Sennet®

Communications Network

Product Guide

M0DA0302-001, Rev F
First edition
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Senstar Stellar

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Approvals - standard Transponder Unit, repeaters and Network Controller

Canada: This Class B digital apparatus meets all requirements of the Canadian Interference -Causing Equipment Regulations.
Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

USA: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including any interference that may cause undesired operation.
The use of shielded cables is required for compliance.
Any changes or modifications not expressly approved by Senstar-Stellar Corporation 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 B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation distance between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Europe: This device conforms to the protection requirement of council directives 89/336/EEC and 73/23/EEC on the approximation of the laws of member states relating to Electromagnetic compatibility and low voltage directive, as amended by directive 93/68/EEC.

CE

Senstar-Stellar Corporation's Quality Management System is ISO 9001:2000 registered.

Approvals for the Large Transponder Unit and the Remote Display and Control Panel are pending.

Related publications

Perimitrax® Site planning guide (A3DA0102):
Describes Perimitrax system features, operation, components and applications. It also provides information regarding the design, planning, and ordering of Perimitrax systems.

Perimitrax® Installation guide (A3DA0202):
Provides instructions for installing the Perimitrax system and system components.

Perimitrax® System setup guide (A3DA0302):
Provides instructions for calibrating and maintaining Perimitrax systems. Information on system, setup, testing, system reports, diagnostics and troubleshooting is also found in this manual.

Intelli-FLEX™ product guide (Multiplex version) (C6DA0402):
Describes Intelli-FLEX multiplex version features, operation, components and applications. It also provides instructions for planning, installing and setting up an Intelli-FLEX multiplex version system.

Senstar®100 Site Creation Planning Guide (DA-030213):
This guide provides detailed instructions on gathering the site data and designing the Senstar 100 database.

Using this guide

This guide provides all of the information necessary to layout, install and setup a Sennet system.

Chapter 1 describes each of the Sennet system components; chapter 2 provides network layout guidelines; the equipment setup and installation instructions are contained in chapter 3; chapter 4 details the system powering up instructions; and chapter 5 describes the operating features for using the remote display and control panel.

The appendices contain forms to assist in configuring your system, equipment specifications, troubleshooting guidelines, maintenance procedures, device address settings and a listing of available equipment for the Sennet system.

Device configuration forms

Throughout this guide, references are made to the device configuration forms. These forms indicate the correct card settings and connections for the site. They should be kept with the relevant units for future reference (a storage pocket is provided in the enclosure for this purpose). See *appendix a - Device configuration forms.*

Figures

The figures contained in this document are for illustration purposes only, they may differ from the actual equipment.

Abbreviations

The following abbreviations are used throughout this guide:

- AC - alternating current
- DC - direct current
- I/O - input/output
- LCD - liquid crystal display
- LED - light emitting diode
- LTU - the Sennet large transponder unit
- NC - the Sennet network controller
- n.c. - normally closed
- n.o. - normally open
- RDCP - the Sennet remote display and control panel
- RP3PC - the Sennet repeater, 3-port, copper model
- RP2PC - the Sennet repeater, 2-port, copper model
- RP2PF - the Sennet repeater, 2-port, copper/fiber optic model
- TU - the Sennet standard transponder unit
- UPS - uninterruptible power supply
- VDU - video display unit

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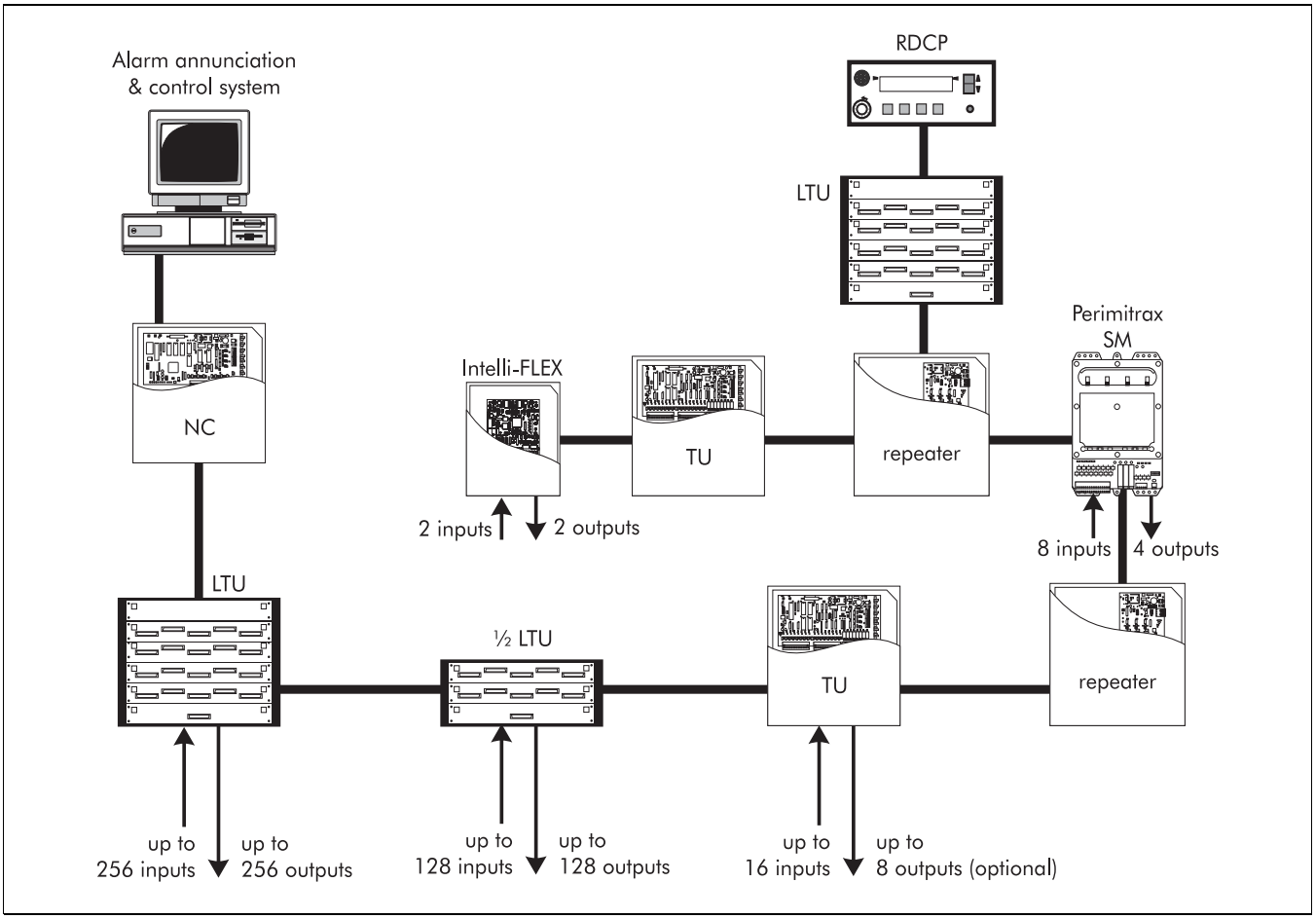
1 Overview Sennet components

What is Sennet



Sennet® is Senstar-Stellar Corporation's alarm communications network designed specifically for security monitoring applications. Each Sennet network consists of a network controller, and a combination of hardware components, (large transponder units (LTU), transponder units (TU), remote display and control panels (RDCP), Perimitrax® buried line sensor Sensor Modules, Intelli-FLEX™ fence sensor multiplex processors and repeaters), as required by the site.

The network provides fast, reliable and secure communications between your security devices and a host alarm annunciator, such as Senstar-Stellar's Senstar®100 alarm annunciation system. The alarm annunciator allows you to configure each network device individually to process specific maintenance, setup and alarm information. The annunciator can also be configured to receive information from intrusion sensors and other security devices, as well as send messages to security devices; for example, to trigger a siren or unlock a door.

The intrusion sensors and security devices can be hundreds of metres or even many kilometres from your annunciator. A network repeater circuit card is used to expand the maximum distance of the network to enable this possibility. This is especially useful when applied to outdoor security systems.

Each device in a Sennet network runs on its own power supply. Where possible, provisions have been made for an optional backup battery. Where this is not possible, an external AC UPS is recommended.

features

- flexible
- reliable data transmission
- fast response time
- easy installation and maintenance
- expandable

Reliable data transmission

Sennet's powerful data protocol and redundant hardware ensures that intrusions are always reported.

- Dual physical data paths increase reliability.
- Powerful data error detection algorithms enable alarm messages to get through even in the presence of noisy or intermittent data paths.
- The source of each alarm message is verified. Any sabotage or tampering with messages is detected and reported. Communication errors are reported and tabulated in a maintenance report.
- Physical tamper detection circuits are provided for all hardware enclosure.

Fast response time

Sennet maximizes operator response by carrying alarm information between security devices and the annunciator, typically in 100 ms. Network delay time is never longer than 500 ms.

Easy installation and maintenance

Sennet is designed for simple installation and maintenance. Twisted-pair wiring or multi-mode fiber optic cabling connects all devices with the network controller, eliminating the need for complex wiring. Installation and replacing parts is fast and easy with snap-in circuit boards, removable terminal blocks, and a minimum number of circuit board switches. Battery charging circuitry is built in - adding UPS capability is simply a matter of connecting a battery. Sennet provides built-in diagnostics for help in troubleshooting and maintenance.

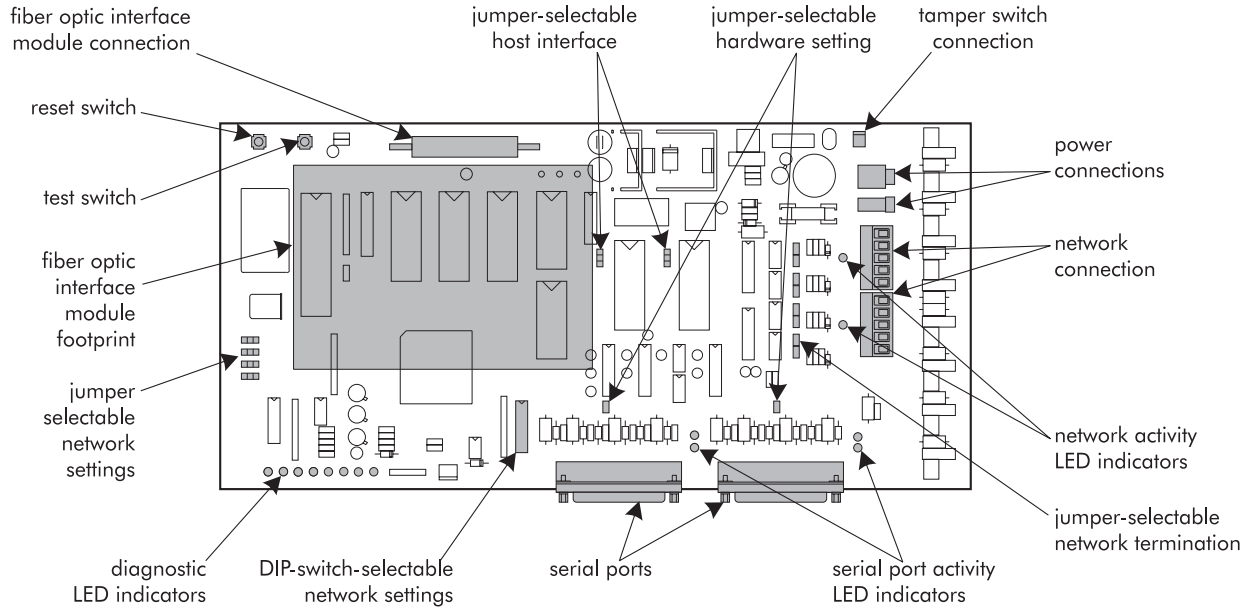
Expandable

Sennet is flexible. Networks can be as small as one network controller and one network transponder, located up to 1.2 km (¾ mile) apart. Transponders and repeaters extend network length to 13 km (8 miles) and increase its capacity to 992 input points and 496 output points. A total network capacity of 3392 inputs, 2976 outputs can be achieved by connecting combinations of Sennet-compatible devices - TUs, LTUs, RDCPs, etc. Multiple transponder networks can be used with one annunciator.

Sennet's data protocol was designed specifically to meet future security requirements. In addition to the twisted-pair format, it supports communication via optical fiber and coaxial cable (Perimitrax Sensor Module only). Built-in redundancy and error handling are designed to adapt to the transmission medium.

The Sennet network is being developed to support more devices in the future.

Network controller



The Sennet system must include a network controller in order to relay information to and from the network.

The network controller acts as the traffic director for the network. It manages all information which passes between the host annunciator and the network. One annunciator may support several networks; contact your supplier for information.

Options for annunciation systems include the Senstar-Stellar Senstar®100, the Senstar-Stellar Perimitrax® Central Controller, the Senstar-Stellar Intelli-FLEX™ Central Controller or a user supplied annunciator.

The network controller connects to the host annunciator(s) through the RS-232/ RS-422 serial port interface(s), and connects to the transponders through redundant RS-485 copper wire, fiber optic or coaxial cable data paths. The coaxial cable is compatible only with the Perimitrax Sensor Module.

The network controller monitors the devices, checks network integrity, and relays alarm and diagnostic information to the host.

The network controller accepts 12 VDC, 16 VAC or 110-120/220-240 VAC power input. The AC operation provides a charger to support local UPS operation with an optional battery. The power supply and network controller are mounted on a Sennet mounting plate which can then be mounted either in a secured area or in an enclosure.

The supplied local UPS operation applies only to the network controller. It does not extend to the other network devices

features

- two serial port RS-232 or RS-422 connections with RTS/CTS hardware handshaking to the host alarm annunciator and control unit - jumper-selectable
- interface to the serial port - jumper-selectable
- host annunciator baud rate - DIP-switch-selectable
- network baud rate - jumper-selectable
- network end-of-line termination circuits - jumper-selectable
- quick connection to network - removable terminal blocks
- timeout monitor enable/disable - jumper-selectable
- AC fail alarm annunciation - DIP-switch-selectable
- push-button Test and Reset switches
- 8 red LEDs - diagnostic status indicators
- 4 green LEDs - serial port activity indicators
- 2 green LEDs - network activity indicators
- 12 VDC, 16 VAC or 110-120/220-240 VAC power, optional battery backup
- RS-485 copper wire or fiber optic cable compatible (through optional fiber optic interface module)

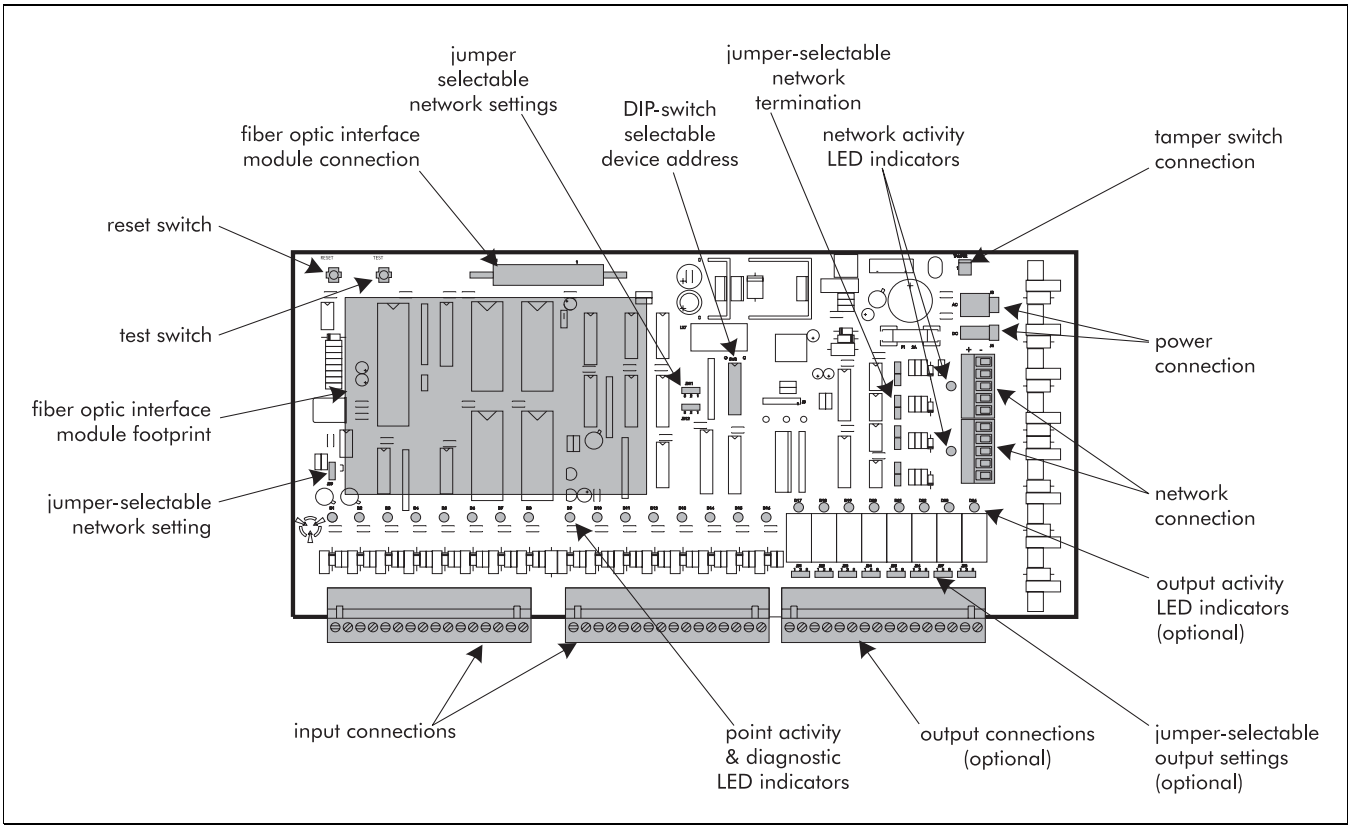
Transponder unit

The transponder unit collects and translates data from distributed sources (e.g., fence-mounted sensors, infrared motion detectors, door and window contacts, microwave sensors). Each transponder provides optional relay outputs that can activate local devices (e.g., mimic panels, gate or door controls, sirens, lights).

Two types of transponder units are available for the Sennet network - the standard transponder unit and the large transponder unit. The standard transponder unit is best suited to collecting and distributing small clusters of security alarm points that are not centrally located. The large transponder unit is more appropriate for a large number of input/output (I/O) points that are concentrated in a specific area.

standard transponder unit

There are 2 versions of the standard transponder unit. One version has an I/O point capacity of 16 inputs/8 outputs, the other version has a 16 input point capacity, with no output point capacity. These units, capable of indoor or outdoor operation, must be mounted in an enclosure or in a protected area.



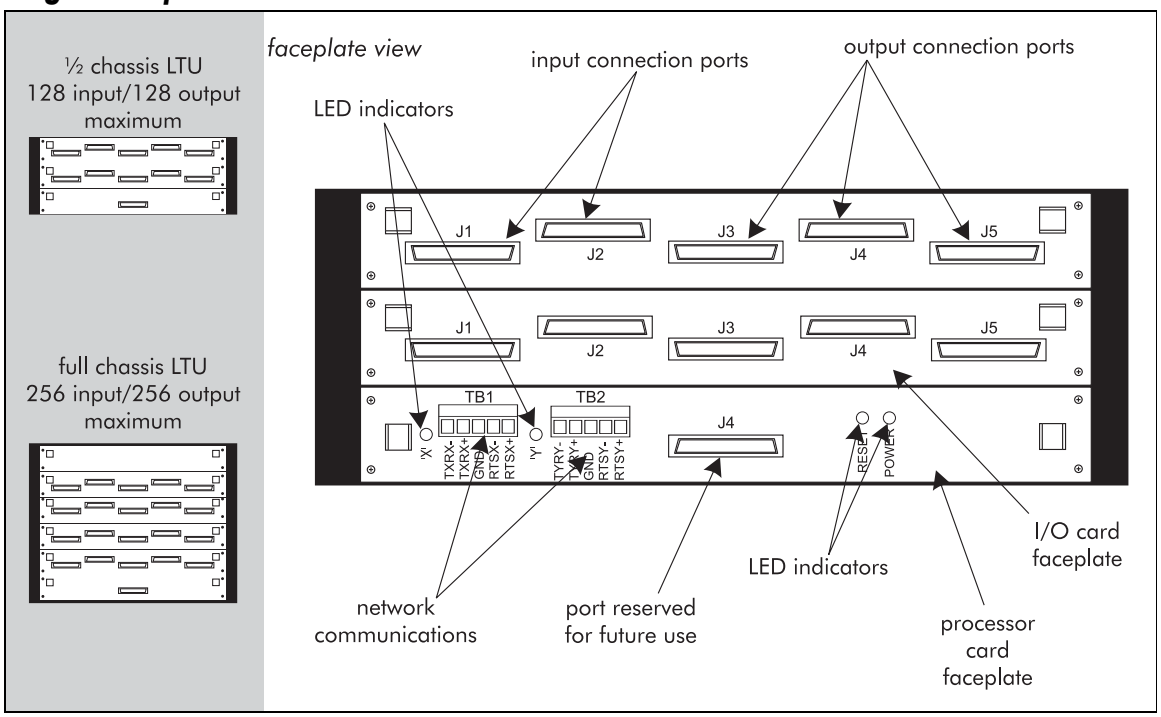
Each transponder unit accepts 12 VDC, 16 VAC or 110-120/220-240 VAC power input. The AC operation provides a charger to support local UPS operation with an optional battery. The power supply and transponder unit are mounted on a Sennet mounting plate which can then be mounted either in a secured area or in an enclosure.

