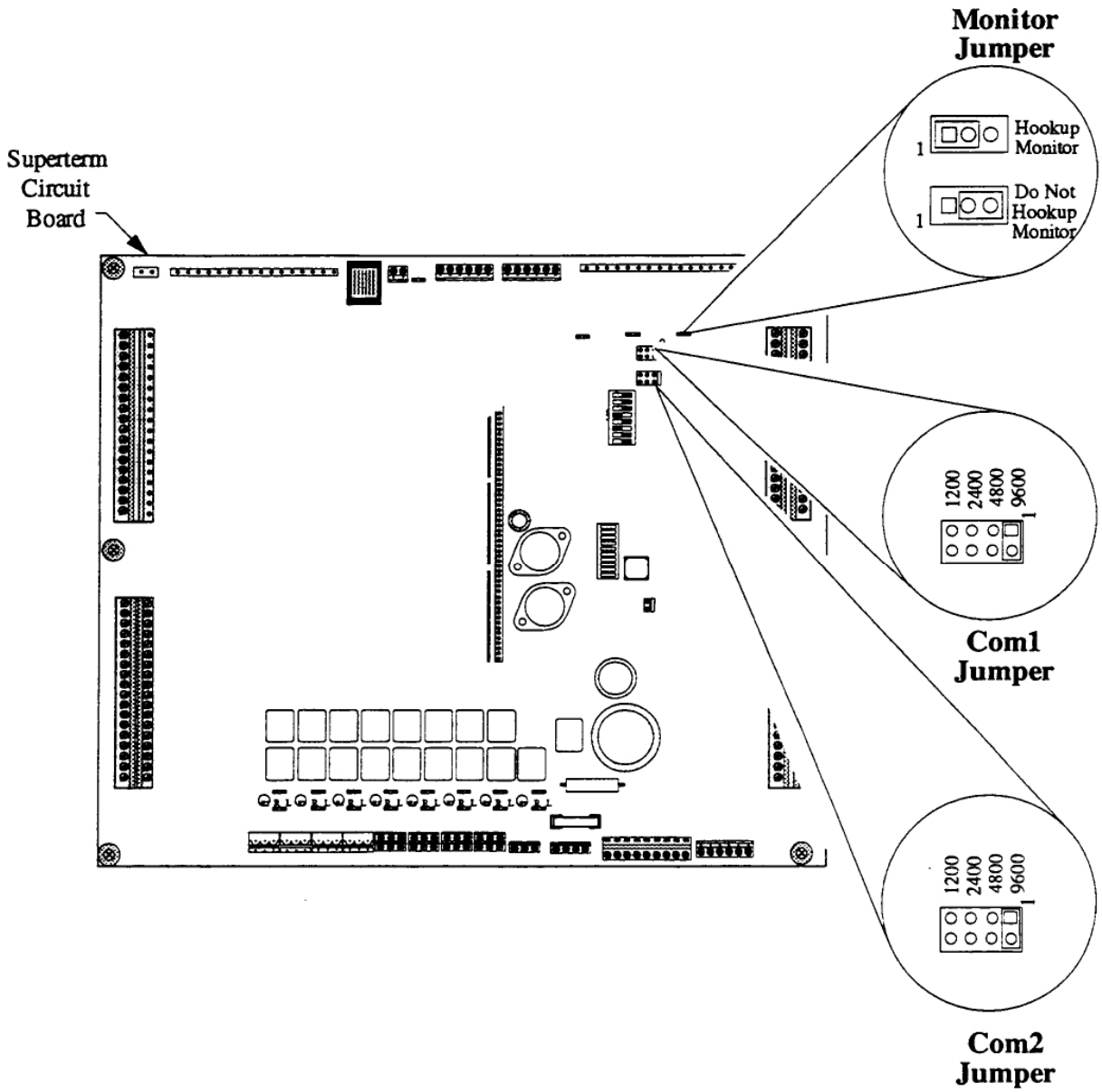


Figure 47 - COM1, COM2, and MONITOR Jumper Locations and Settings

MBAT Jumper

A lithium battery preserves data stored in memory for 10 months in the event of a power failure or loss of the system battery-backup (see Figure 48).

NOTES: The Superterm is shipped with the MBAT jumper in the OUT mode to prevent unnecessary battery drain.

DO NOT confuse the lithium battery with the back-up battery (see page 5). The lithium battery does not operate the Superterm in the event of a power failure.

IN - Data Saved

The IN mode activates the lithium battery and preserves Superterm data in the event of a power failure or loss of the system battery-backup.

- Set the jumper to contact the center post (pin 2) and the left hand post (pin 1).

OUT - Data Lost

The OUT mode de-activates the lithium battery. No Superterm programming or database information will be saved.

- Set the jumper to contact the center post (pin 2) and the right-hand post (pin 3).

MODE1 Jumper

The MODE 1 jumper is used to designate the particular Superterm as an active REPEATER or a passive MULTIDROP network member (see Figure 48).

MULTIDROP Mode

Use this mode when the Superterm RS-422 Polling port is operating in a MULTIDROP network.

- Set the jumper to contact the center post (pin 2) and the right-hand post (see pin 3).

REPEATER Mode

Use this mode when the Superterm RS-422 Polling port is operating in a REPEATER network.

- Set the jumper to contact the center post (pin 2) and the left-hand post (pin 1).