The supplied local UPS operation applies only to the transponder unit. It does not extend to the other network devices

features - standard transponder unit

- network device address - DIP-switch-selectable
- network baud rate - jumper-selectable
- network end-of-line termination circuits - jumper-selectable
- quick connection to network inputs/outputs - removable terminal blocks
- timeout monitor enable/disable - jumper-selectable
- push-button Test and Reset switches
- 16 red LEDs - input alarm/tamper and diagnostic status indicators
- 8 red LEDs - optional output relay activity indicators
- 2 green LEDs - network activity indicators
- 16 supervised inputs
- 8 dry-contact outputs (optional)
- output type (normally open - n.o., normally closed - n.c.) - jumper-selectable
- 12 VDC, 16 VAC or 110-120/220-240 VAC power, optional backup battery

large transponder unit

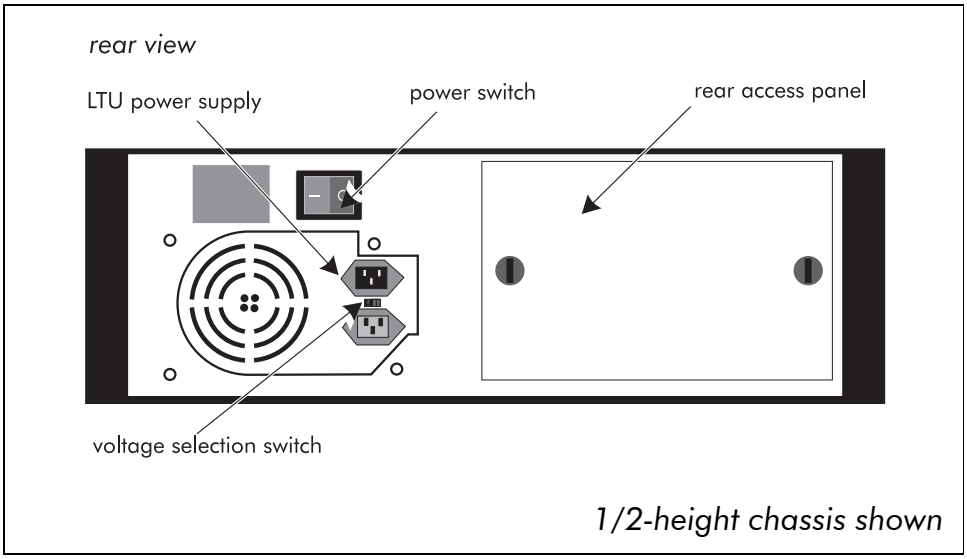


The half-chassis version of the LTU has an I/O capacity of 128 inputs and 128 outputs. Each unit consists of a 19-inch rack mount half-chassis that contains a processor card, the power supply for the LTU and slots for two I/O cards.

A full chassis version of the large transponder unit (LTU) is also available. This unit has an I/O capacity of 256 inputs and 256 outputs. Each unit consists of a 19-inch rack mount chassis that contains a processor card, the power supply for the LTU and slots for four I/O cards.

Each I/O card faceplate provides two input connector ports (J1 and J2) and three output connector ports (J3, J4 and J5). The 64 supervised input structure is identical for each of the 3 card types, however, the output structure is different for each - 64 relay, 32 relay and 64 lamp driver. These are described more fully in the sections that follow.

The processor card faceplate houses the connectors to the X and Y Sennet network connections (TB1 and TB2 respectively).



The 115/230 VAC LTU power supply, mounted inside the rear of the LTU chassis, provides power to the processor card and the LTU I/O circuit cards.

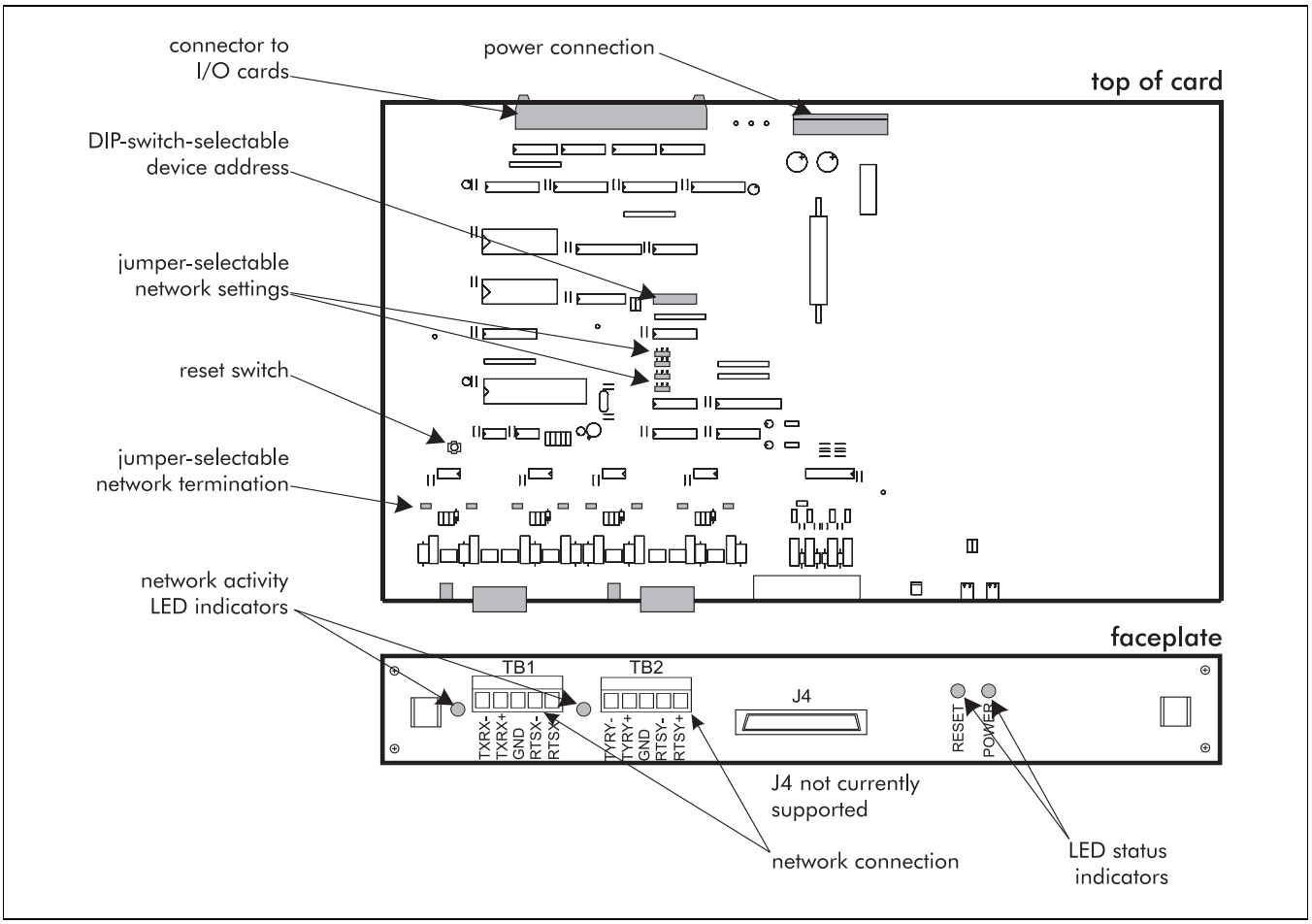
The power and voltage selection switches are mounted on the rear wall of the LTU chassis above the power supply.

features

- network device address - DIP-switch-selectable
- network baud rate - jumper-selectable
- network end-of-line termination circuits - jumper-selectable
- quick connection to network inputs/outputs - removable terminal blocks
- 2 green LEDs - network activity indicators
- timeout monitor enable/disable - jumper-selectable
- 2 red LEDs - power and reset status indicators
- 256 supervised inputs (maximum) in blocks of 64
- 256 outputs (maximum) in blocks of 64
- 19-inch rack chassis
  - wall or rack mount
  - 1/2-height chassis accommodates 2 I/O cards
  - full height chassis accommodates 4 I/O cards
- 115/230 VAC power supply

LTU processor card

The LTU processor card slides into the lower slot position in both the ½ and full LTU chassis. Network settings and connections, and power and communication connections to the I/O cards are made at the LTU processor card.

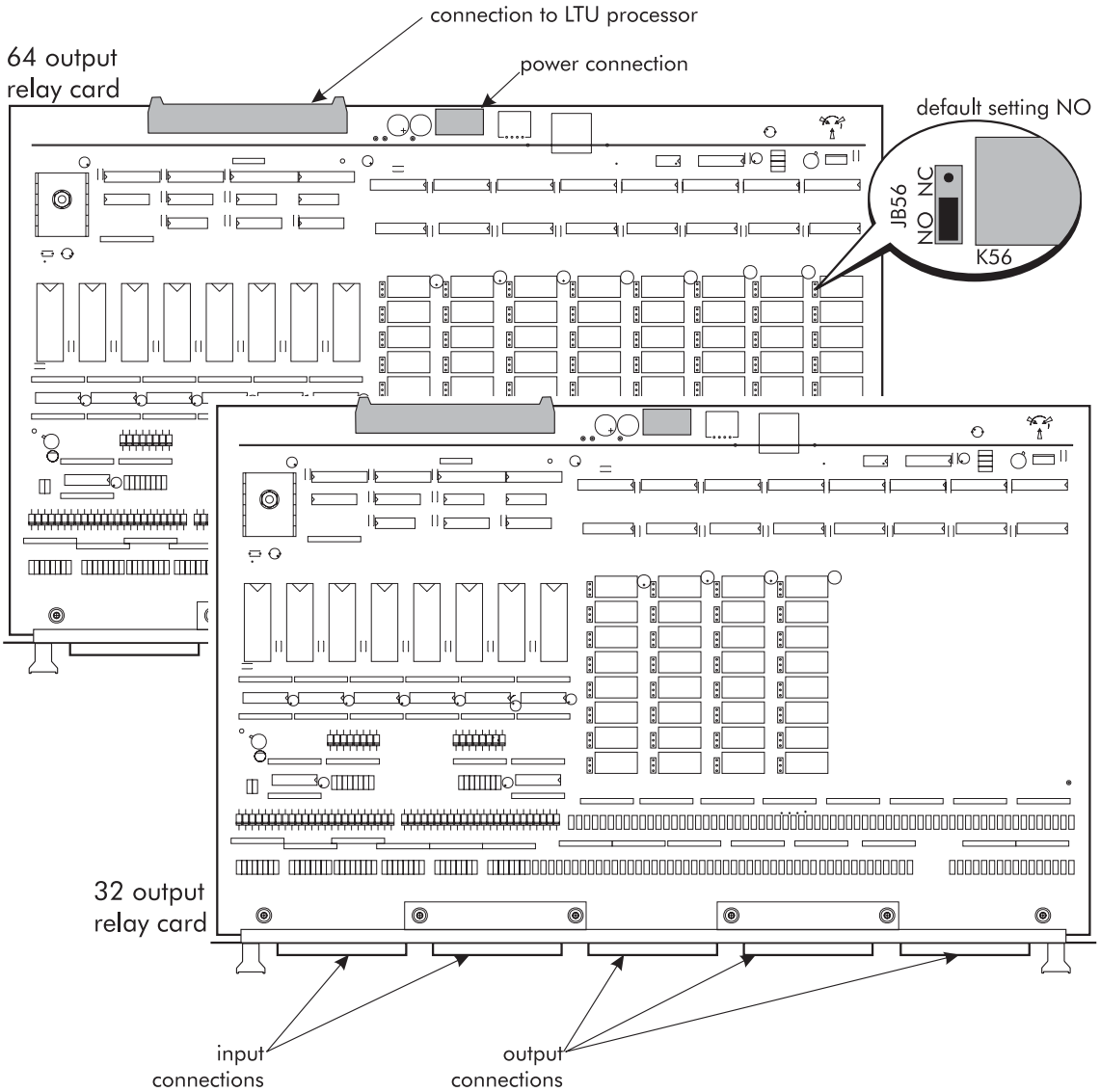


Output relay cards

The 64 output relay card contains the circuitry required to connect 64 supervised inputs and 64 relay outputs to the network. Jumper settings for n.o. and n.c. relay configurations are made on this card. The back of the card provides connectors for power and communication from the processor card. The faceplate houses 2 input and 3 output ports.

The 32 output relay card is similar to the 64 output card with the exception that only 32 outputs are available.

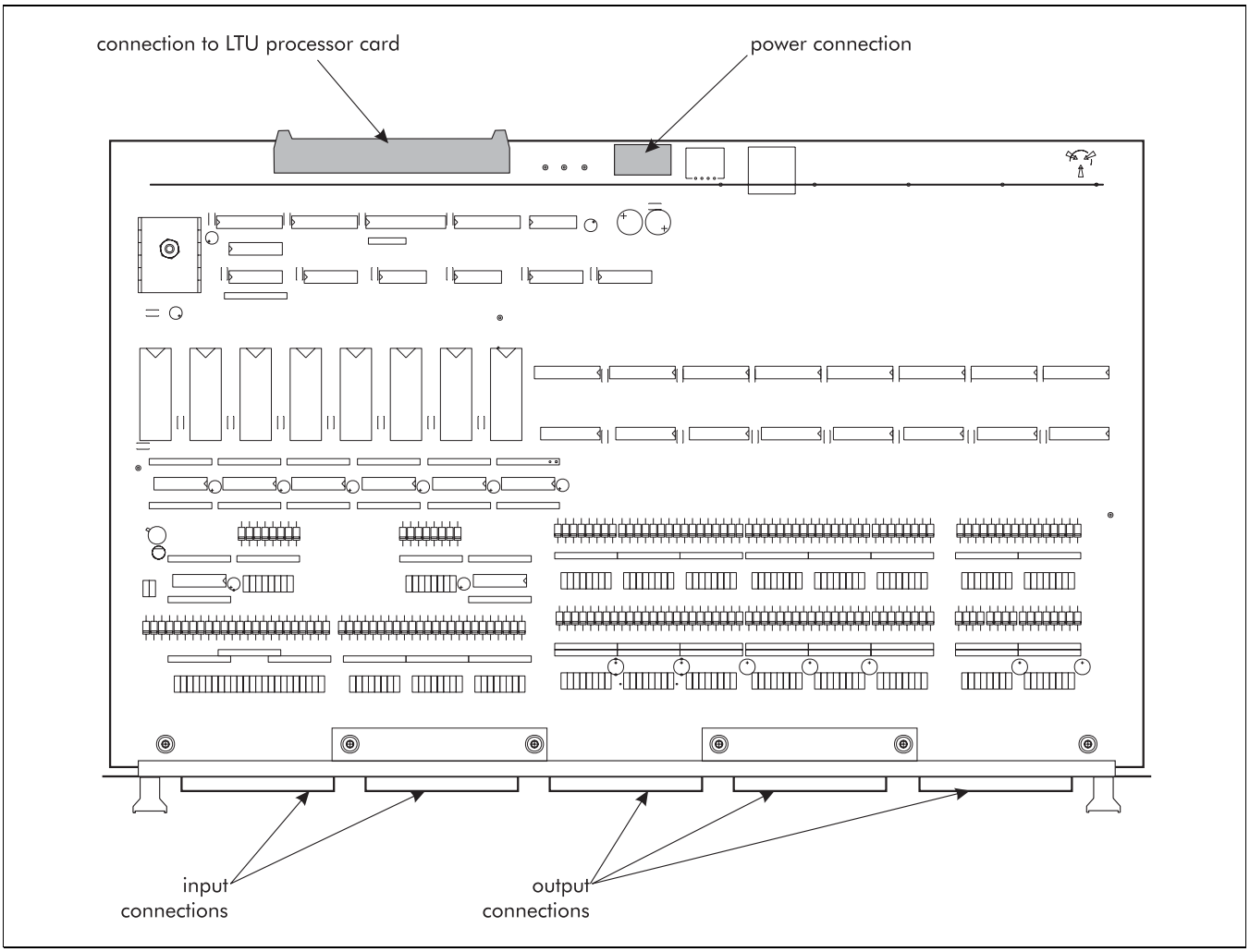
Both of these cards are mounted above the processor card in the ½ or full LTU chassis.



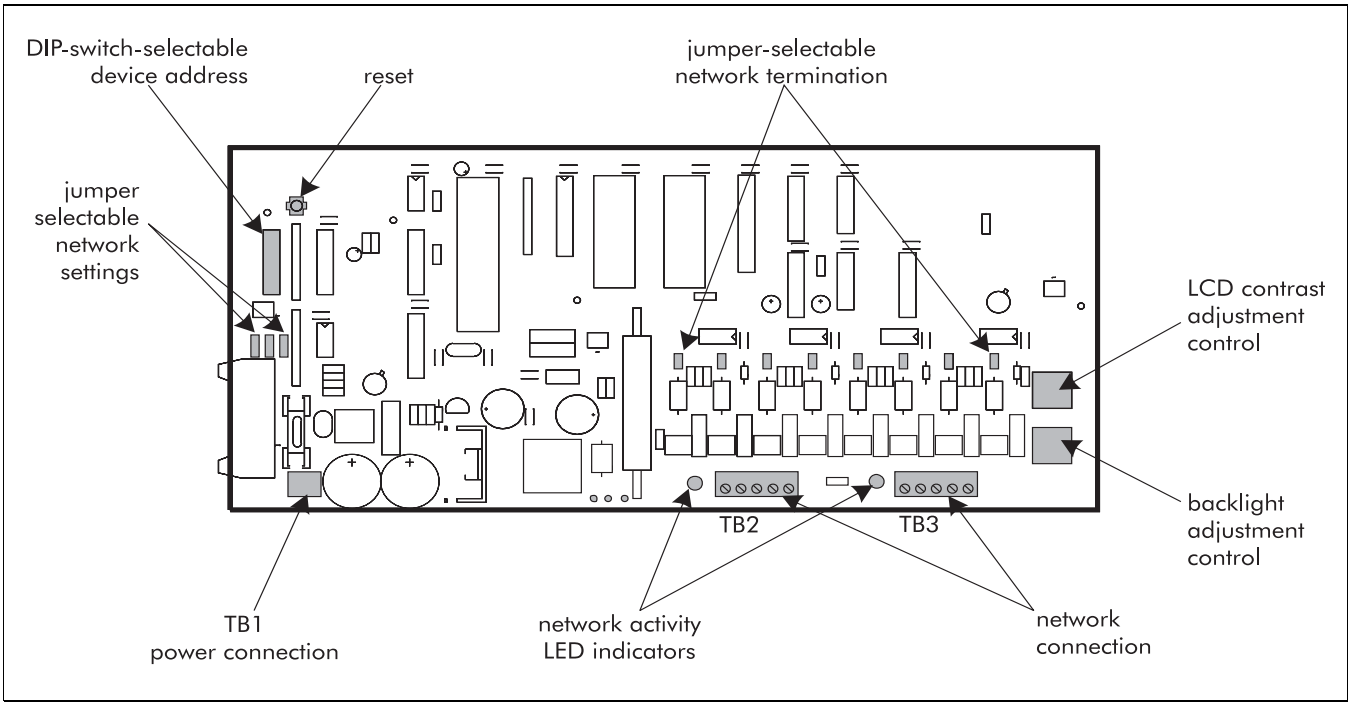
Output lamp driver card

The output lamp driver contains the circuitry necessary to connect 64 supervised inputs and to activate 64 output lamps. The back of the card provides connectors for power and communication from the LTU. The faceplate houses 2 input and 3 output ports.

This card is mounted above the processor card in the ½ or full LTU chassis.



Remote display and control panel

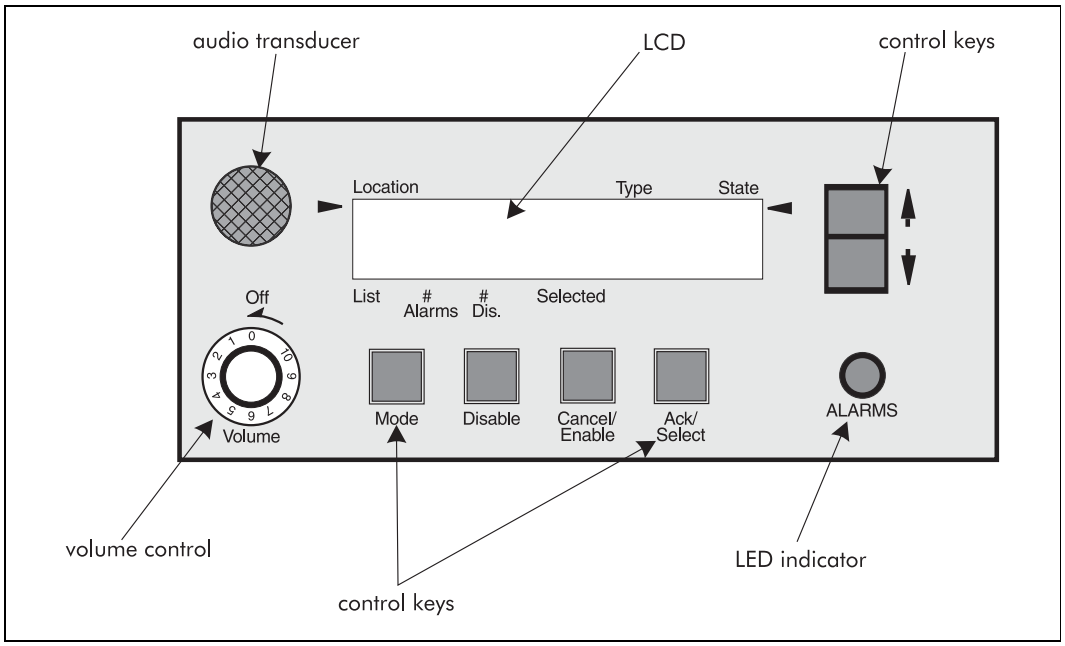


The remote display and control panel (RDCP) enables the system to display and process alarms at a location that is different from the central annunciation system. The unit can be mounted in a 19-inch rack, in a wall or on a table top. Each Sennet network can accommodate 16 of these panels based on Senstar 100 specifications.

The RDCP accepts 12 VDC or 16 VAC power input. The customer-supplied power supply should be mounted close to the panel in a secure location.

circuit card features

- network device address - DIP-switch-selectable
- network baud rate - jumper-selectable
- network end-of-line termination circuits - jumper-selectable
- quick connection to network inputs/outputs - removable terminal blocks
- timeout monitor enable/disable - jumper-selectable
- 2 green LEDs - network activity indicators
- adjustable LCD contrast
- adjustable LED backlight intensity
- adjustable audible alarm
- 255 alarm points (maximum)
- input power connector
- 12 VDC/16 VAC power supply



faceplate features

- 4 line by 40 character backlit LCD
- 6 control keys
- volume control
- LED alarm activity indicator

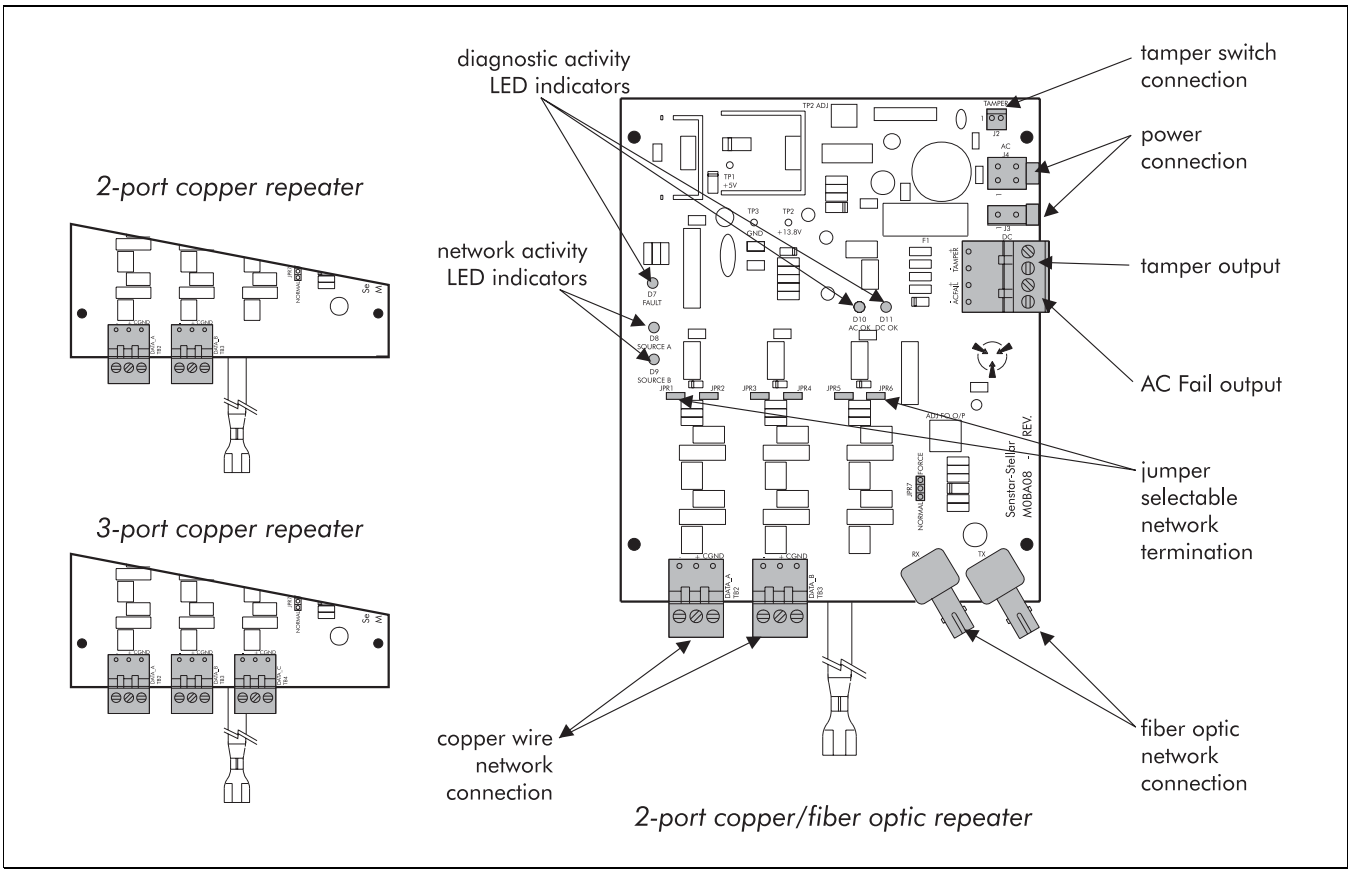
Repeater

Three repeater card options are available for the Sennet network. A 2- or 3-port option is available for copper wire network applications. A 2-port copper/fiber optic option is also available. This repeater is used for networks that use fiber optic cabling exclusively and also in networks where copper wire and fiber optic cabling are both used. In the latter instance, the copper/fiber optic repeater can be used to translate data signals between copper wire and fiber optic cable compatible signals.

For copper wire networks, repeaters are required to extend the operational distance between network devices beyond the 1.2 km (¾ mile) limit (or the specified number of devices allowed), or to implement nonlinear configurations such as branches or stars.

The fiber optic option may be used in networks where lightning may be a concern, such as an outdoor application, or in cases where the distance between 2 network devices is beyond the 1.2 km limit for the copper wire, but within the 2 km (1¼ mile) range of the fiber optic cabling.

The repeater is mounted on a Sennet mounting plate which can then be mounted either in a secured area or in an enclosure.



The repeater accepts 12 VDC, 16 VAC or 110-120/220-240 VAC power input. The AC operation provides a charger to support local UPS operation with an optional battery. The power supply and repeater are mounted on a Sennet mounting plate which can then be mounted either in a secured area or in an enclosure.

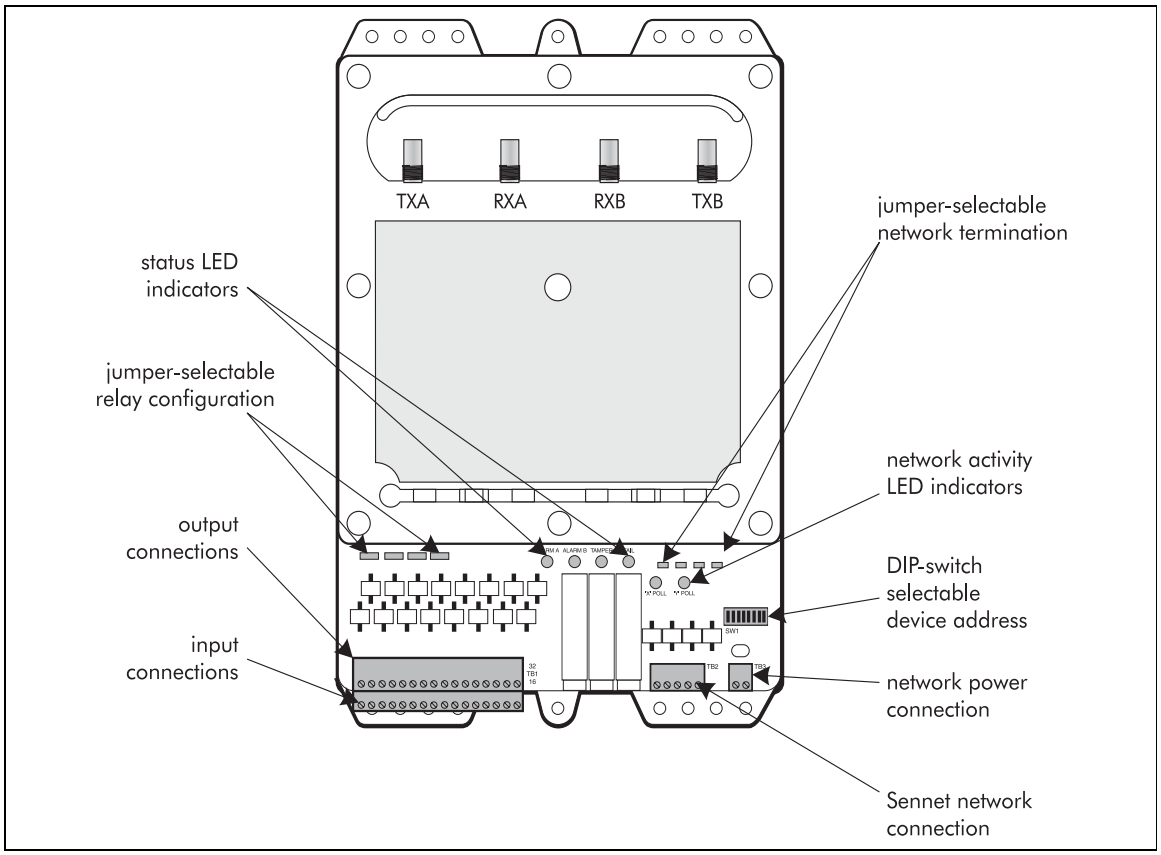
The supplied local UPS operation applies only to the repeater. It does not extend to the other network devices.

features

- operation independent of network baud rate
- network end-of-line termination circuits - jumper-selectable
- quick connection to network - removable terminal blocks
- 2 green LEDs - communications status indicators
- AC fail and tamper switch output connections used as inputs to a nearby transponder
- 2 red LEDs - AC and DC power status indicators
- 1 red LED - communication failure indicator
- on-board network transient protection
- 12 VDC, 16 VAC or 110-120/220-240 VAC power, optional backup battery
- compatible with 50/125, 62.5/125 and 100/140 multimode fiber optic cable

Perimitrax® Sensor Module

The Perimitrax® Sensor Module is a Sennet-compatible device. As such, the Sensor Module can be integrated into any Sennet network. This feature allows the direct integration of perimeter security into the Sennet alarm and data collection system. For more information refer to *Perimitrax Site planning guide (A3DA0102)*.



features

- network device address - DIP-switch-selectable
- fixed network baud rate - 19200 baud
- network end-of-line termination circuits - jumper-selectable
- quick connection to network - removable terminal blocks
- 2 red LEDs - network activity indicators
- 8 supervised inputs per Sensor Module
- 4 dry-contact outputs per Sensor Module
- output type (normally open - n.o., normally closed - n.c.) - jumper-selectable
- quick connection to I/O points - removable terminal blocks
- 4 red LEDs - input alarm/tamper and diagnostic status indicators

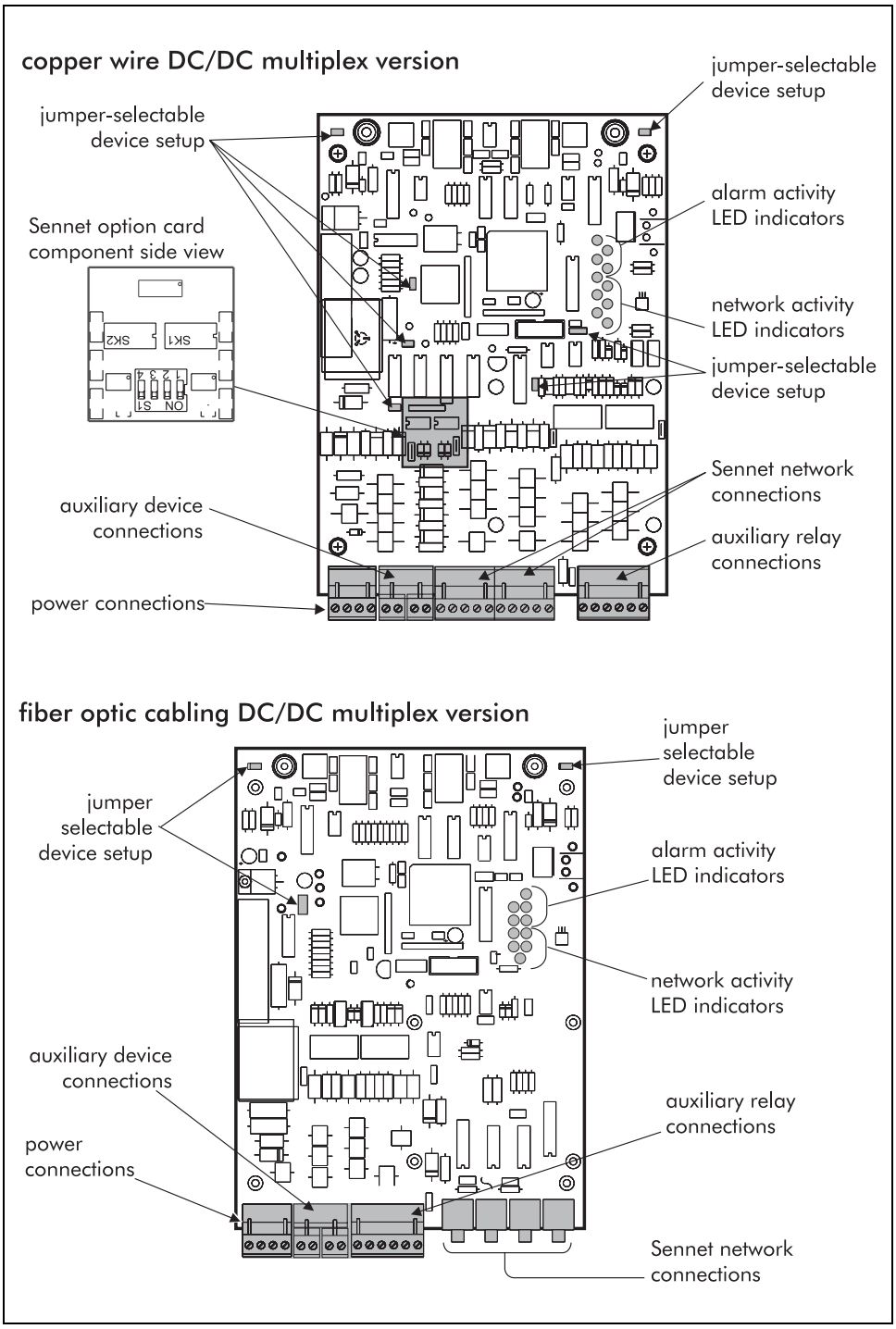
For Sensor Module setup and wiring information refer to *Perimitrax System setup guide (A3DA0302)*.

Intelli-FLEX™ Multiplex version processor

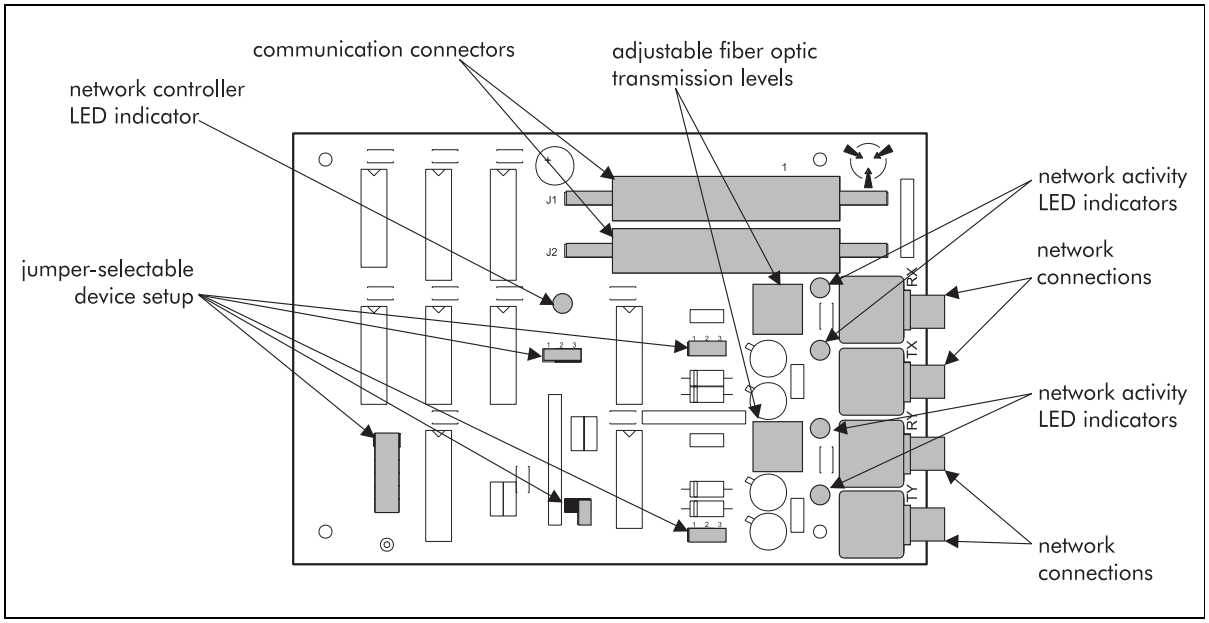
The Intelli-FLEX™ multiplex version processor is a Sennet-compatible device. As such, this processor can be integrated into any Sennet network. This feature allows the direct integration of perimeter security into the Sennet alarm and data collection system. For more information refer to *Intelli-FLEX™ product guide - multiplex version (C6DA0402)*.

features

- 2 auxiliary device inputs
- 2 built-in auxiliary control relays
- lightning, EMI and RFI protection
- network end-of-line termination circuits - jumper-selectable
- quick connection to network - removable terminal blocks
- LED lighting option - jumper-selectable
- 12V low supervision indication - jumper-selectable
- half duplex communication option - jumper-selectable
- 3 LEDs - communication activity indicators
- 6 LEDs - alarm activity indicators
- 1 LED - power activity indicator



Fiber optic interface module



A fiber optic interface module is available from Senstar-Stellar Corporation. This module is installed directly on the network controller or the standard transponder unit to disable the copper wiring interface and enable a fiber optic interface. The fiber optic cabling is then connected to the module.

This module is generally used in networks that contain only network controllers and standard transponder units. However, if a device that is not fiber optic compatible exists as part of the network, such as the remote display and control panel or the large transponder unit, the network can be converted to copper compatible and then back to fiber optic compatible using a Sennet copper/fiber optic 2-port option repeater card.

features

- 4 ST®-style connectors, compatible with 50/125, 62.5/125 and 100/140 multimode fiber optic cable fail safe timer - jumper-selectable
- network type - jumper-selectable
- test enable/disable - jumper-selectable
- 2 LEDs - network activity indicators
- 2 LEDs - communication fail indicators
- 1 LED - network power indicators
- adjustable signal level

Hardware mounting options

Network controller, standard transponder unit, repeater

The Sennet network controller, standard transponder unit and repeater circuit cards must each be mounted either on a mounting plate in a secure area, or in a secure box. These options are listed below:

- **Sennet mounting plate** - a metal plate for mounting a network controller or a transponder, or one or two repeaters, and the AC power supply and battery (30 x 35 cm [11¾ x 13¾ in.]). Used for installation in a large cabinet or secured room.
- **indoor lockable enclosure** - includes mounting plate and tamper switch (38 x 38 x 10 cm [15 x 15 x 4 in.])
- **outdoor weatherproof lockable enclosure (NEMA 4)** - includes mounting plate and tamper switch (41 x 41 x 15 cm [16 x 16 x 6 in.])

Refer to *appendix b - Specifications* for more details.

Large transponder unit

The Sennet LTU cards are assembled in a chassis that can be mounted in a 19-inch rack. The ½-height LTU is 3 RU (13.1 cm [5.15 in.]) high. The full height LTU is 6 rack units (RU) (26.2 cm [10.3 in.]) high. Both units are 50 cm (20 in.) deep.

Remote display and control panel

The Sennet remote display and control panel can be mounted in a 19-inch X 3 RU rack, on a wall, or on a desktop. The unit is 7 cm (2.75 in.) deep.

Perimitrax Sensor Module

The Perimitrax Sensor Module is typically mounted in an outdoor enclosure. See the *Perimitrax Installation guide (A3DA0202)*.