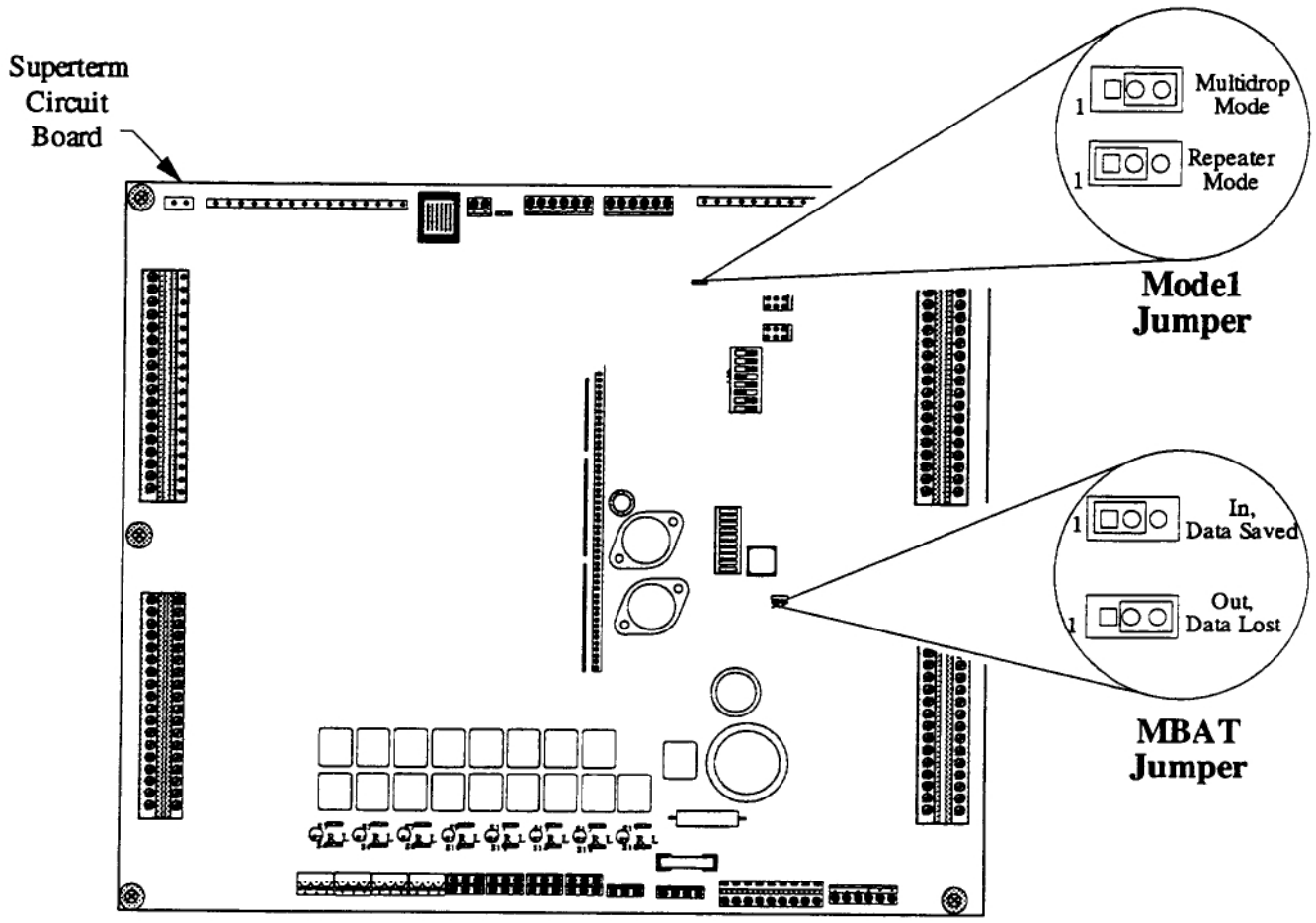


Figure 48 - Jumper Locations and Settings

Door Strike Jumper Setting

Door strike power may be either LOCAL or REMOTE (see page 22).

Each of the Superterm's door strike relays requires setting two associated jumpers.

The jumpers, labeled S3 through S18, are located on the Superterm circuit board below the bank of relays and between the relay fuses (see Figure 49).

NOTE: Use insulated needle-nose pliers when working with jumpers.

Table 50 relates the door strike relays to the appropriate jumper numbers.

Table 50 - Door Strike Relays and Associated Jumpers

Door Strike Relay #	Jumper Pair
1	S3 and S4
3	S5 and S6
5	S7 and S8
7	S9 and S 10
9	S 11 and S 12
11	S13 and S14
13	S15 and S16
15	S 17 and S 18

LOCAL Power Jumper Setting

Operating specific relays on LOCAL power requires setting two associated jumpers to the LOCAL position.

Verify that both jumpers for the associated relay (see Table 50) contact the center post, pin 2, and the right-hand post, pin 3 (see Figure 49, Detail A).

NOTE: The letters R and L on the jumper refer to REMOTE and LOCAL. *They DO NOT refer to Right and Left.*

REMOTE Power Jumper Setting

Operating specific relays on REMOTE power requires setting two associated jumpers to the REMOTE position.

Verify that both jumpers for the associated relay (see Table 50) contact the center post, pin 2, and the left-hand post, pin 1 (see Figure 49, Detail B).

NOTE: The letters R and L on the jumper refer to REMOTE and LOCAL. *They DO NOT refer to Right and Left.*

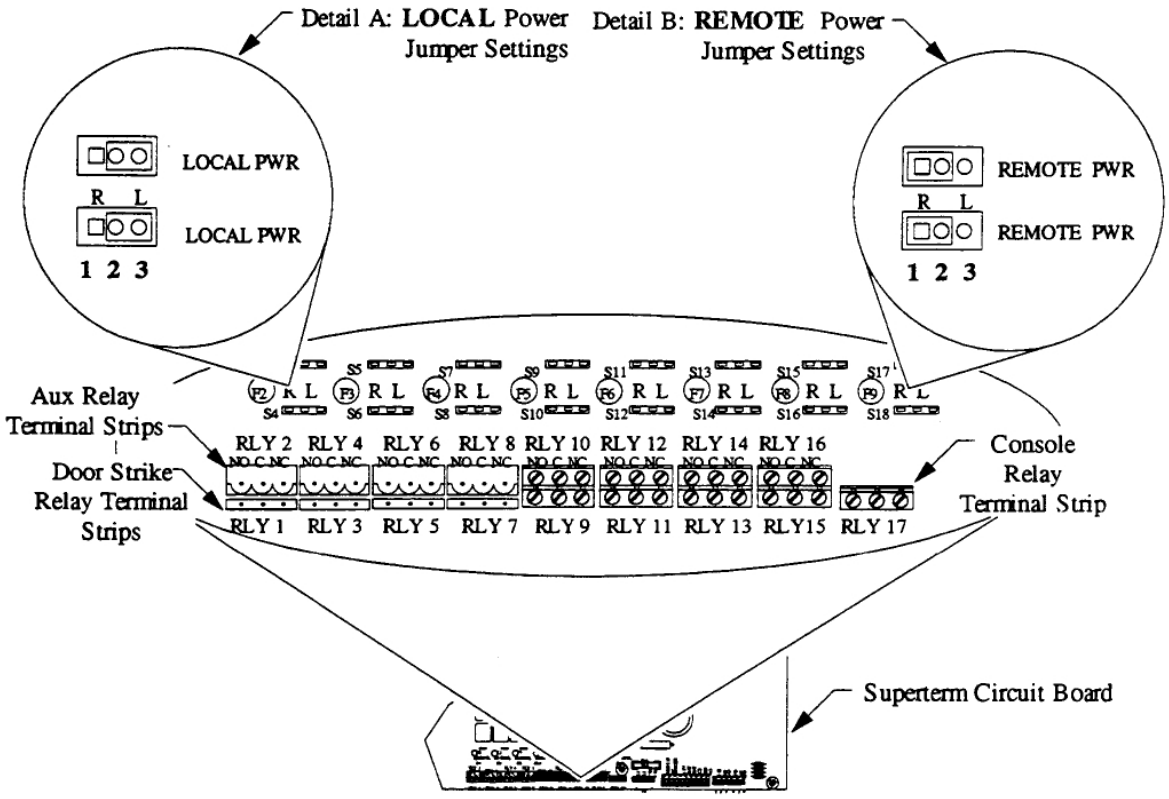


Figure 49 - Superterm Door Strike Jumper Settings

TROUBLESHOOTING

LED Diagnostics

The Superterm circuit board uses LEDs to indicate the presence of a particular voltage and RS-232 signals. Figure 50 shows the LED position on the Superterm circuit board and the individual LED functions.

Table 51 - LED Diagnostic Functions

LED Number	LED Indication	Notes
1	AC	AC voltage is present at the AC Power Input Terminal Block pins 7, 8, and 9
2	12VDC	+12VDC voltage is present at the AUX Power Terminal Strip
3	+5VDC/CPU	+5VDC voltage is present on the Superterm Circuit Board for distribution to the DR1 through DR8 terminal strips and the CPU is operating
4	RXD	Presence of an incoming signal from an external device
5	TXD	Presence of an outgoing signal from the Superterm board to an external device
6	Blank	No function
7	Blank	No function
8	T2	Reserved for test function
9	Blank	No function
10	T1	Reserved for test function

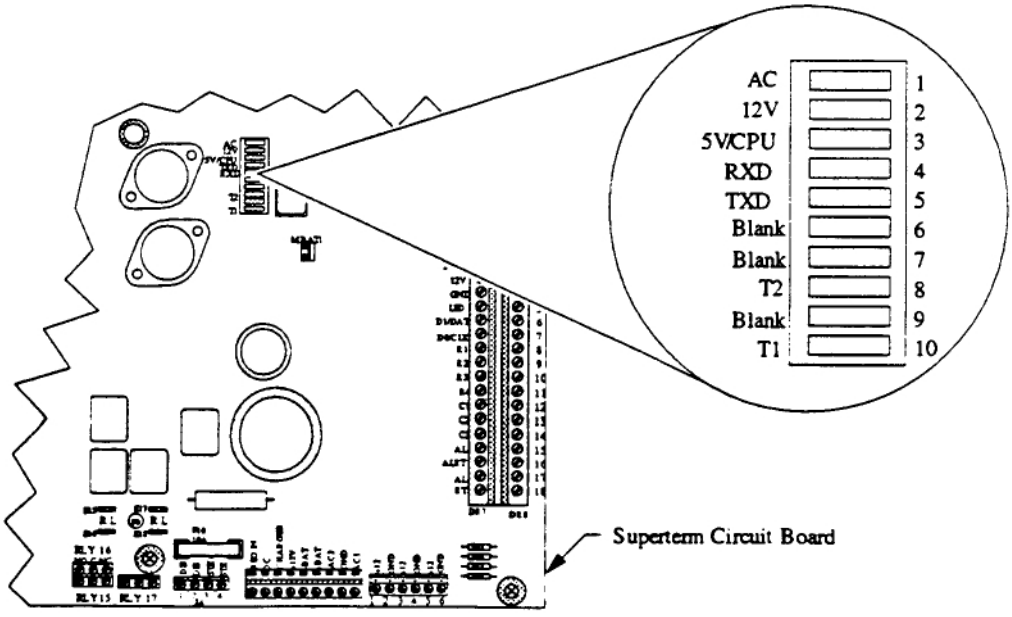


Figure 50 - Superterm Status LED's

Superterm Circuit Board Main Fuse

A 10-ampere (10A) slow-blow fuse protects the Superterm main circuit board from voltage/amperage surges. The fuse is located on the lower right-hand edge of the circuit board above the STKPWR terminal strip (see Figure 51).

WARNING
Verify that the main AC power to the Superterm cabinet is switched OFF and locked against accidental starting.

1) Turn OFF the main circuit breaker controlling power to the Superterm cabinet.

2) Using a non-conducting fuse puller, remove the old fuse (see Figure 51).

3) Replace the fuse with a 5mm x 20mm long, 10-Amp, 250V, slow-blow fuse.

4) Reset the main circuit breaker.

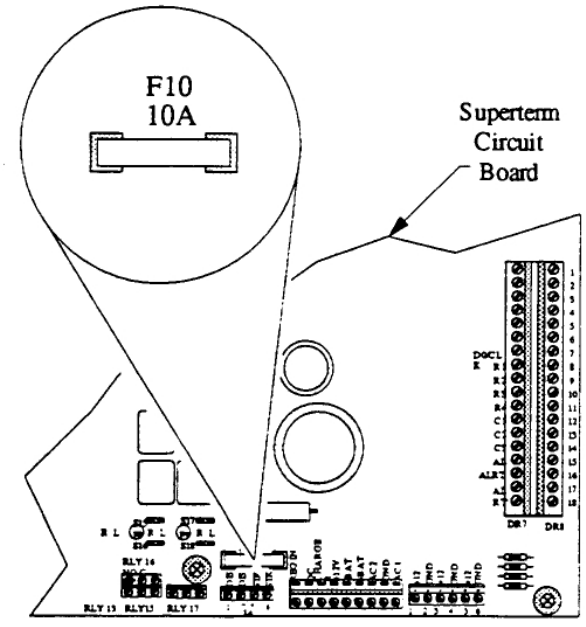


Figure 51 - Superterm Main Fuse Location

Superterm Door Strike Fuses

Eight 2-ampere (2A) slow-blow fuses protect the door strike relays. These fuses are located in line across the lower center surface of the Superterm circuit board (see Figure 52).