Intelli-FLEX Multiplex version processor

The Intelli-FLEX multiplex version processor is typically mounted in an outdoor enclosure. See the *Intelli-FLEX (multiplex version) product guide (C6DA0402)*.

2 Network configuration

Network layout guidelines

This chapter details the parameters that are required to layout a Sennet-based security system.

In *Configuration parameters*, page 2-2, the overall details for configuring a Sennet system are outlined. The table cross references lead you to details that are specific to each portion of the layout process.

For details on the Perimitrax Sensor Module configuration parameters refer to the *Perimitrax Site planning guide, (A3DA0102)*.

For details on the Intelli-FLEX multiplex version processor configuration parameters refer to the *Intelli-FLEX product guide (Multiplex version), (C6DA0402)*.

Once you have worked through the Configuration parameters table, prepare a site plan as explained on page 2-18, and fill in a device configuration form for each Sennet network device *(Appendix a)*.

The device configuration forms are used:

- by the designer to design and layout the system; and
- by the installer to implement the database settings.

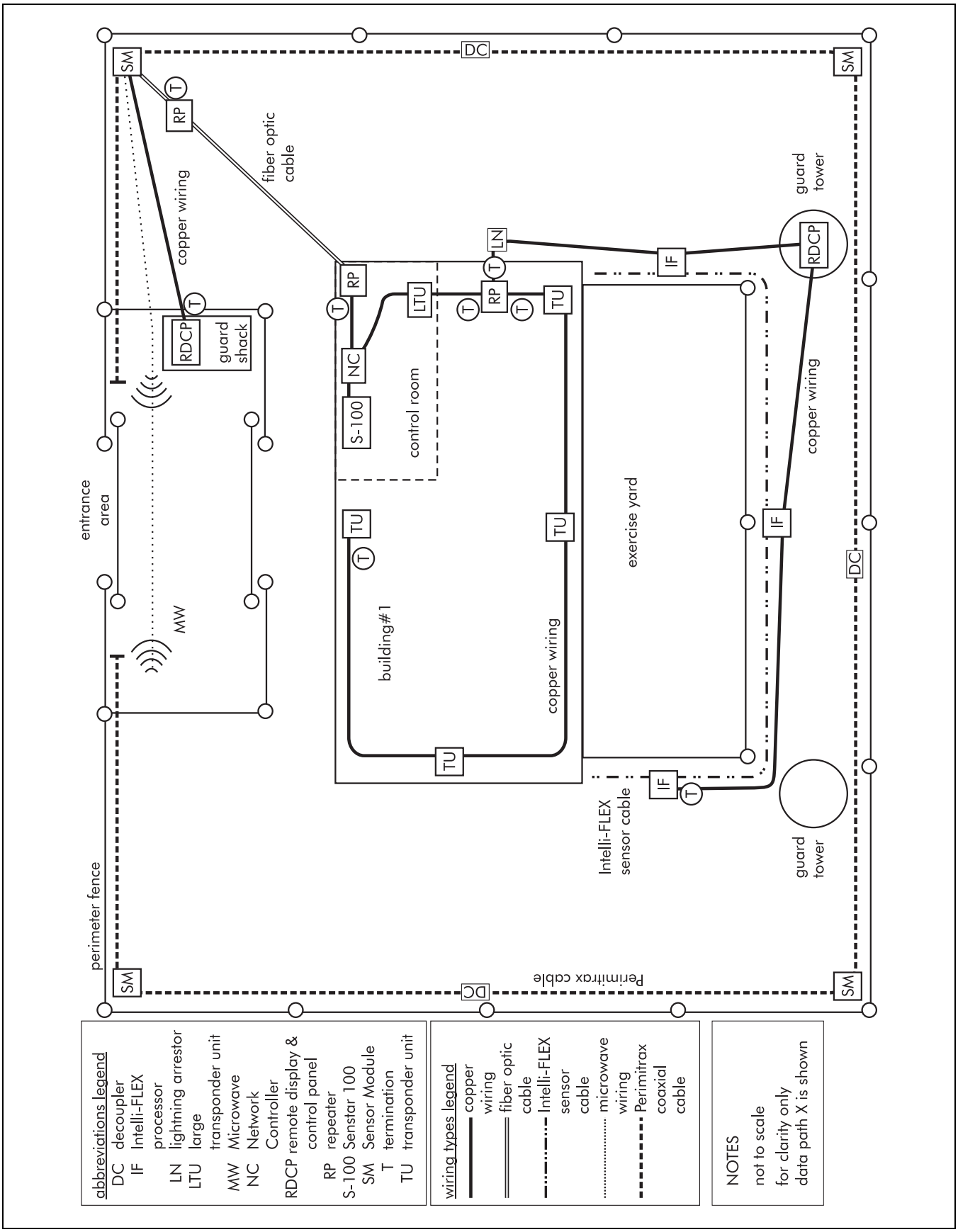
A copy of the device configuration form should be kept with the device.

The network baud rate must be the same for all devices on the network. Devices such as the Perimitrax Sensor Module and the repeater operate only at 19200 baud.

Configuration parameters

	parameter description	ref
x-y data paths	• data paths must not cross connect at any point	page 2-4
network device limit	• combination of 62 addressable network devices (Sennet TU, LTU, RDCP; Perimitrax SM; and Intelli-FLEX multiplex version processor)	
	• and 27 load devices within a 1.2 km copper wire network or network segment (addressable devices and repeaters, lightning arrestors, etc.)	
cable length limit	• twisted pair copper wire - 1.2 km (¾ mile) without repeaters	page 2-4
	• twisted pair copper wire - 13 km (8 miles) with repeaters	
	• 62.5/125 multimode fiber optic cable - 2.0 km (1¼ miles) between 2 network devices to a maximum of 75 km (46 miles)	page 2-4
	• Perimitrax coaxial cable - 2.8 km (1.8 miles) per Sensor Module block	A3DA0102
terminations	• end-of-line terminations are required at each end of all copper wire data segments	page 2-4
grounding requirements	• ground wire connections are required between each network device	page 2-7
NETWORK DEVICE REQUIREMENTS	• maximum input points - 3392 (based on the Senstar 100 system)	
	• maximum output points - 2976 (based on the Senstar 100 system)	
Network Controller	• 1 required for every 62 addressable devices	page 2-11
Large Transponder Unit	• 256 input/256 relay output or lamp driver capacity per unit to a maximum of 10 per network (based on the Senstar 100 system) within the device limit	page 2-12
Transponder Unit	• 16 input/(optional)8 output capacity to a maximum of 62 units per network	page 2-12
Remote Display & Control Panel	• 255 alarm point capacity to a maximum of 16 units per network (based on the Senstar 100 system) within the device limit	page 2-14
fiber optic interface module	• one card required for each Network Controller and standard Transponder Unit in the fiber optic cable portion of a network	
Perimitrax Sensor Module	• a maximum of 62 units per network (based on the Senstar 100 alarm annunciation system)	A3DA0102
Intelli-FLEX multiplex processor	• a maximum of 62 units per network (based on the Senstar 100 alarm annunciation system)	C6DA0402
repeater requirements	• 1 repeater is required to a maximum of 10 units per network branch:	page 2-15
	•if the maximum cable length without repeaters is exceeded	
	•if the load device limit is exceeded	
	•if the network includes both fiber optic cabling and copper wire	
	•if the network is non-linear (i.e., star or "T" configuration)	
enclosure requirements	• 1 indoor or outdoor version Sennet enclosure is required for each NC, TU and repeater (2 repeaters can be installed in one enclosure)	
	• 1 Sensor Module enclosure is required for each Perimitrax Sensor Module	A3DA0102
	• 1 Intelli-FLEX enclosure is required for each Intelli-FLEX multiplex version processor	C6DA0402
power supply requirements	• Sennet network devices	page 2-18
	• Perimitrax Sensor Modules	A3DA0102
	• Intelli-FLEX multiplex version processors	C6DA0402

Sample site plan



Network wiring requirements

Copper wire or fiber optic cabling can be used for data path connections.

The Perimitrax Sensor Module and the Sennet remote display and control panel are copper wire compatible only. They cannot be used in fiber optic cabled networks.

Copper wiring	Fiber optic cabling
Commercially available copper wire is used for network segment connections. A partial list of suppliers is given at the end of this guide.	Commercially available multi-mode fiber optic cable is used for data path connections. Standard ST-style connections are used. Contact Senstar-Stellar for additional design information.
• copper networks can be up to 1.2 km (¾ mile) without the need for repeaters, and with repeaters, can be up to 13 km (8 miles)	• networks using fiber optic cabling can accommodate up to 2 km (1¼ mile) per link (section between two devices), to a maximum of 75 km (46 miles)
• copper networks can support branch and star configurations	• a fiber optic data path provides greater protection against electrical noise and lightning damage
• copper wiring is less expensive than fiber optic cabling	• a fiber optic data path does not radiate any signals and may not be tapped for high security applications
	• a fiber optic network eliminates the concern about differences in ground potential
	• a fiber optic network does not support branch or star configurations using standard components

Layout guidelines

- It is recommended that you use two data paths for redundancy. If one path is interrupted, messages will still be sent along the other path.
- It is recommended, for high security applications, that the wiring be kept physically separate - i.e., through different conduit.
- The two data paths do not need to run in the same direction, but they must not be cross-connected at any point.

Data line terminations

At each point where a data segment starts and ends, termination circuitry must be used. The installer must set jumpers to activate the circuits on the appropriate cards and data paths.

Mark each point on the site plan where a termination is required. Check to ensure

that the network is properly terminated:

- every data path segment will have exactly two points where termination resistors are required
- there can never be more than two connections to any data point on a path
- unused data paths are not terminated

Segment length

A repeater breaks the data path into two segments. The maximum length of each network segment is determined by:

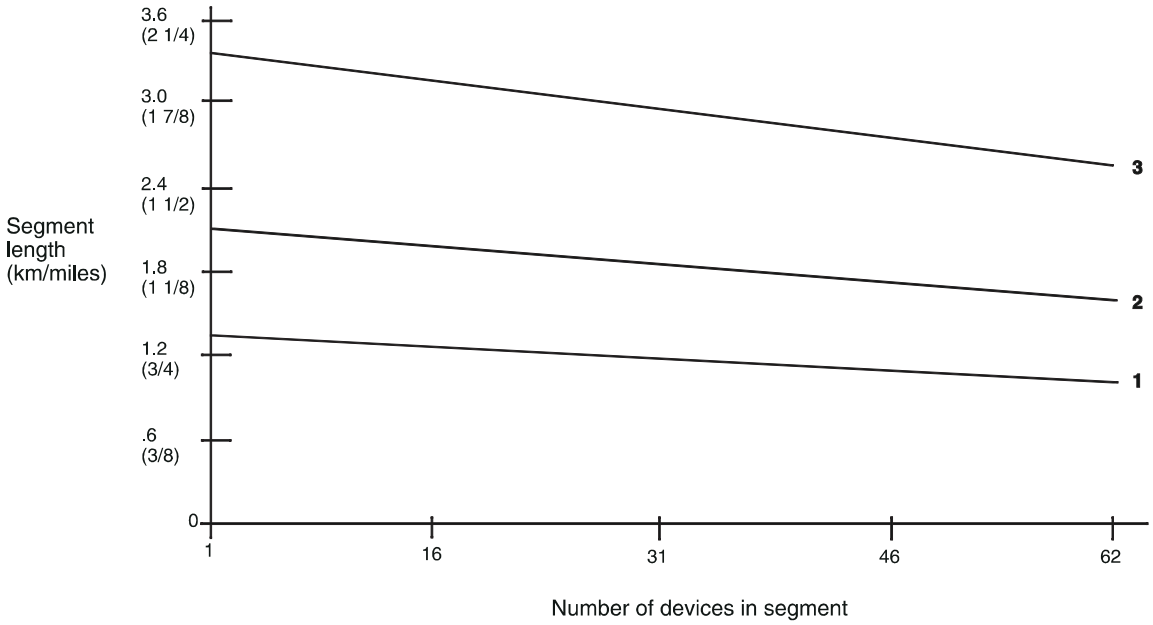
- the wire gauge of the data path wires and the number of devices on that segment
- the electrical noise picked up by the data path wiring
- whether gas discharge protection is used

A gas discharge protection device is a load device. It does not reduce the maximum number of addressable devices that can be used.

Wire gauge

The following chart shows the wire gauge required for various network segment lengths and number of devices (LTU's, TU's, RDCP's, NC's, repeaters and gas discharge protection). Match the segment length in the left hand column with the number of devices. The wire gauge on or above the point is the minimum required.

The chart is based on wire resistance and DC conditions. Noise considerations may shorten segment length significantly.



Wire size	American wire gauge AWG	Birmingham wire gauge BWG	Metric	Sq in	mm^2
1	26	27	4	0.000199	0.128
2	24	25	5	0.000317	0.205
3	22	23	7	0.000503	0.324

Note: Numbers are exact for the AWG. BWG and metric gauge numbers are the closest sizes to the AWG.

Electrical noise

In any network segment longer than about 1.5 km (1 mile), there is a risk of electrical noise problems and undesirable induced voltages. If the data path is near high voltage power lines, near industrial electrical machinery, or close to high powered radio or radar systems, keep the network segments short to avoid potential noise problems.

Electrical noise can vary greatly from location to location. The best way to avoid potential problems is to design a network with high noise margins:

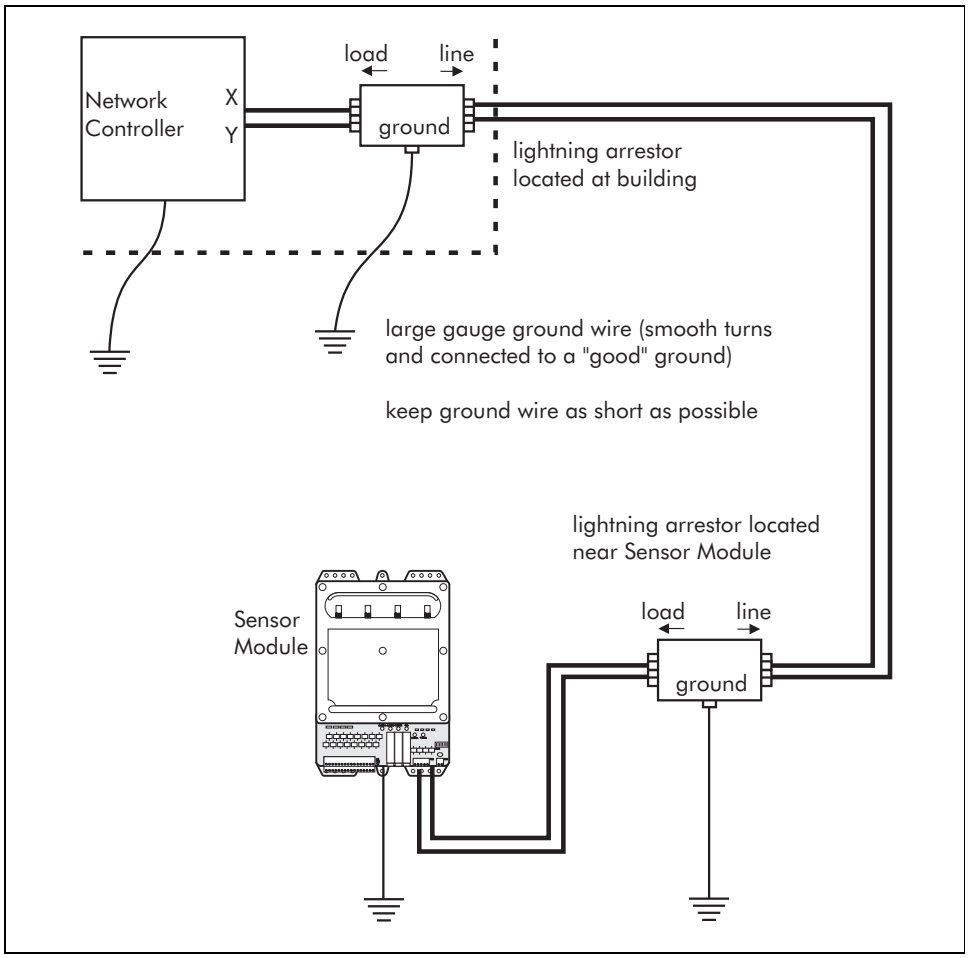
- maintain shorter network segments
- use larger wire gauges
- use good quality shielded wire

Recommended wire types are listed in *Appendix f - Specifications.*

If excessive noise occurs, it will cause errors in the messages sent between the controller and the devices on the network. The errors will be reported by the network controller to the annunciator.

Surge protection

All devices have built-in lightning protection. However, when running data paths outdoors, in high lightning areas, use gas lightning protection (Senstar-Stellar # SW-LW1) at each entrance to a building and at the entrance to electronics enclosures that are located outdoors to provided added protection from surges due to lightning or other sources on the data paths.



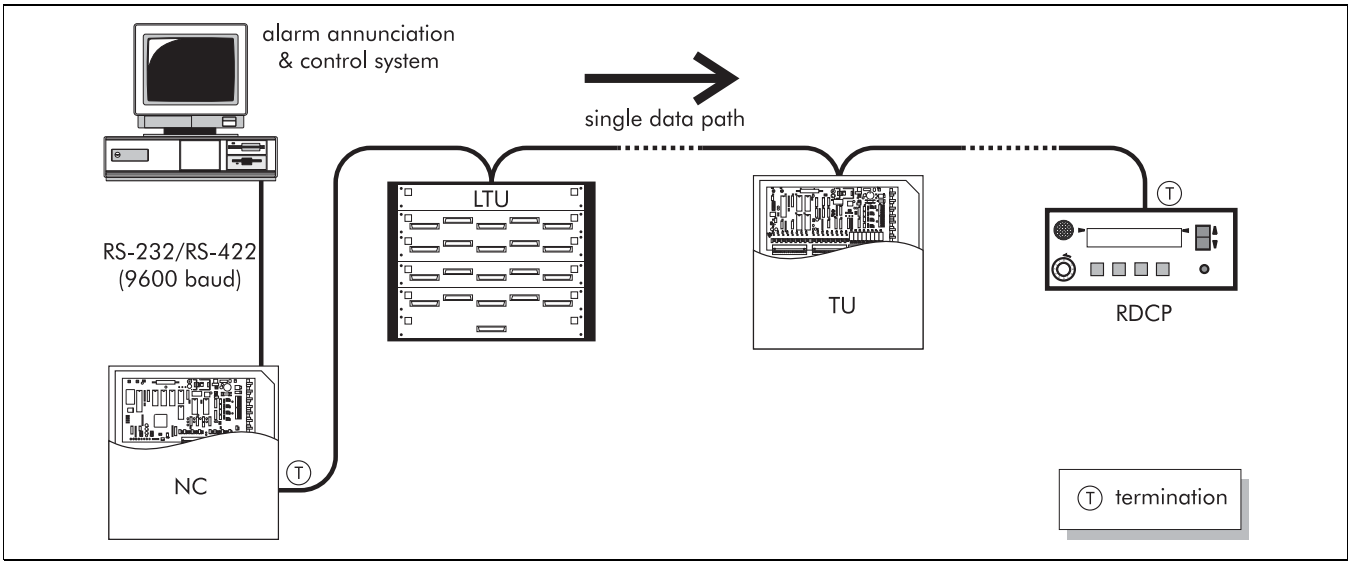
Ground connection and voltage

A voltage difference greater than 7.5 volts peak between either wire on the data path and the ground connection, may destroy the network transceiver chips. Contact Senstar-Stellar for information on solving this potential problem.

All devices must be properly grounded.