WARNING
Verify that the main AC power to the Superterm cabinet is switched OFF and locked against accidental starting.

1) Turn OFF the main circuit breaker controlling power to the Superterm cabinet.

2) Locate the faulty door strike fuse (F2 - F9) (see Figure 52). 3) Using a non-conducting fuse puller, remove the old fuse.

3) Replace the fuse with a 2-Amp, SB, 250V, plug-in, slow-blow fuse.

4) Reset the main circuit breaker.

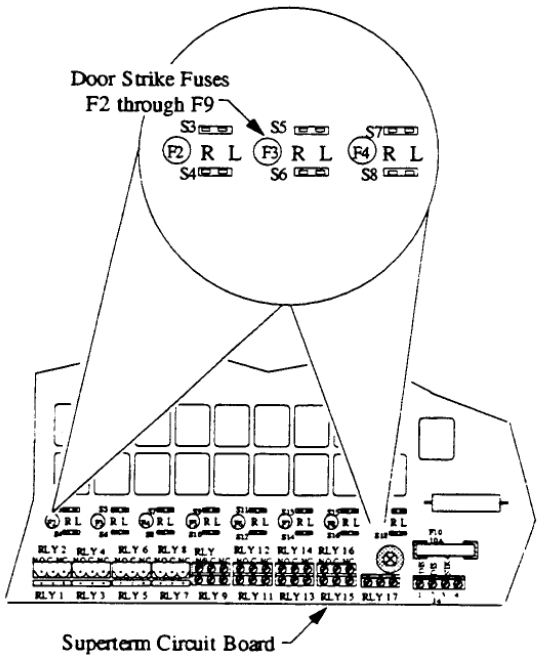


Figure 52 - Door Strike Fuse Location

UPGRADING

Expanded Memory Upgrade

The Superterm card holder capacity may be expanded by installing optional memory boards or devices. The expanded memory may be factory installed or upgraded in the field. Memory upgrade options include a 256K memory module and a 2MB memory board (refer to Expansion Boards and Accessories section, page 5).

256K Memory Module

The 256K memory upgrade requires replacing the existing Superterm standard memory module (labeled U61 on the Superterm circuit board). The U61 memory module is located in the center of the Superterm circuit board (see Figure 53).

Installing the 256K Memory Module

1) Remove AC power from the Superterm and disconnect the 12VAC battery.
2) Discharge static electricity from your body.

WARNING: Before handling Superterm internal components use a personal grounding strap or make contact with the metal chassis to reduce the possibility of static discharge damaging the standard memory module (U61) and the 256K memory module.

3) Using an IC extractor, carefully lift the standard memory module (U61) from its socket on the Superterm circuit board and place in a safe location for future use (see Figure 53).
4) Insert the 256K memory module in the U61 socket, aligning pin 1 on the chip with pin 1 on the board taking care not to bend the memory module pins.

NOTE: The raised portion of the chip (U5) is oriented towards the Superterm relays.

5) Connect the 12VAC battery and restore the AC power to the Superterm.

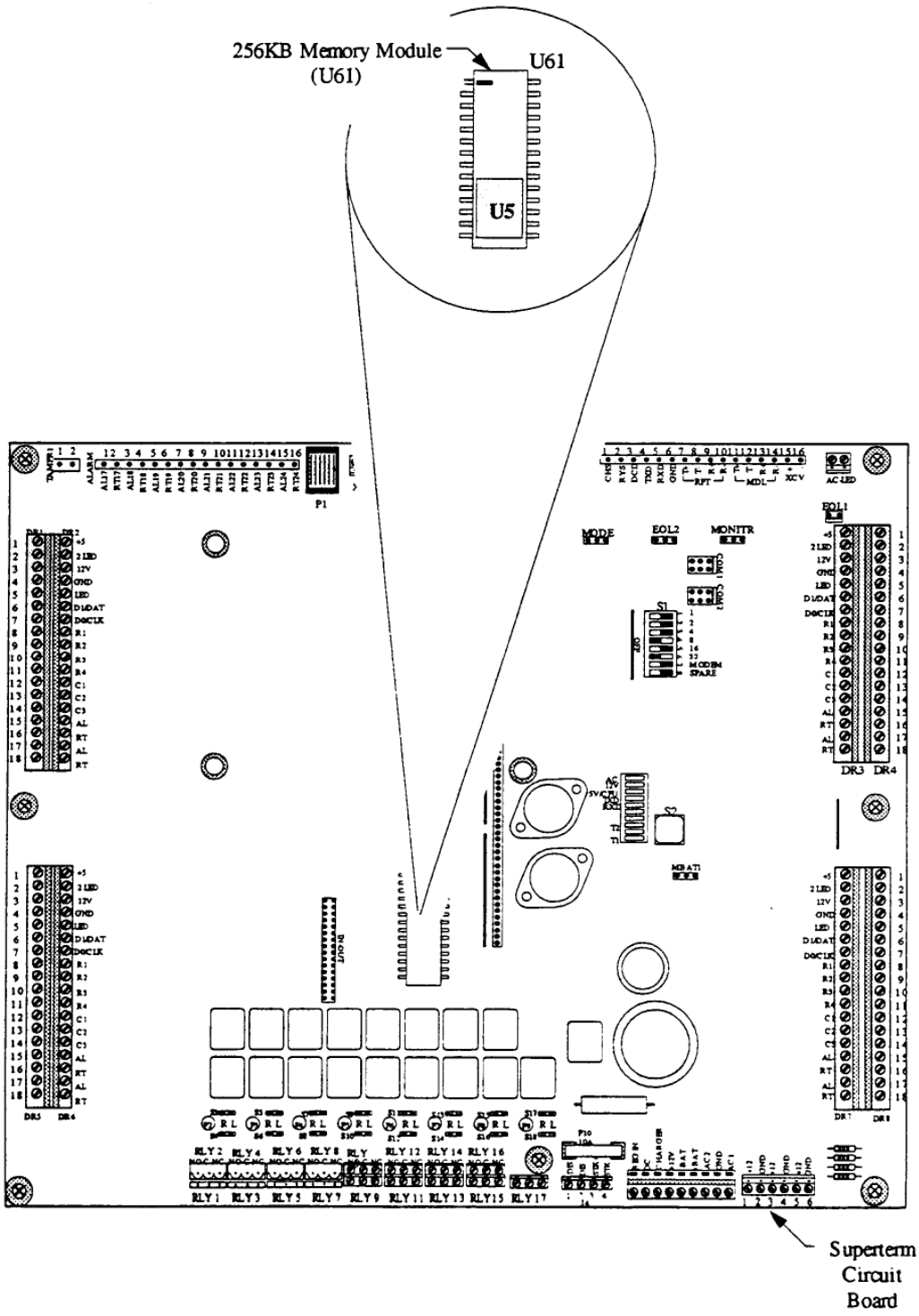


Figure 53 - 256K Memory Upgrade Installation

2MB Memory Board

The 2MB memory upgrade requires installing an additional memory board on top of the Superterm main circuit board. The standard memory device, U61, remains installed when the 2MB board is added.

Mounting the 2MB Memory Board

The 2MB board attaches to the Superterm board with three standoffs and a 36-pin connector (see Figure 55).
Two of the standoffs are "snap" type connectors (see Figure 55, Detail A).
The third standoff is a nylon "screw-on" type connector (see Figure 55, Detail B).

1) Remove AC power from the Superterm and disconnect the 12VAC battery.
2) Discharge static electricity from your body.

WARNING: Before handling the 2MB board, use a personal grounding strap or make contact with the Superterm metal chassis to reduce the possibility of static discharge damaging the Superterm circuit board and the 2MB memory board.

NOTE: If the three 2MB board standoffs are already mounted on the Superterm circuit board, remove the three standoffs from the 2MB board.

3) Align the 36-pin SIP header on the 2MB board over the 36-pin socket on the Superterm circuit board.
4) Align the three standoffs with the appropriate boles on the 2MB board.
5) Gently lower the 2MB board onto the Superterm circuit board.

NOTE: Verify that all 36 pins are properly aligned in the socket. A bent pin will result in a faulty installation.

6) Push the 2MB board down until it is properly seated against the three standoffs and all the pins are in their sockets.
7) On the 2MB board, place the SELL jumper to contact the center post and the right-hand (OPER) post (see Figure 54).
8) Reconnect the 12VAC battery and restore the AC power to the Superterm cabinet.

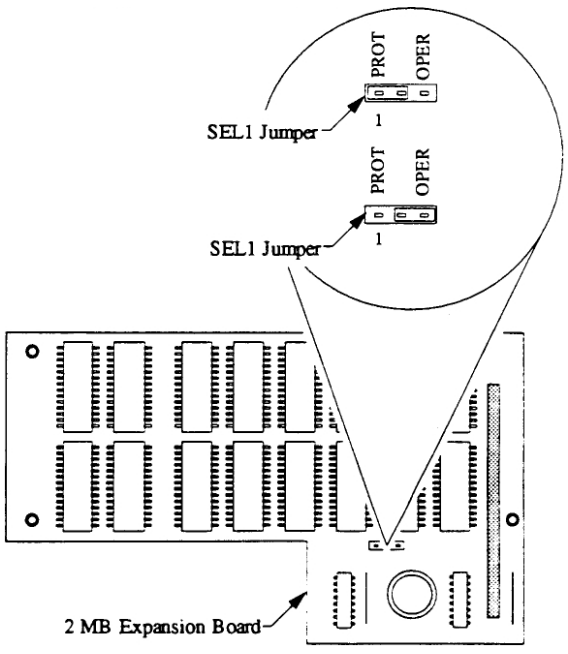
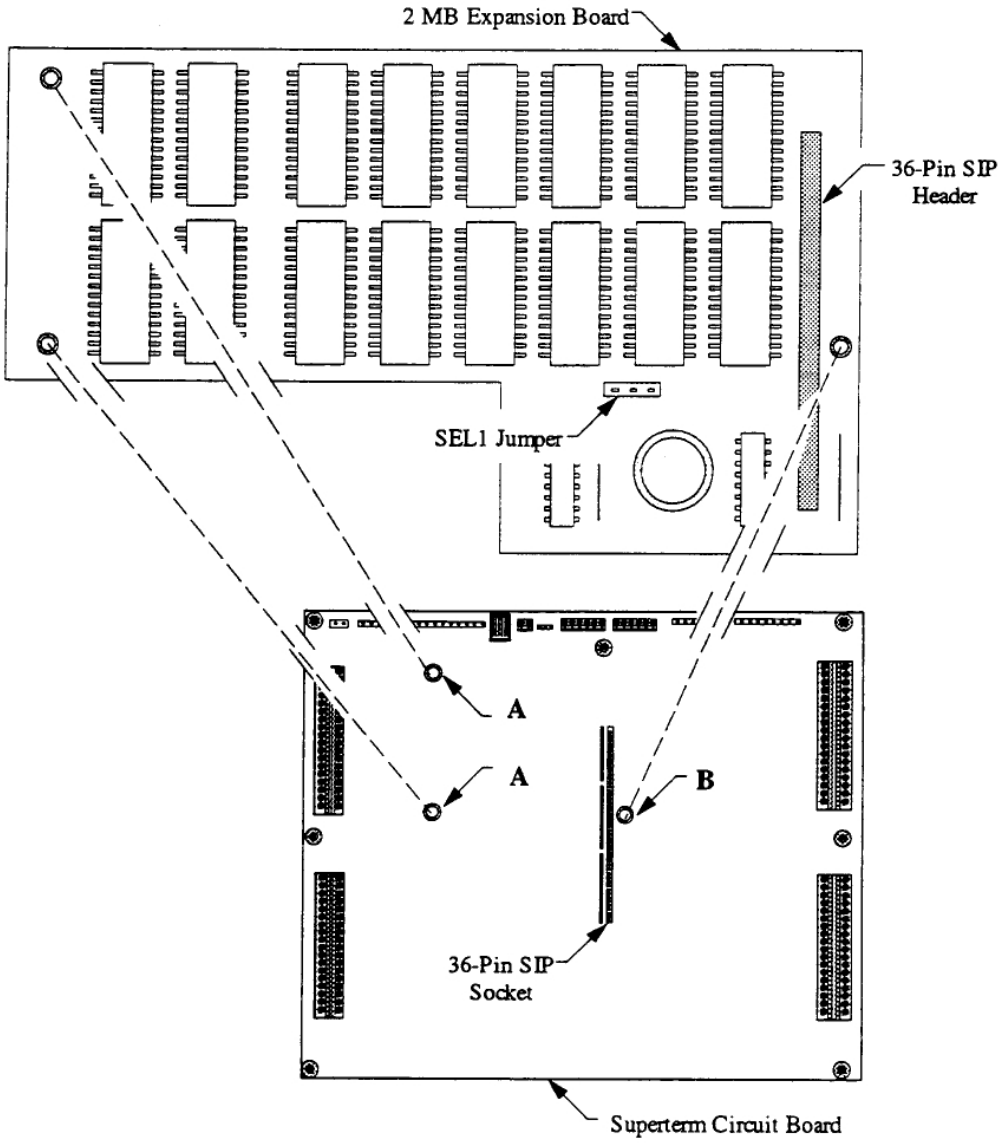
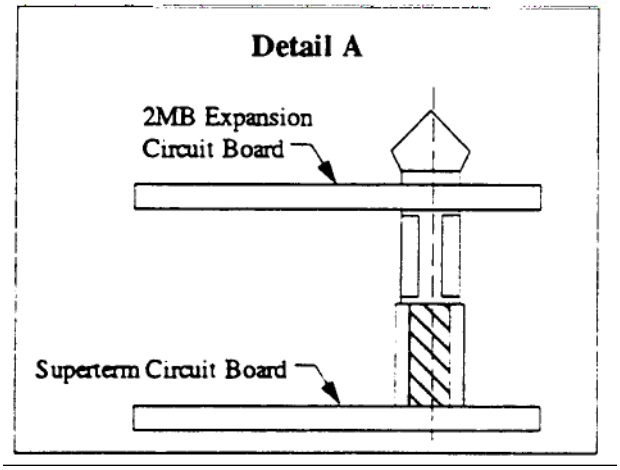