Sample configurations

Copper wire - One side single direction



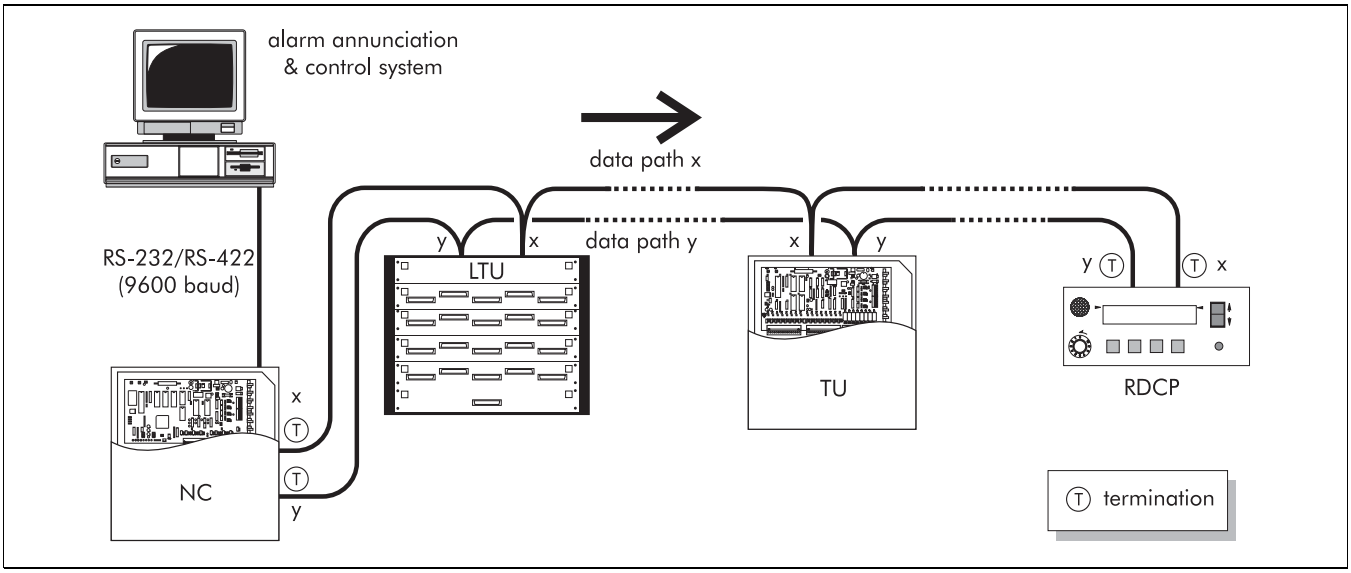
Advantage

- inexpensive to install - only 1 wire pair required

Disadvantage

- no redundancy

Copper wire - Two-side, single direction



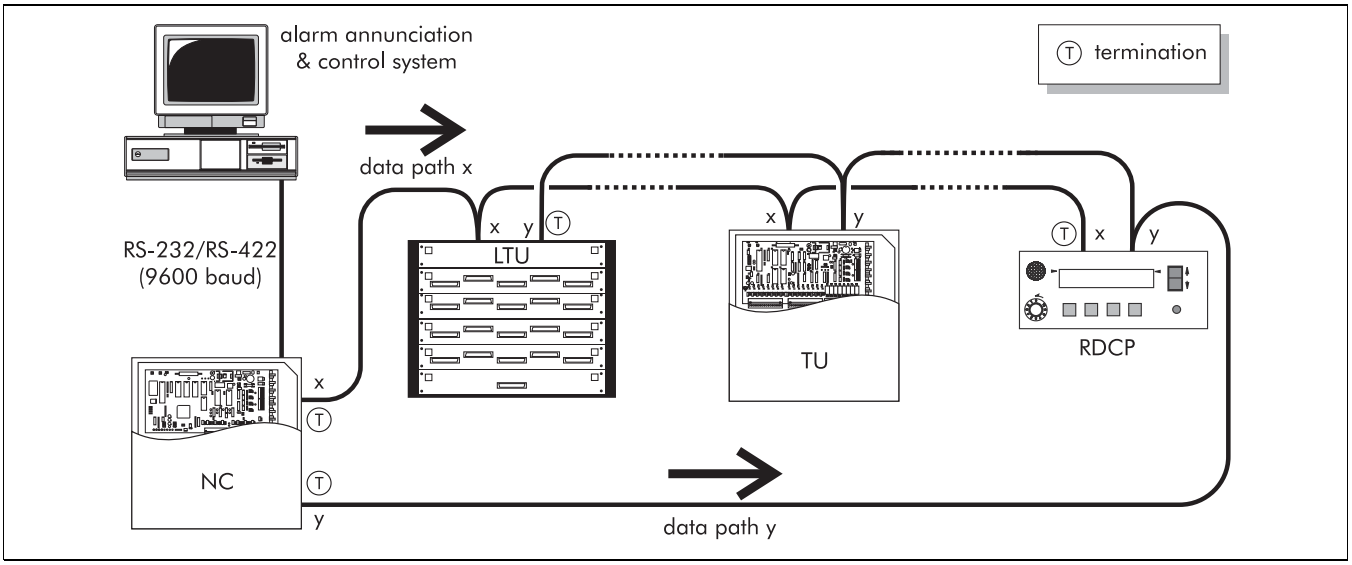
Advantage

- redundant data paths if the cable pairs are installed apart from each other

Disadvantage

- more expensive to install than one-side, single direction
- if both data paths are cut the portion of the system beyond the cut is disabled.

Copper wire - Dual direction



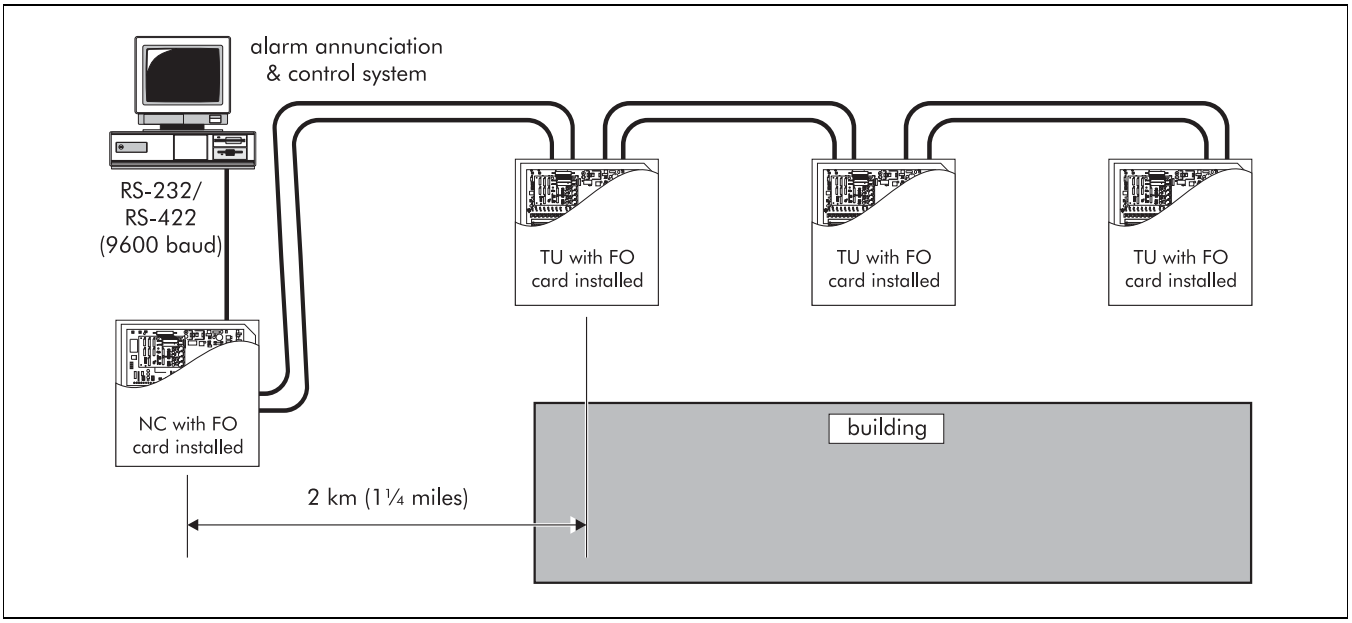
Advantage

- best installation for redundant data paths
- 2 cable cuts will not disable the entire system

Disadvantage

- more expensive to install than one-side, single direction and two-side single direction.

Fiber optic cabling - linear configuration, single direction



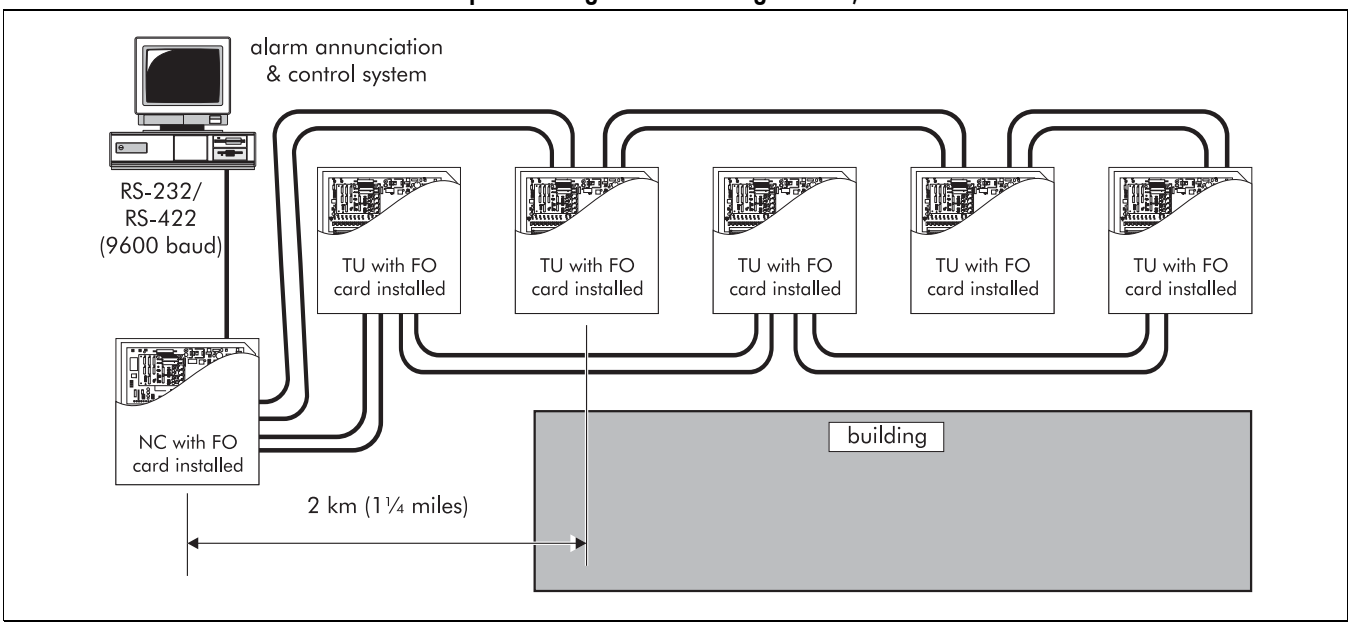
Advantage

- inexpensive to install, when compared with copper wire configuration - greater distance between network devices
- eliminates ground differentials and possible electrical interference

Disadvantage

- no redundancy - cable cuts or network device failure will cause breakdown of system
- more expensive than similar configuration using copper wire

Fiber optic cabling - linear configuration, dual direction



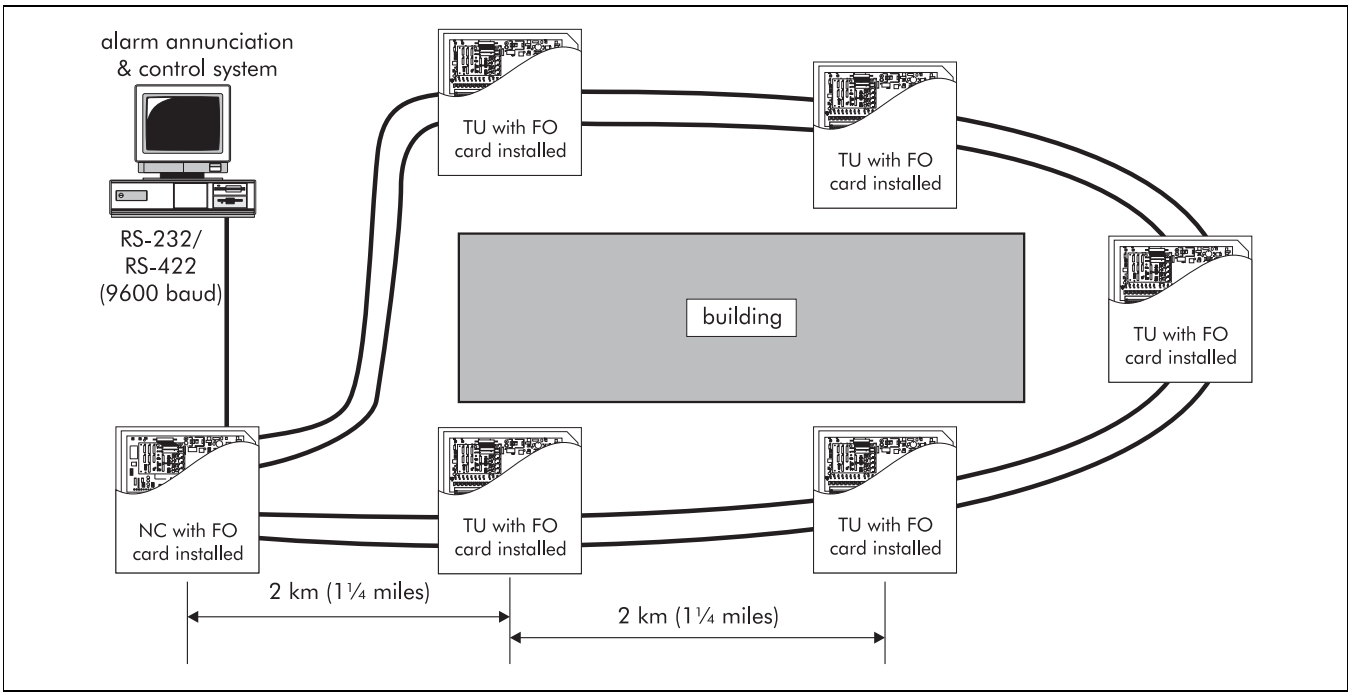
Advantage

- redundant data paths
- fiber optic cable cuts or network device failure will not disable the entire system

Disadvantage

- more expensive to install than, single direction, linear configuration

Fiber optic cabling - loop



Advantage

- redundant data paths
- cable cuts or network device failure will not disable the entire system

Disadvantage

- more expensive to install than, single direction, linear configuration

Network controllers - network layout

Layout guidelines

- one NC is required for every 62 addressable devices
- it may be possible to support multiple networks depending on the type of alarm annunciator you have; for example, the Senstar 100 alarm annunciation system supports up to 34 networks. Contact your supplier for details
- the NC should be located very close to your annunciator, typically within 15 metres (50 feet) with an RS-232 interface. If the NC must be located at a greater distance from the annunciator, configure an RS-422 interface to extend the distance up to 1.2 km (¾ mile)
- the NC has a temperature range of 0ºC to 55ºC (32ºF to 131ºF)
- if the NC is in a wet location, it should be installed in an outdoor enclosure
- if part of a fiber optic network, a fiber optic interface module is required

Procedure - network layout

- ❑ Count the total number of devices required by the system.
- ❑ Separate the network into parts which allow each NC to be near the annunciator. An approximately equal number of transponders in each network is preferable to maximize system availability and performance.
- ❑ Fill in device configuration forms for each NC. (See *appendix a - Device configuration forms*)
- ❑ For installation information refer to *Chapter 3 - Installation, setup and wiring*.

Transponder units - network layout

Large transponder unit - layout guidelines

- maximum 10 LTU's per network (based on the Senstar 100 system)
- each LTU accepts up to 256 inputs
- LTU's can drive 256 relay outputs or lamp drivers (12 mA, 24 VDC, 1 A [resistive], form A or form B selectable)
- when considering the number of inputs for each LTU, include AC fail or tamper inputs from any nearby repeaters
- LTU's should be located to minimize the length of the alarm input connections. Long wire runs (greater than 100 m [300 ft.]) increase the risk of spurious alarms due to electrical noise on the alarm inputs
- as much as possible, LTU's should be located so that the network is one continuous line, avoiding branches and stars
- LTU's operate over a temperature range of 0ºC to 55ºC (32ºF to 131ºF)
- LTU's must be located indoors in a secured area
- LTU's must be located close to an AC power outlet
- LTU's do not have internal UPS capability, they must use an external UPS

Standard transponder unit - layout guidelines

- maximum 62 TU's per network
- each TU accepts up to 16 inputs
- TU's can drive 8 relay outputs (24 VDC, 1 A [resistive], form A or form B selectable)
- when considering the number of inputs for each TU, include AC fail or tamper inputs from any nearby repeaters
- TU's should be located to minimize the length of the alarm input connections. Long wire runs (greater than 100 m [300 ft.]) increase the risk of spurious alarms due to electrical noise on the alarm inputs
- as much as possible, TU's should be located so that the network is one continuous line, avoiding branches and stars
- TU's operate over a temperature range of -40ºC to 70ºC (-40ºF to 158ºF) and can be located indoors or outdoors. If located outdoors or in wet indoor locations, the TU's must be housed in a weatherproof outdoor enclosure
- if part of a fiber optic network, a fiber optic interface module is required

Input supervision

Inputs can either be non-supervised, or supervised with single or dual end-of-line resistors. The inputs can handle normally open or normally closed sensor contacts.

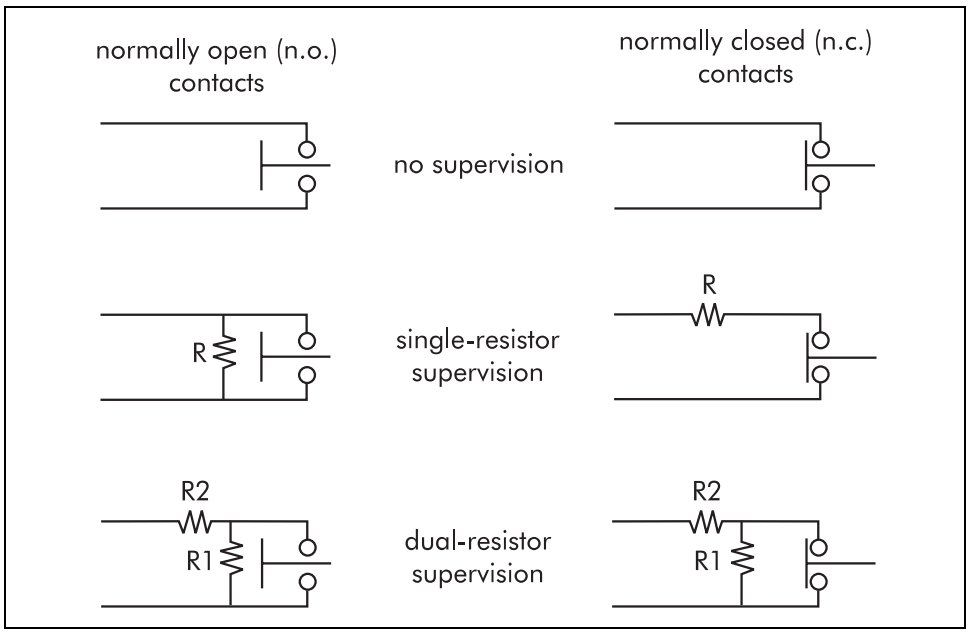
The following resistor values are supported by Senstar 100:

- For single-resistor supervision:

820ohm	2K2
1K0	3K3
1K1	4K7
1K2	5K1
1K5	5K6

- For dual-resistor supervision:

1K1
2K2
5K6



When filling out the device configuration forms, see *appendix a*, specify the type of end-of-line supervision and resistor values needed, and the sensor contacts used.

Transponders can handle inputs from the AC fail and tamper outputs on the repeaters. Repeaters are shipped with normally closed, single-resistor supervision contacts for these outputs. You can change the supervision to none or dual-resistor supervision, or change the resistor value.

Procedure - network layout

- ❑ Determine how many input contact closures you will be receiving, and how many devices you will be driving from relay contacts.
- ❑ Identify on your site plan the approximate physical locations of the inputs and outputs.
- ❑ Locate one or more Sennet transponders as required to handle the number of alarm points and inputs from repeaters.

  If you have more than the maximum number of points in one location, you will need more than one transponder.

  Leave a few free points at each transponder location to accommodate future moves, changes and expansion.
- ❑ Indicate whether the transponders are located indoors, in wet locations or outdoors. (LTU's cannot be located outdoors.)
- ❑ Fill in device configuration forms for each TU, LTU and LTU I/O card. *(See Appendix a)*
- ❑ For installation information refer to *Chapter 3 - Installation, setup and wiring.*

Remote display and control panels - network layout

Layout guidelines

- maximum 16 RDCP's (based on the Senstar 100 network)
- each RDCP displays a maximum of 255 alarm points
- as much as possible, RDCP's should be located so that the network is one continuous line, avoiding branches and stars
- RDCP's operate over a temperature range of 0ºC to 55ºC (32ºF to 131ºF)
- RDCP's must be located indoors in a secured area
- RDCP's must be located close to the power source. The unit should also have a UPS backup connection

Procedure - network layout

- ❑ Determine how many locations will require the RDCP.
- ❑ Identify the approximate locations of these units on the site plan.
- ❑ Fill in device configuration forms for each RDCP. (See *appendix a - Device configuration forms)*
- ❑ For installation information refer to *Chapter 3 Installation, setup and wiring.*

Repeaters - network layout

Generally, a repeater is required:

- to amplify the signals along a long copper network data path;
- in cases where the total network length is beyond the 1.2 km limit for the copper wire, or beyond the 2 km (1¼ mile) range for fiber optic cabling;
- in cases where the number of devices on the network exceeds the recommended load;
- to implement nonlinear configurations in a copper network, such as branches or stars; or
- to translate from copper wire compatible signals to fiber optic compatible signals in networks where lightning may be a concern, such as an outdoor application.

If redundant data paths are used, repeaters must be installed on both data paths.

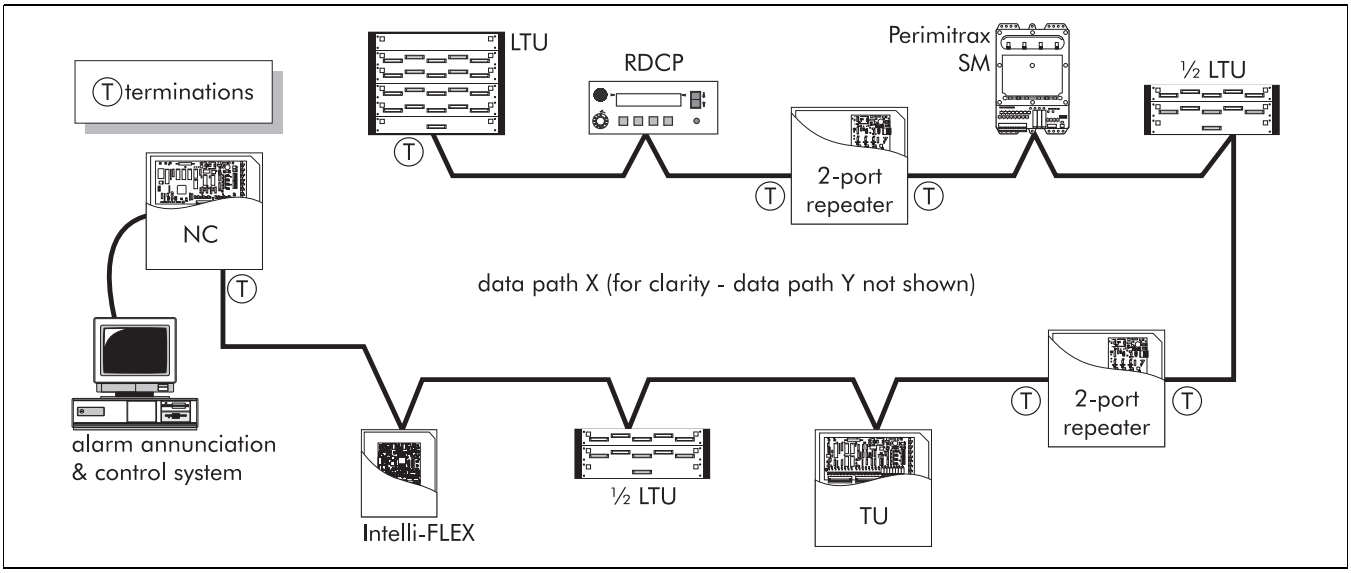
Layout guidelines

- The RS-485 specification allows a maximum of 32 devices, however the recommended maximum is 27 devices on each 1.2 km (¾ mile) network segment. Typically, longer network segments can be used and more devices can be connected in each segment, depending on wire gauge, segment length and electrical noise conditions.
- Repeaters can be added as needed. Following the RS-485 specification (above), repeaters should not be required for segments shorter than 1.2 km.
- Any branch of the network can have a maximum of 10 repeaters between the network controller and another device.
- Repeaters are required to branch a network into two data segments at a "T". Several "T"s can be used to form a star network. This configuration is useful where alarm points are spread over long distances in several directions from the controller.
- Repeaters operate over the full outdoor temperature range (-40°C to 70°C [-40°F to 158°F]), and can be used indoors or outdoors, with the appropriate enclosure.
- 2-port copper wire/fiber optic compatible repeaters have built-in lightning protection on the data paths. If this type of repeater is placed at the point where the data lines enter a building, it eliminates the need to install separate data line lightning protection equipment.

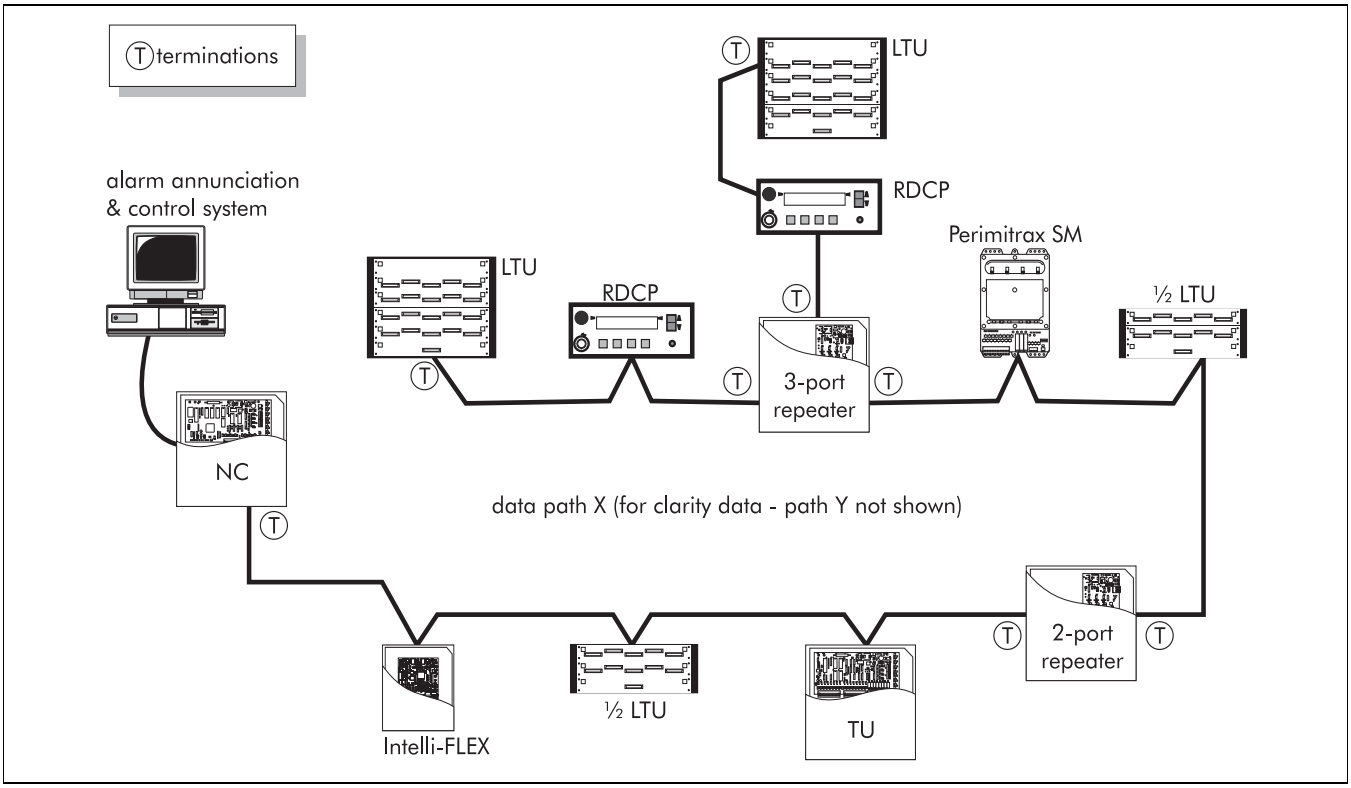
Procedure - network layout

- ❑ Route the data path to minimize the network distance and the number of repeaters needed.
- ❑ Indicate the locations of the repeaters on the site plan.
- ❑ Ensure that the data line termination rules are followed.

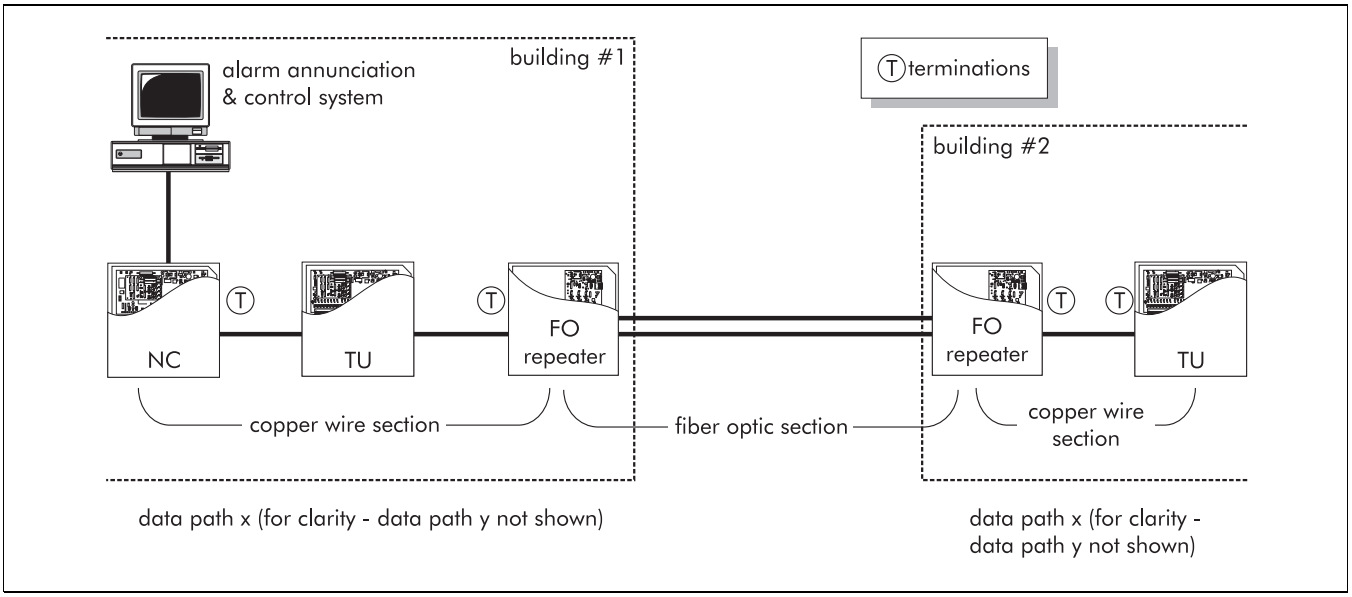
Using a repeater to extend the copper wire network



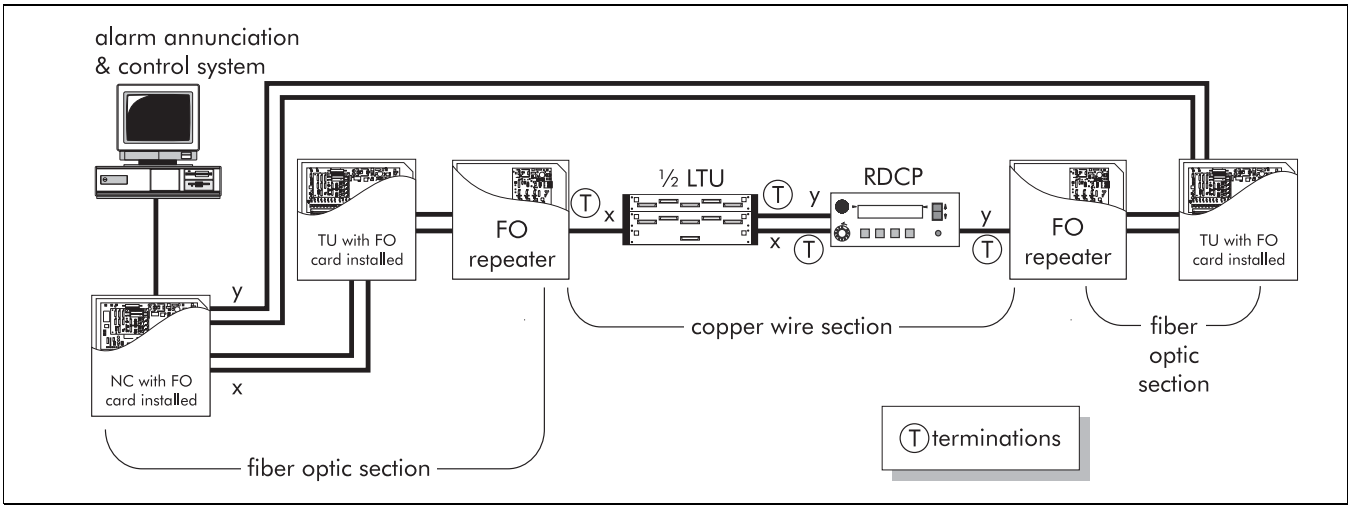
Using a repeater to create a branch in the copper wire network



Using repeaters to run fiber optic cabling between 2 buildings in a copper wire network



Using repeaters to integrate copper wire compatible devices with a fiber optic network



Power supplies

Define the power source required for each NC, TU and repeater unit. Record this on your site plan.

- **Customer-supplied 12 VDC, 500 mA**. If you use this input option, Sennet's battery charging circuitry is not used. DO NOT ORDER THE AC POWER OPTION. The 12 volt supply must be negative ground or floating.
- **Customer-supplied 16 volts VAC, 20 VA.** You may only run one network controller, transponder or repeater from one 16 volt transformer secondary. Contact Senstar-Stellar Corporation for technical details if you have chosen this option. To use the battery charging circuitry which is built into Sennet for UPS operation, purchase a suitable lead acid battery.
- **110-120/220-240 VAC**. Order the AC power option, which is switchable for 110-120, 60 Hz or 220-240, 50 Hz volt operation. To use the built-in battery charging circuitry for UPS operation, purchase a suitable lead acid battery.

The LTU has 115/230 AC, 60/50 Hz only capabilities.

The RDCP is capable of running on 16 VAC, 20 VA or 12 VDC, 250 mA only.

Site plan guidelines

The site plan should clearly show the location of all devices on the network, and all wiring connections. It should include:

- location of all devices (i.e., network controller, transponders, repeaters, remote display and control panels, Perimitrax Sensor Modules, Intelli-FLEX multiplex version processors, etc.)
- all locations where termination circuitry is required
- X and/or Y data paths connecting all devices
- type of network wiring (fiber optic cable, copper wire, or Perimitrax coaxial cable)

A sample site plan is shown on page 2-3.

3 Installation, setup and wiring

This chapter details the procedures required to install, setup and wire each of the Sennet devices.

All local construction and electrical codes must be followed concerning the entry and termination of "mains" electrical supply lines.

Outline of installation procedures

✓	Description	Reference
	determine the location for each device	Chapter 2
	Read through Device setup - guidelines	page 3-2
	Install a fiber optic interface module on each NC and TU as required	page 3-6
	Install enclosures for each NC, TU and repeater as required	page 3-4
	Setup and connect each device:	
	network controller	page 3-14
	transponder unit	page 3-21
	large transponder unit	page 3-30
	remote display and control panel	page 3-37
	repeater	page 3-27
	Perimitrax Sensor Module	A3DA0302
	Intelli-FLEX multiplex processor	C6DA0402
	wiring power to enclosure(s)	page 3-8
	power up network	Chapter 4

Device setup - guidelines

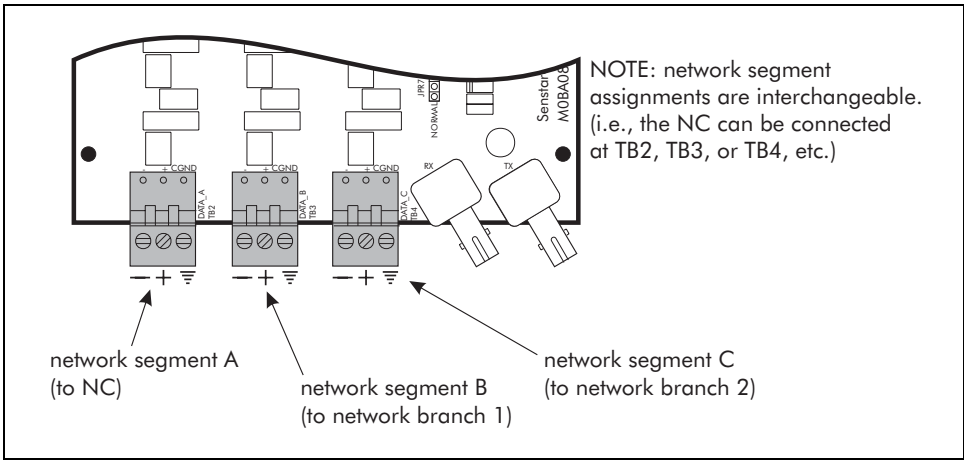
- Unless otherwise stated, the setup instructions on page 3-14 through 3-40 assume that the device has already been installed.
- The baud rate for all network devices must be the same. (Whenever a repeater or a Perimitrax Sensor Module is used the baud rate setting must be 19200 - factory setting.)
- The timeout monitor factory setting is *enabled*.
- Refer to the device configuration forms for the correct settings, see *appendix a - Device configuration forms*.
- DIP-switch setting conventions are shown in *appendix e*.

Connecting the network

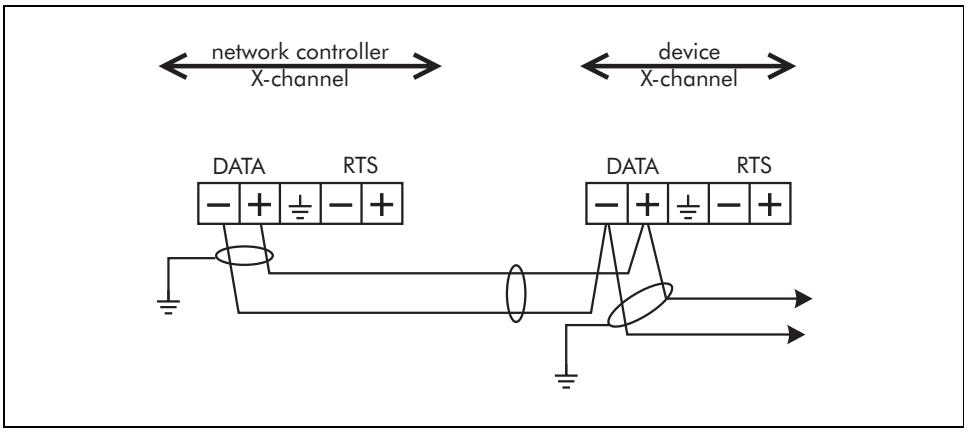
When connecting the devices together, refer to the *device configuration forms, appendix a*. There should be one form for each device, indicating connections to and from the unit. The X and Y sides of one device must always be connected to the corresponding X and Y side of the next device.

network controller	Side X = TB1	Side Y = TB2
large transponder unit	Side X = TB1	Side Y = TB2
transponder	Side X = TB5	Side Y = TB6
remote display and control panel	Side X = TB2	Side Y = TB3
repeater (2-port copper)	network segment A = TB2	network segment B = TB3
(3-port copper)	network segment C = TB4 (see figure following)	
(2-port fiber optic)	RX = receive side	TX = transmit side
fiber optic interface module	Side X = TX, RX	Side Y = TY, RY
Intelli-FLEX multiplex processor (copper wire)	Side X = TB3 pins 1-5	Side Y = TB3 pins 6-10
(fiber optic cable)	Side X = RXA, TXA	Side Y = RXB, TXB
Perimitrax Sensor Module	Side X = TB2 pins 1-3	Side Y = TB2 pins 3-5

Network connections to the copper wire repeater



Single point grounding



Normally, the shields of the data cable are connected at one end only, with the other end isolated from ground.

Make sure that all devices are properly grounded.

Installing an enclosure

The network controller, transponder unit and repeater must be mounted in an enclosure, or on a mounting plate in a secured area. This section details the installation procedure for the enclosures.

In general, the devices are shipped already installed in the enclosure. If, however, these devices require assembly, refer to *appendix d - maintenance procedures*.