Figure 54 - 2MB Expansion Board Jumper Setting





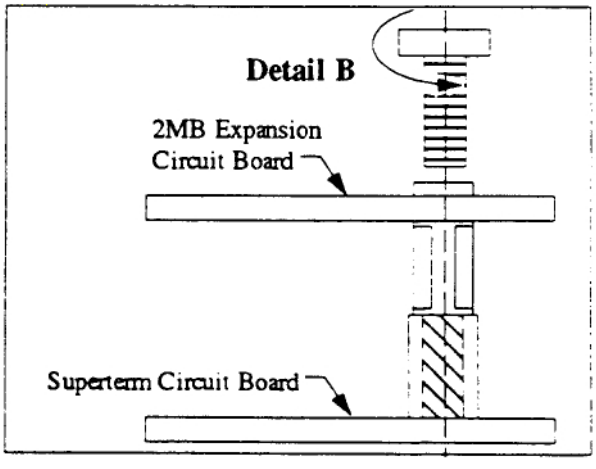


Figure 55 - 2MB Expansion Board Installation

MAINTENANCE

Power Supply Replacement

The following procedure applies after determining that the Superterm on-board Linear Power Supply needs replacing.

WARNING
Verify that the AC source voltage is switched off at the breaker panel before proceeding with power supply replacement.

1) Open the Superterm cabinet and locate the 12VDC power supply in the lower right-hand corner of the cabinet (see Figure 56).

2) Disconnect the 2-pin Molex connector from the transformer module's power supply wires (one black and one white).

3) Disconnect the RED wire of the 12VDC output wiring harness from the power input terminal strip pin 4 (refer to page 12, Step-Down Transformer Connection for specific information).

4) Disconnect the BLACK wire of the 12VDC output wiring harness from the power input terminal strip pin 5 (refer to page 12, Step-Down Transformer Connection, for specific information).

5) Remove the two #6-32 nuts securing the power supply bracket to the Superterm cabinet.

6) Remove the power supply bracket from the Superterm cabinet.

7) Remove the two #6-32 nuts securing the power supply chassis to the rear wall of the Superterm cabinet.

8) Remove the two #6-32 x 1/4" Phillips head screws securing the power supply chassis to the bottom of the Superterm cabinet.

9) Remove the power supply chassis from the Superterm cabinet.

10) Install the new power supply in the reverse order of the removal.

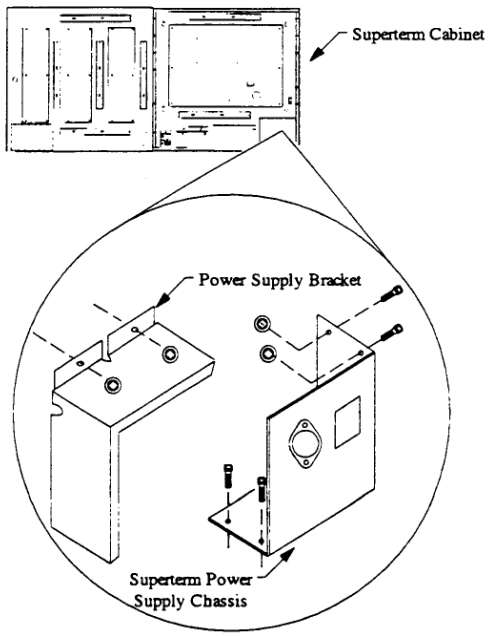


Figure 56 - Superterm Power Supply Replacement

Backup Battery Replacement

WARNING
Verify that the AC source voltage is switched off at the breaker panel before proceeding with backup battery replacement.