Required tools and equipment

- standard screwdriver
- No. 1 and No. 2 Phillips screwdrivers
- assorted 1/4-20 mounting hardware
- chassis punches
- indoor enclosure (Senstar-Stellar #SN-EN2), or
- weatherproof enclosure (Senstar-Stellar # SN-EN3)

Points to remember

When installing enclosures keep the following in mind:

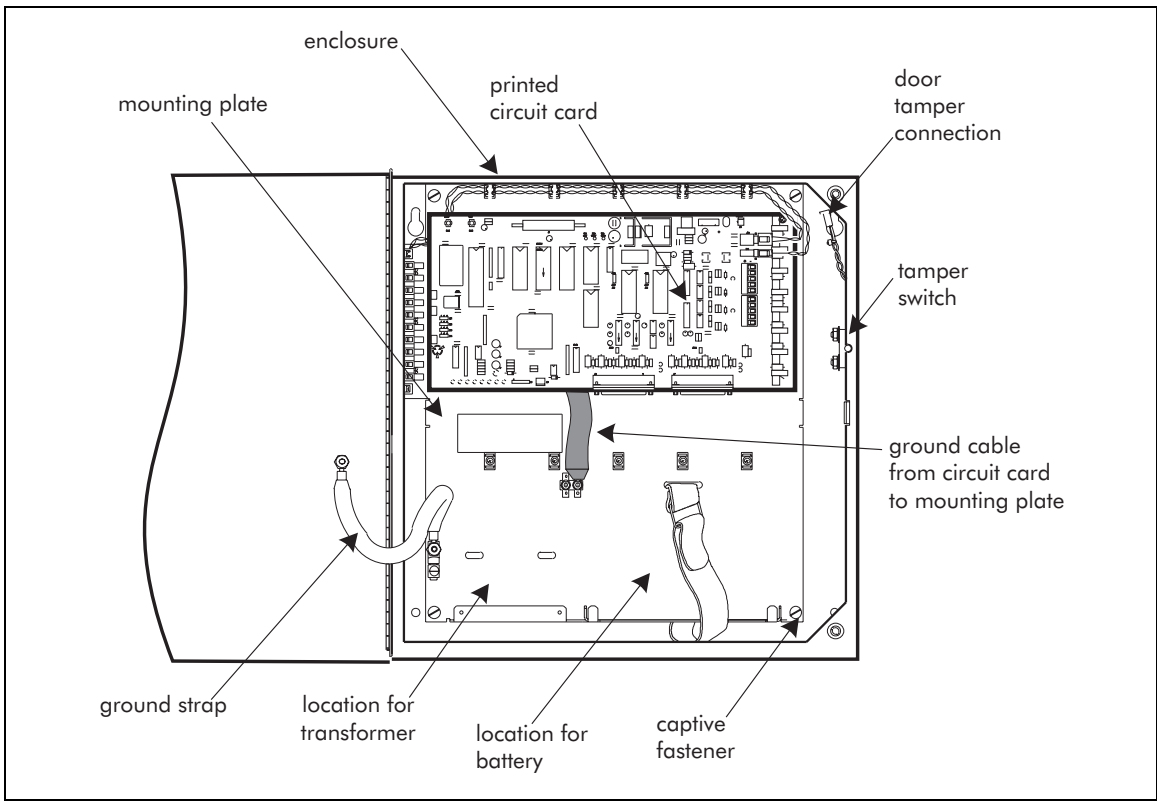
- follow local electrical codes as required
- a NEMA 4 rated enclosure is required in areas of high humidity or outdoors
- install the enclosure at eye level wherever possible
- install the enclosure above high water or snow levels
- install the enclosure close to the device power source
- install the enclosure out of direct sunlight
- install anti-ram protection in areas of high vehicular traffic
- locate cable entry holes on the bottom surface of the enclosure

Installation procedure

CAUTION *Use an anti-static wrist strap when handling circuit cards. If this is not possible, ground yourself by touching the metal back panel* ***BEFORE*** *touching the card.*

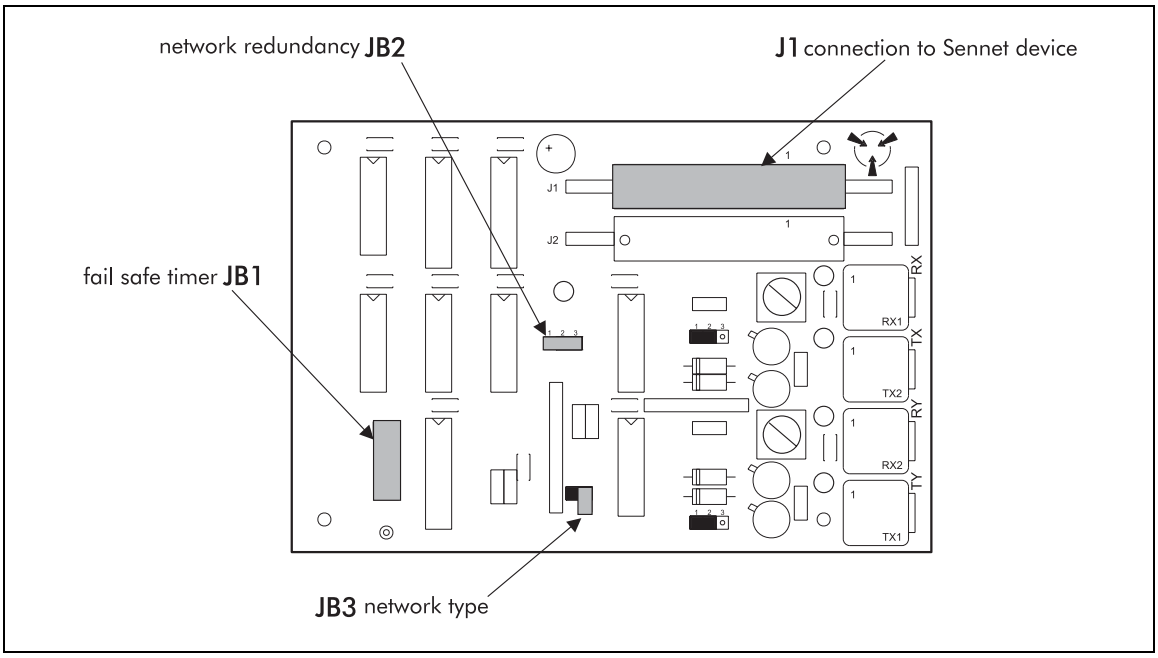
The printed circuit card (and the power supply, if ordered) is attached to a mounting plate in the enclosure. To avoid damage to the components, remove the mounting plate before mounting the enclosure on the wall.

- ❑ Disconnect the door tamper connection from the card.
- ❑ Disconnect the ground strap from the door of the enclosure.
- ❑ Unscrew the four captive fasteners on the corners of the mounting plate and lift the plate out of the enclosure.



- ❑ Drill and punch cable entry holes in the bottom of the enclosure for the entry of the sensor, serial port, network and power cables. Refer to the supplied template for recommended hole locations.
- ❑ Use the enclosed template to locate the mounting holes.
- ❑ Mount the enclosure in accordance with the manufacturers instructions. (supplied with enclosure)
- ❑ Install the mounting plate in the enclosure.
- ❑ Re-connect the door tamper connection to the card.
- ❑ Re-connect the ground strap to the door of the enclosure.
- ❑ Connect the ground cable from the circuit card to the mounting plate.

Installing the fiber optic interface module



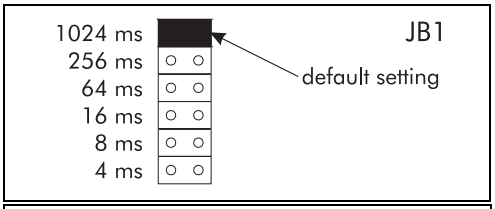
The fiber optic interface module is compatible only with the Sennet network controller and standard transponder units. One module must be installed on each of these devices in a fiber optic network.

Jumper settings

The fail safe timer limits the amount of time that data transfers across the cables before a communication fail alarm results. This prevents data lines from becoming crowded, which may result in a system failure.

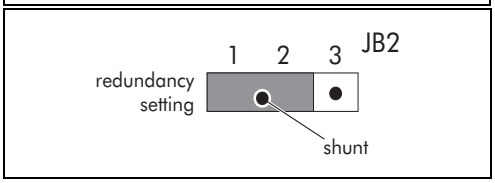
Fail safe timer

- ❑ To set the fail safe timer, install a shunt over JB1 pins 1 and 2 at the appropriate setting.



Network redundancy

- ❑ To set the network redundancy at JB2, install a shunt over pins 1 and 2.

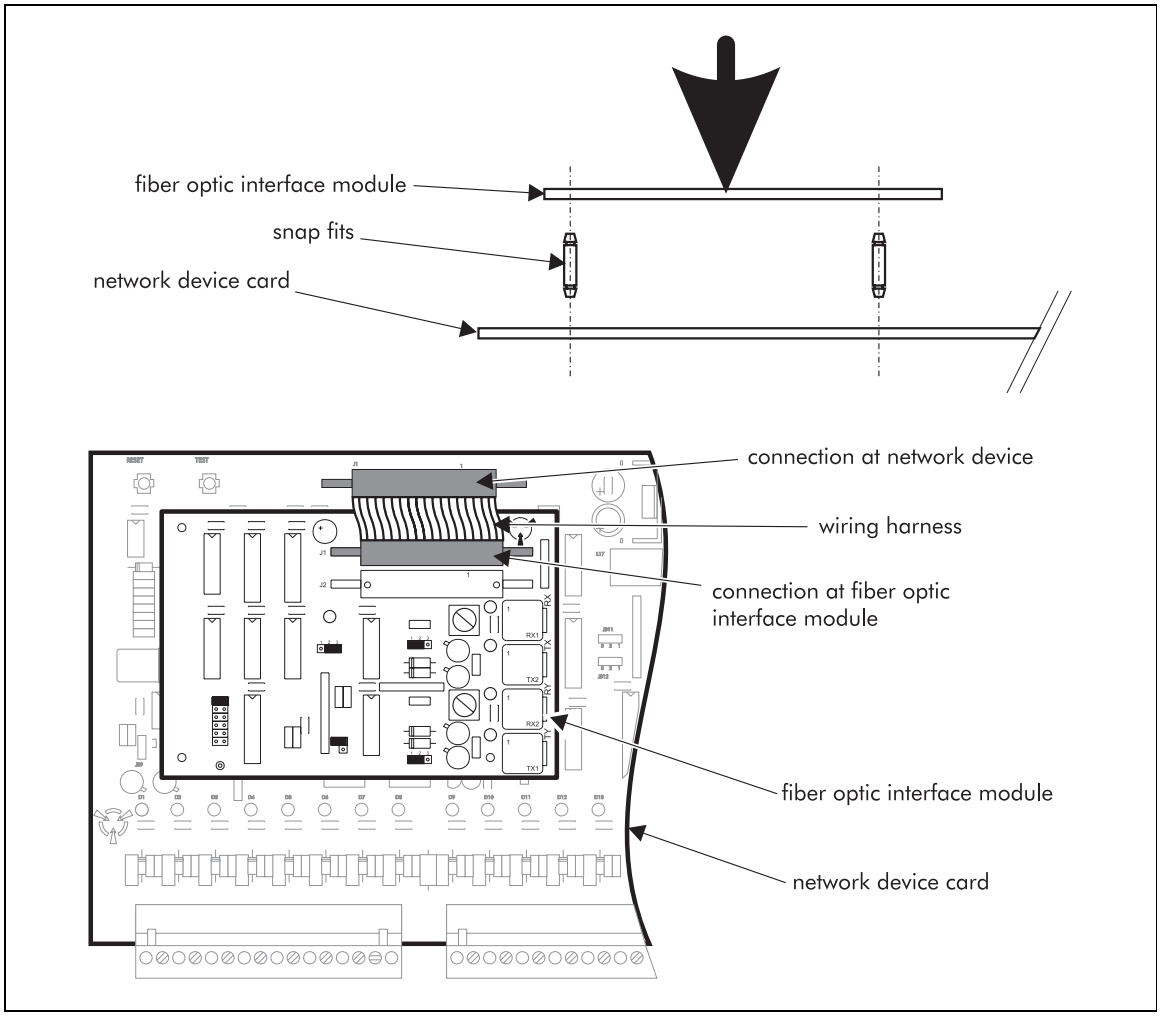


Network type

- ❑ To disable the fiber optic option and enable the RS-485 copper network, install a shunt across both pins at JB3. (The default setting is fiber optic enabled - shunt on one pin only)

Installing the interface module

❑ Snap the fiber optic interface module in to the appropriate location on the network device.



❑ Connect the wiring harness to the fiber optic interface module at J1 and to the network device at the appropriate location. (Refer to ***Network controller - settings***, page 3-14 and ***Transponder unit - settings***, page 3-21)

Before installing the fiber optic interface module on the network device make sure that all network device settings that are located under the module have been made.

Adjusting the output level

The output levels of fiber optic transmission are factory set. These settings should not be altered unless instructed to do so by Senstar-Stellar. Contact Senstar-Stellar Corporation for more information.

Wiring power to the enclosure

These procedures are valid for the network controller, transponder and repeater. Refer to the following table to determine the appropriate wiring configuration:

wiring option	reference section
factory installed AC power	*Wiring 110-120/220-240 VAC power to the enclosure*, page 3-8
customer supplied AC power	*Wiring 16 VAC power to the enclosure*, page 3-9
customer supplied DC power	*Wiring DC power to the enclosure*, page 3-11
customer installed battery	*Connecting the optional backup battery*, page 3-10

CAUTION

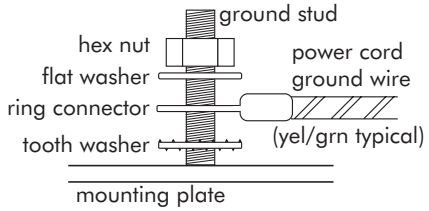
For safety reasons, these instructions must be followed carefully. Ensure that installation conforms to local electrical codes.

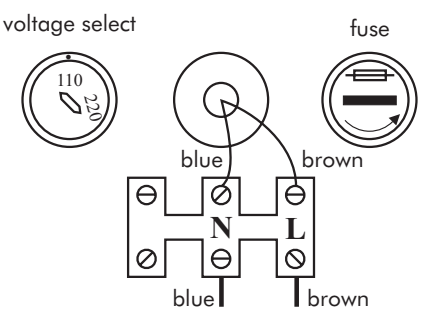
An appropriate two-pole disconnect device must be installed by qualified service personnel, as part of the building installation.

Wiring 110-120/220-240 VAC power to the enclosure

If using the 110-120/220-240 VAC power supply, proceed as follows:

- ❑ Using a Panduit crimp tool (p/n CT-1550 or equivalent), crimp the supplied ring connector (or other certified/recognized ring connector) to the power cord (earth) ground wire.
- ❑ Connect the power cord ground wire to the ground stud on the enclosure mounting plate, as indicated.
- ❑ Connect the neutral wire of the power cord (usually white or blue) to the N terminal, and the line wire (usually black or brown) to the L terminal on the terminal block of the power supply cover.





- ❑ Set the voltage switch on the power supply cover to the appropriate voltage, either 110-120 V or 220-240 V.

The factory setting is 110-120 V.

- ❑ Select the fuse and fuse carrier according to the voltage you've specified.

Voltage selection switch

110 range is 110 to 120 V
220 range is 220 to 240 V

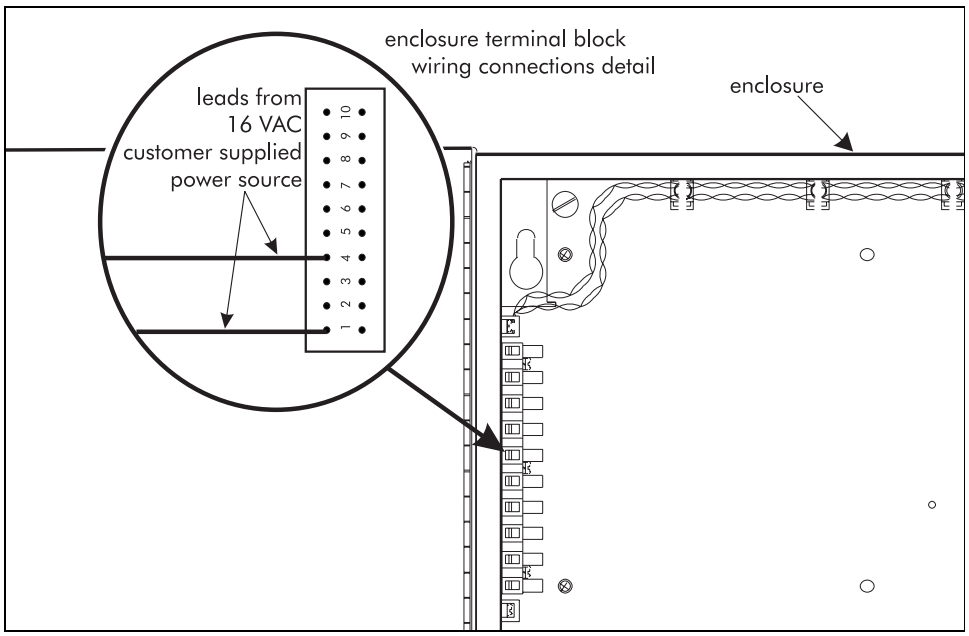
Voltage	Fuse	Fuse carrier
110-120 V	0.5A	grey
220-240 V	0.25A	black

- ❑ Insert the fuse into the fuse carrier, and insert the fuse carrier into the fuse holder, located on the power supply cover.

CAUTION *Always replace the fuse with one of the same type and rating.*

Wiring 16 VAC power to the enclosure

WARNING *Always disconnect power before servicing the unit. Disassembly must be performed by qualified personnel only.*



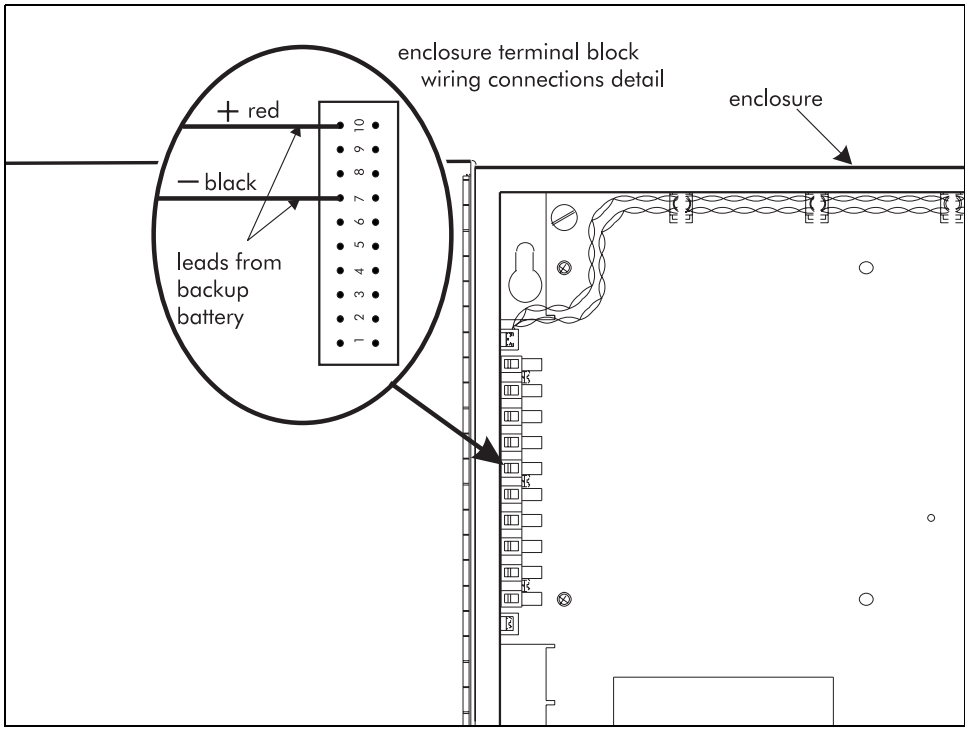
If using the 16 VAC power supply, proceed as follows:

- ❑ Connect one lead from the 16 VAC power source to position 1 on the enclosure terminal block (located on the upper left edge of the mounting plate).
- ❑ Connect the other lead from the power source to position 4 on the enclosure terminal block.

Connecting the optional backup battery

WARNING

Always disconnect power before servicing the unit.
Disassembly must be performed by qualified personnel only.
Replace the battery with only the same (or equivalent) type, as recommended by the battery's manufacturer.
Follow the manufacturer's directions for discarding used batteries.



If using a backup battery, follow the instructions below:

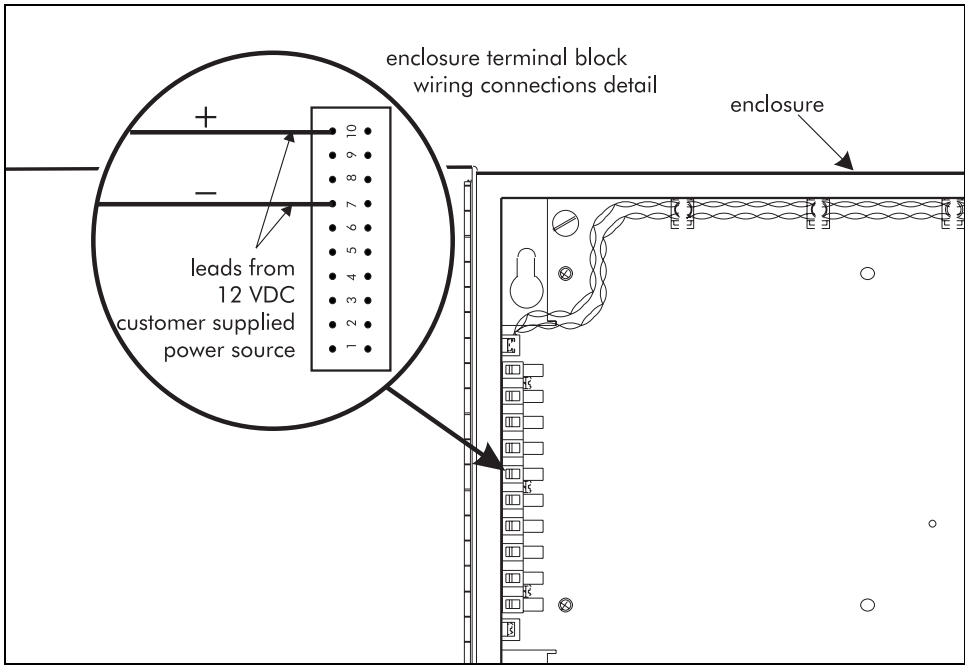
The enclosure is shipped with two battery harnesses for the two sizes of battery terminals. (1/4 in. disconnect terminals and 3/16 in. disconnect terminals). Use the appropriate harness for your battery.

- ❑ Secure the battery to the mounting plate, using the supplied velcro strap.
- ❑ Connect the terminal attached to the red wire on the battery harness, to the + terminal of the battery. Connect the lead on the other end of the red wire to position 10 on the enclosure terminal block.
- ❑ Connect the terminal attached to the black wire on the battery harness, to the - terminal of the battery. Connect the lead on the other end of the black wire to position 7 on the enclosure terminal block.