1) Open the Superterm cabinet and locate the backup battery secured to the lower center ledge of the cabinet (see Figure 57).

2) Remove the two #6-32 x 1/4" screws securing the backup battery to the Superterm cabinet.

3) Disconnect the RED lead from pin 6 (labeled +BAT) of the power input terminal strip (refer to page 12, Step-Down Transformer Connection for specific information).

4) Disconnect the BLACK lead from pin 5 (labeled -BAT) of the power input terminal strip.

5) Disconnect the RED lead from the POSITIVE terminal of the battery.

6) Disconnect the BLACK lead from the NEGATIVE terminal of the battery.

7) Remove the old battery.

8) Install the new battery in the reverse order of the removal.

Backup Battery In-Line Fuse Replacement

WARNING
Verify that the AC source voltage is switched off at the breaker panel before proceeding with in-line fuse replacement.

1) Open the Superterm cabinet and locate the backup battery secured to the lower center ledge of the Superterm cabinet (see Figure 57).

2) Remove the old fuse from the fuse holder and replace with a new 3AG, 3A fuse.

3) Close the Superterm cabinet and restore the AC source voltage.

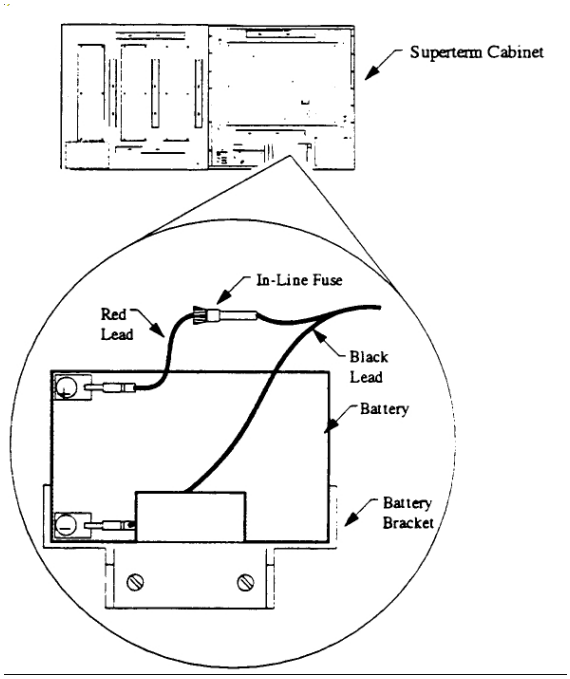


Figure 57 - Superterm Battery/In-Line Fuse Location

Superterm Step-Down Transformer Replacement

WARNING
Verify that the AC source voltage is switched off at the breaker panel before proceeding with power supply replacement.

1) Open the Superterm cabinet and locate the transformer assembly secured to the lower left-hand ledge of the Superterm cabinet (see Figure 58).

2) Disconnect the BLACK lead from pin 7 (labeled AC2) of the power input terminal strip (refer to page 12, Step-Down Transformer Connection for specific information).

3) Disconnect the YELLOW lead from pin 8 (labeled GND) of the power input terminal strip.

4) Disconnect the WHITE lead from pin 9 (labeled AC1) of the power input terminal strip.

5) Disconnect the 2-wire Molex connector between the transformer and the expansion power supply.

6) Disconnect the transformer's NEUTRAL (White) lead from the AC input power terminal block (refer to page 10, 120VAC Power for specific information).

7) Disconnect the transformer's LINE (Black) lead from the AC input power terminal block.

8) Remove the four (4) lock nuts securing the transformer assembly to the Superterm cabinet.

9) Remove the old transformer assembly.

10) Install the new transformer assembly in the reverse order of the removal.

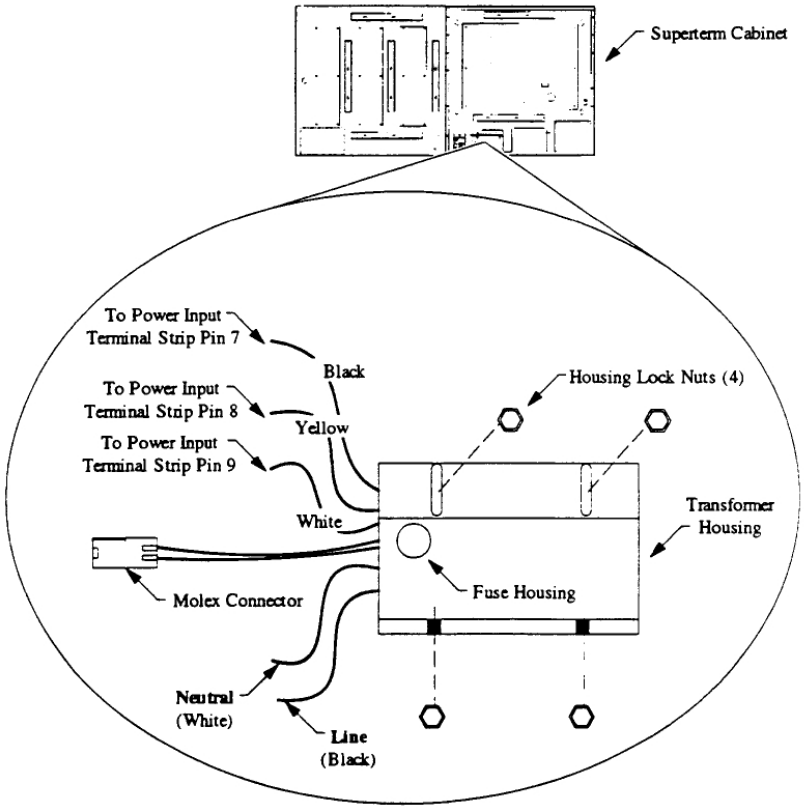


Figure 58 - Replacing the Superterm Transformer Assembly

Service Entrance Fuse Replacement

WARNING
Verify that the AC source voltage is switched off at the breaker panel before proceeding with service entrance fuse replacement.

1) Open the Superterm cabinet and locate the transformer assembly secured to the lower left-hand ledge of the Superterm cabinet (see Figure 59).
2) Locate the fuse housing in the upper left-hand comer of the transformer assembly.
3) Remove the old fuse.
4) Replace with a new 3AG, 2A/120VAC fuse.
5) Close the Superterm cabinet.
6) Restore the AC source voltage to the Superterm.

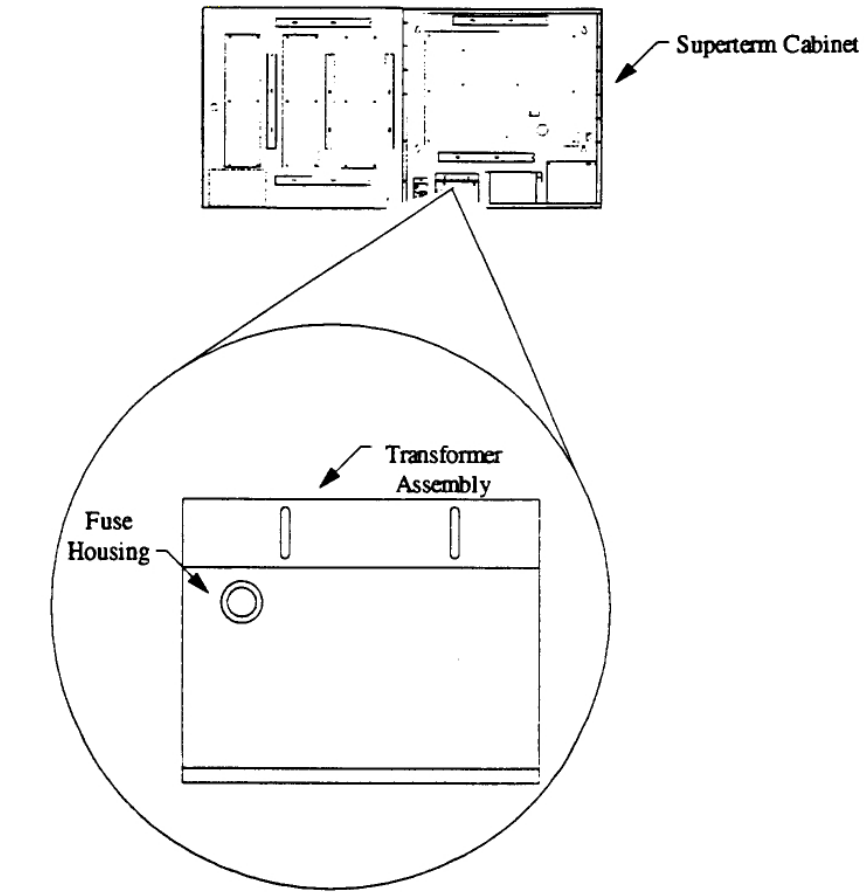


Figure 59 - Service Entrance Fuse Replacement

SPECIFICATIONS

SPECIFICATION	Quantity (8/4-Door)	Comments
Readers	8/4	Full function on or off line
Anti-Passback		Standard
Access Modes	4	Card Only, Unique Code only, Card and Code, Free Access
Serial Ports	3	Host computer, printer (RS-232)
Polling Modes	3	Dial-up (RS-232), RS-422 Multidrop and Repeat
Baud Rates	4	1200, 2400, 4800, 9600 bps
Keypads	8/4	4 x 3
Relays	17/9	Form "C", contact rating of 2A @28VDC (Fused). Expandable
Alarms	24/16	Supervised or non-supervised (host programmable)
LEDs	16/8	2 LEDs per door
Tamper Switch	1	Pre-assigned
Reader Types		Wiegand/Proximity, Magnetic Stripe
Supply Voltage		120/230 VAC
Current Draw		1.0A @ 120VAC (Maximum)
Primary Battery Backup (Memory Only)		6 Months nominal at 25°C
Battery Backup		Approx. 4-6 hours
Weight		48 lbs.
Enclosure Dimensions		21.5"H x 21.25"W x 7"D
Temperature Range Operating Storage		 32-115°F (0-46°C) 32-149°F (0-65°C)
Relative Humidity		0% to 80% non-condensing
Card Capacity	4000	Standard, expandable to 100,000
Time Zones	128	Standard
Access Levels	255	Standard
Holidays	50	Standard
Link Programs	64	Standard
Facility Codes	10	Standard
Transaction Buffer	500	Standard

SPECIFICATIONS

Cables	AWG	Type *	Maximum Length
Alarm Inputs	22 ga	Stranded, shielded, w/drain 2-conductor alarm	1000 ft (305m)
Readers: Magnetic Stripe & Wiegand/Proximity	22 ga	Stranded, shielded, w/drain 4 or 5-conductor (5-conductor for readers w/ LEDs)	1000 ft 500 ft w/unbuffered Wiegand (305m/152m unbuffered)
Keypad	22 ga	Stranded, shielded w/drain 7-conductor	1000 ft (305m)
Polling Line RS-422 (Network)	22 ga	Stranded, shielded, w/drain 2-twisted pair	4000 ft (1220m)
RS-232, Dial-Up (Host Computer)	22 ga	Stranded, shielded, w/drain	50 ft (15m)
Printer	22 ga	Stranded, shielded, w/drain 3-conductor	50 ft (15m)
		*** NOTE:** DO NOT use twisted pair cables except for RS-422 connections.	

POWER RATINGS

As supplied from the factory, the Superterm contains a 115VAC Power Supply, or an optional 230VAC Power Supply (this option not evaluated by ETL).

Continental Instruments LLC recommends using a dedicated, unswitched power outlet to prevent any interference from other equipment that might be connected on the same line.

Voltage	Current (Maximum)	Power (Maximum)
AC- 105-125VAC	1.0 Amperes	125VA
210-250VAC	0.5 Amperes	
DC- 12VDC	0.5 Amperes Std. Version	6 Watts
DC- 12VDC	1.0 Ampere Exp. Power Version	12 Watts

A NAPCO SECURITY TECHNOLOGIES COMPANY

355 Bayview Avenue, Amityville, NY 11701
Phone: 631-842-9400 Fax: 631-842-9135

www.cicaccess.com

Publicly traded on NASDAQ Symbol: NSSC