Wiring DC power to the enclosure

WARNING

Always disconnect power before servicing the unit.
Disassembly must be performed by qualified personnel only.



For 12 VDC power to the units, follow the instructions below:

- ❑ Connect the + wire from the DC power source to position 10 on the enclosure terminal block.
- ❑ Connect the - wire from the DC power source to position 7 on the enclosure terminal block.

Wiring AC power to the network device

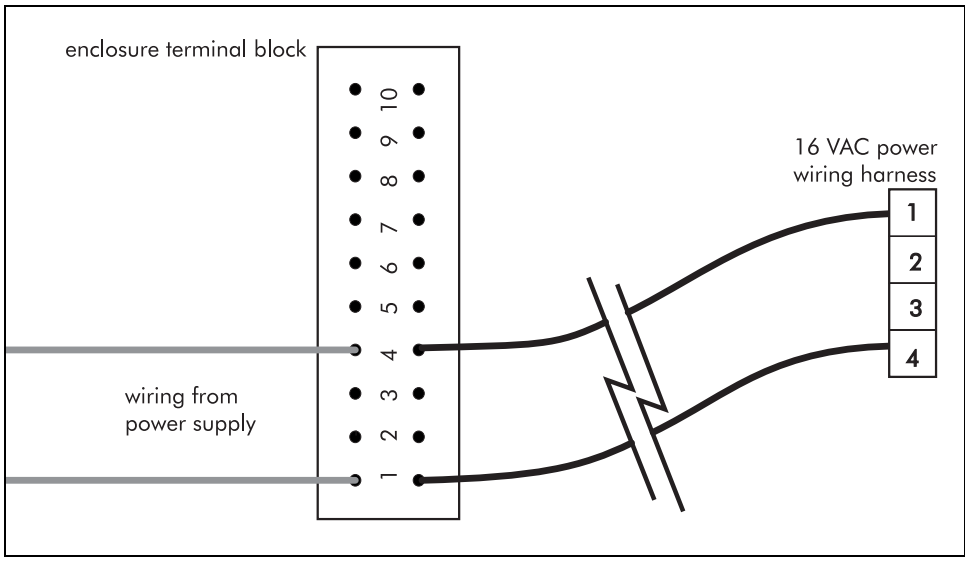
WARNING

Always disconnect power before servicing the unit.
Disassembly must be performed by qualified personnel only.

If you are using the 16 VAC power supply proceed as follows:

- ❑ Make sure that the enclosure terminal block to power supply connections have been made. See *Wiring 16 VAC power to the enclosure*, page 3-9, for more information.

Connect the 16 VAC wiring harness (included with the network device) to the enclosure terminal block as follows:



- ❑ Connect the wire from pin 1 on the wiring harness to pin 1 on the enclosure terminal block.
- ❑ Connect the wire from pin 4 on the wiring harness to pin 4 on the enclosure terminal block.

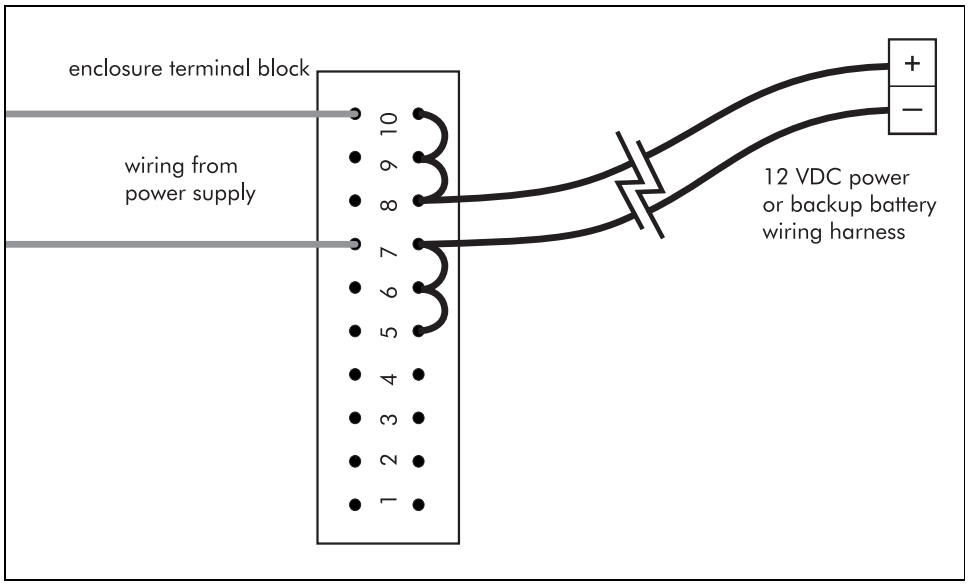
Wiring DC power or the backup battery to the network device

WARNING *Always disconnect power before servicing the unit. Disassembly must be performed by qualified personnel only.*

If you are using the 12 VDC power supply or the backup battery proceed as follows:

- ❑ Make sure that the enclosure terminal block to power supply connections have been made. See *Connecting the optional backup battery*, page 3-10 or *Wiring DC power to the enclosure*, page 3-11, for more information.

Connect the 12 VDC wiring harness (included with the network device) to the enclosure terminal block as follows:



- ❑ Connect the negative wire from the wiring harness to pin 7 on the enclosure terminal block.
- ❑ Connect the positive wire from the wiring harness to pin 8 on the enclosure terminal block.

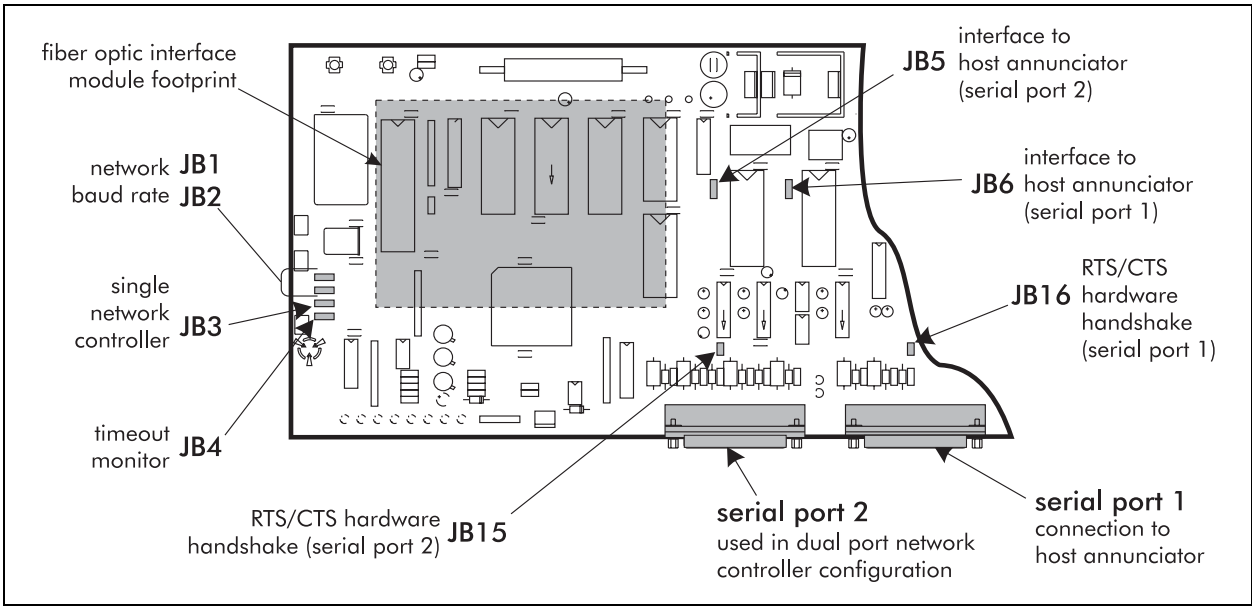
Grounding

CAUTION *The DC power must be negative (—) ground or floating. Do not use positive (+) ground.*

For safety reasons, and to protect the equipment, you should provide an external ground connection to the enclosure. This is especially important for units located at either end of a cable run between buildings.

Connect a heavy (minimum 14 AWG) wire from a solid ground point to the grounding lug on the mounting plate.

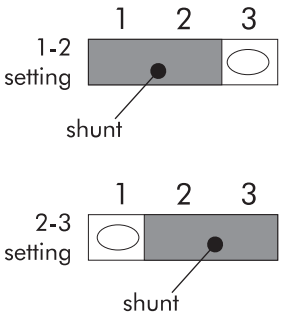
Network controller - settings



If the network controller is part of a fiber optic network, install the fiber optic interface module on the Network controller card in accordance with *Installing the fiber optic interface module*, page 3-6. Make the network communications connections in accordance with *Network communications - fiber optic cabling*, page 3-18.

Network baud rate

❑ Set the required network baud rate at JB1 and JB2 in accordance with the table below.



The factory set baud rate is 19200.

Baud rate	JB1	JB2
2400	1-2	1-2
4800	1-2	2-3
9600	2-3	1-2
19200	2-3	2-3

Network controller

❑ Check that jumper JB3 has a shunt on pins 2 and 3 (factory setting) to indicate that there is a single network controller on the network.

Timeout monitor

The timeout monitor limits the amount of time that data transfers across the cables before a communication fail alarm results. This prevents data lines from

becoming crowded, which may result in a system failure.

❑ Check that JB4 has a shunt on pins 1 and 2 to enable the timeout monitor (factory setting).

This setting should never be changed.

Interface for connection to host annunciator

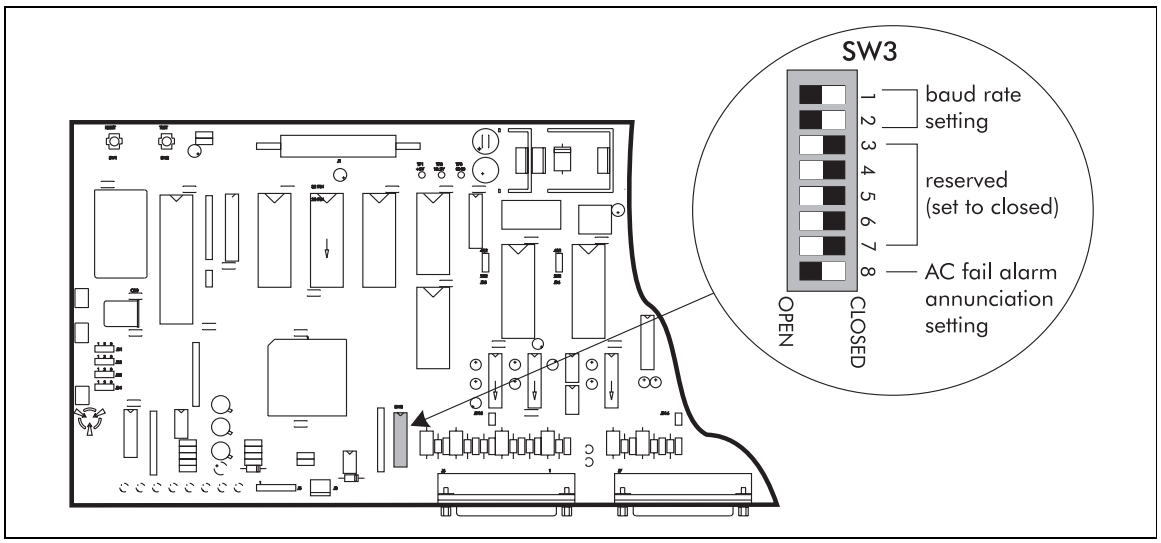
❑ Check that jumper JB6 is set to either RS-232 interface or RS-422 interface for serial port 1. (Set jumper JB5 for serial port 2 as required by a dual ported network controller.)

The factory setting is RS-232.

Interface	JB6
RS-232	1-2
RS-422	2-3

RTS/CTS hardware handshake

If RTS/CTS hardware handshaking is required, remove the shunt at JB16 for serial port 1. (Set jumper JB15 for serial port 2 as required by a dual ported network controller.)



Host annunciator baud rate

❑ Set DIP-switch SW3-1 and SW3-2 for the baud rate required for both serial port interfaces with the host annunciator.

The factory setting is 9600.

For software versions less than 2.00, the baud rate must be 4800.

Baud rate	SW3-1	SW3-2
1200	closed	closed
4800	open	closed
9600	closed	open
19200	open	open

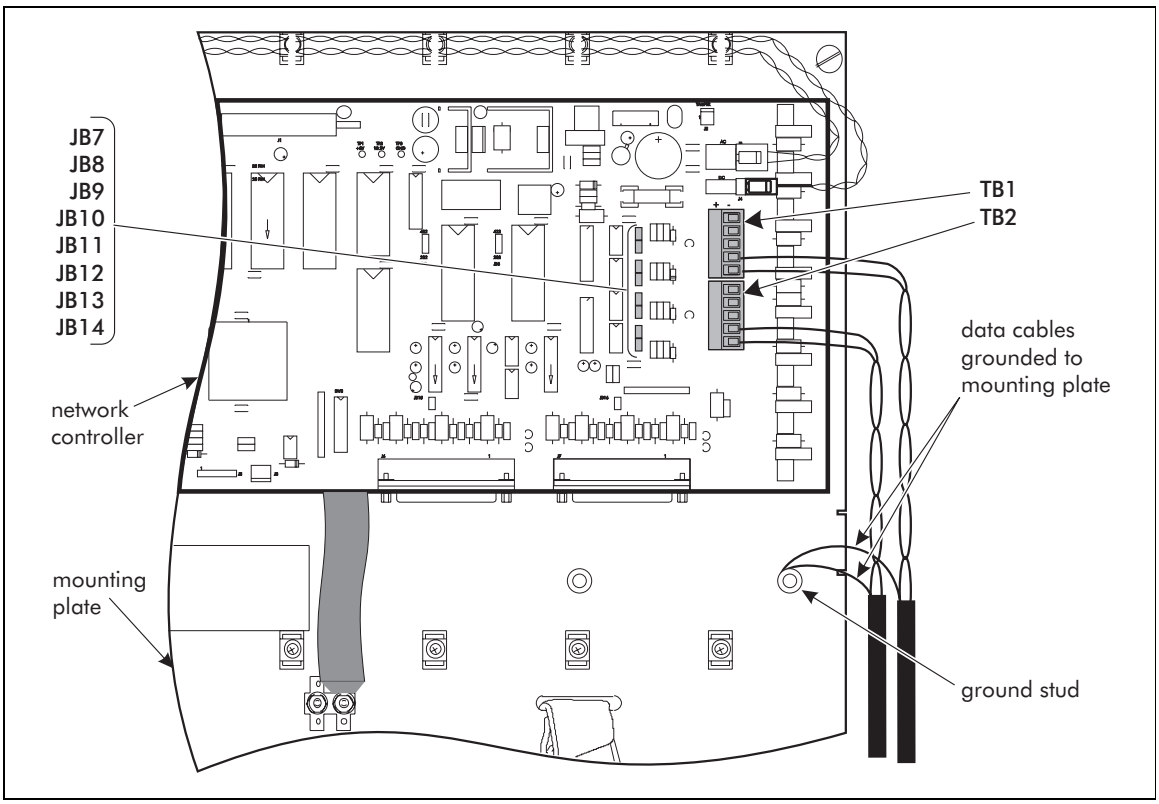
AC fail alarm annunciation

The AC fail alarm can be set to have annunciation enabled or disabled at SW3-8 as follows:

- disable alarm annunciation 'CLOSED'
- enable alarm annunciation 'OPEN' (factory)

Positions SW3-3 to SW3-7 are reserved for future use and must be set to the closed position.

Network communications - copper wire



Wiring

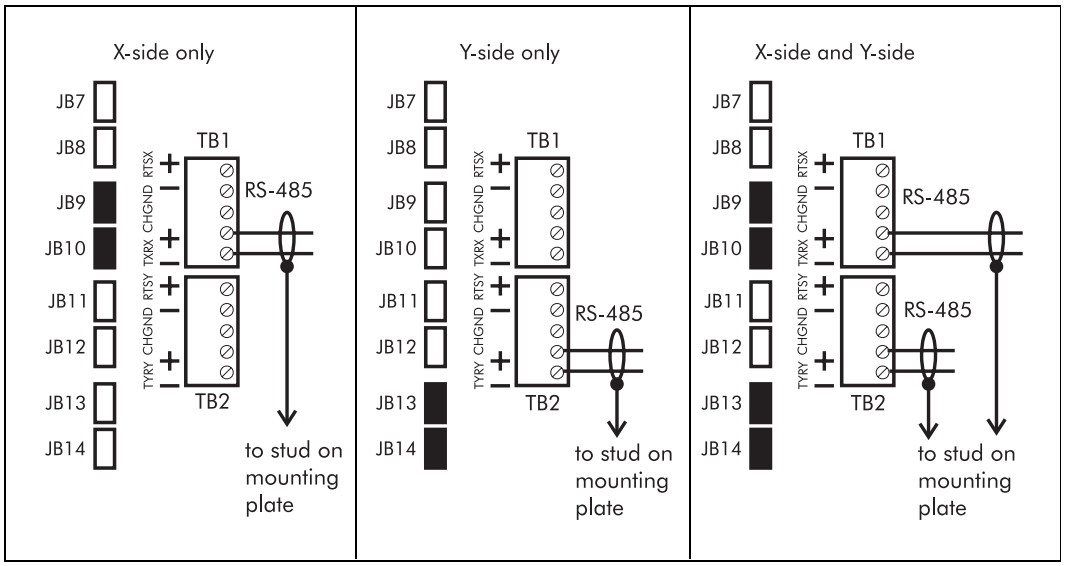
- ❑ Connect the shield wires from the data cables to the ground stud on the mounting plate.
- ❑ Connect the network controller to the X and Y network data cables at the designated terminal blocks.

Jumper settings

To terminate the data signal from the RS-485 copper wire place the shunt over both pins of the jumper. This must be done at units located at both ends of the network or network segment, to eliminate the data signal reflections that would otherwise occur.

- ❑ If X-side of the network (TB1) is on the physical end of the network or network segment, install shunts at JB9 and JB10.
- ❑ If Y-side of the network (TB2) is on the physical end of the network or network segment, install shunts at JB13 and JB14.

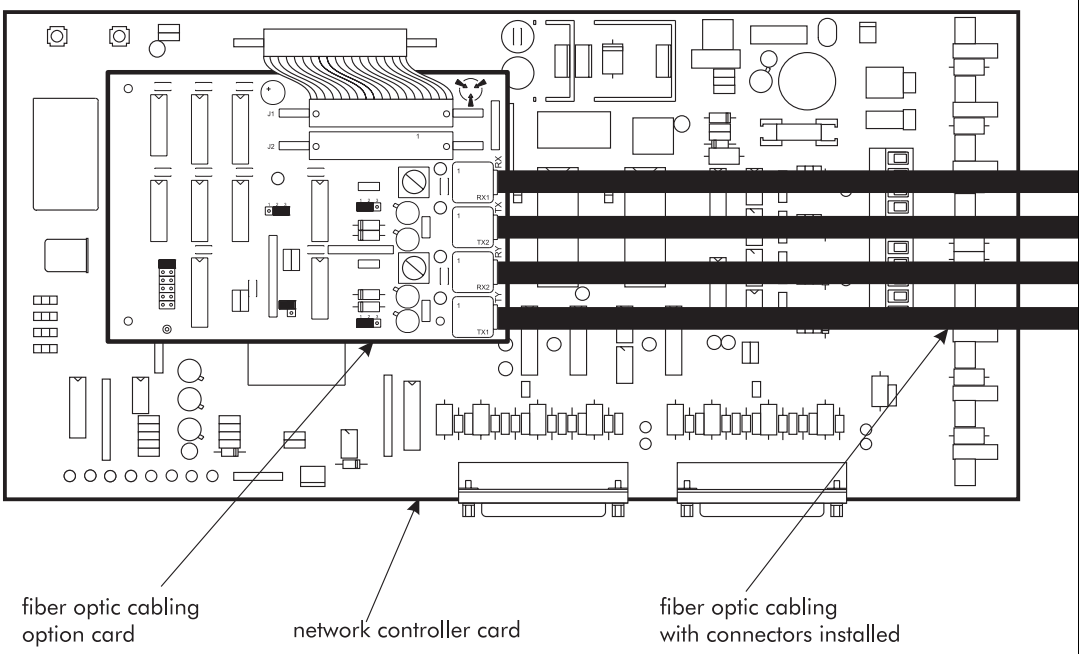
Always install network termination shunts in pairs, as illustrated below.



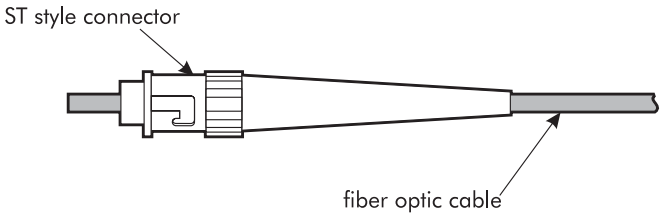
The factory setting has no shunts installed.

- ❑ Connect the remaining end of the wiring to the next network device.

Network communications - fiber optic cabling



Make sure that the fiber optic interface module has been installed. See *Installing the fiber optic interface module*, page 3-6.

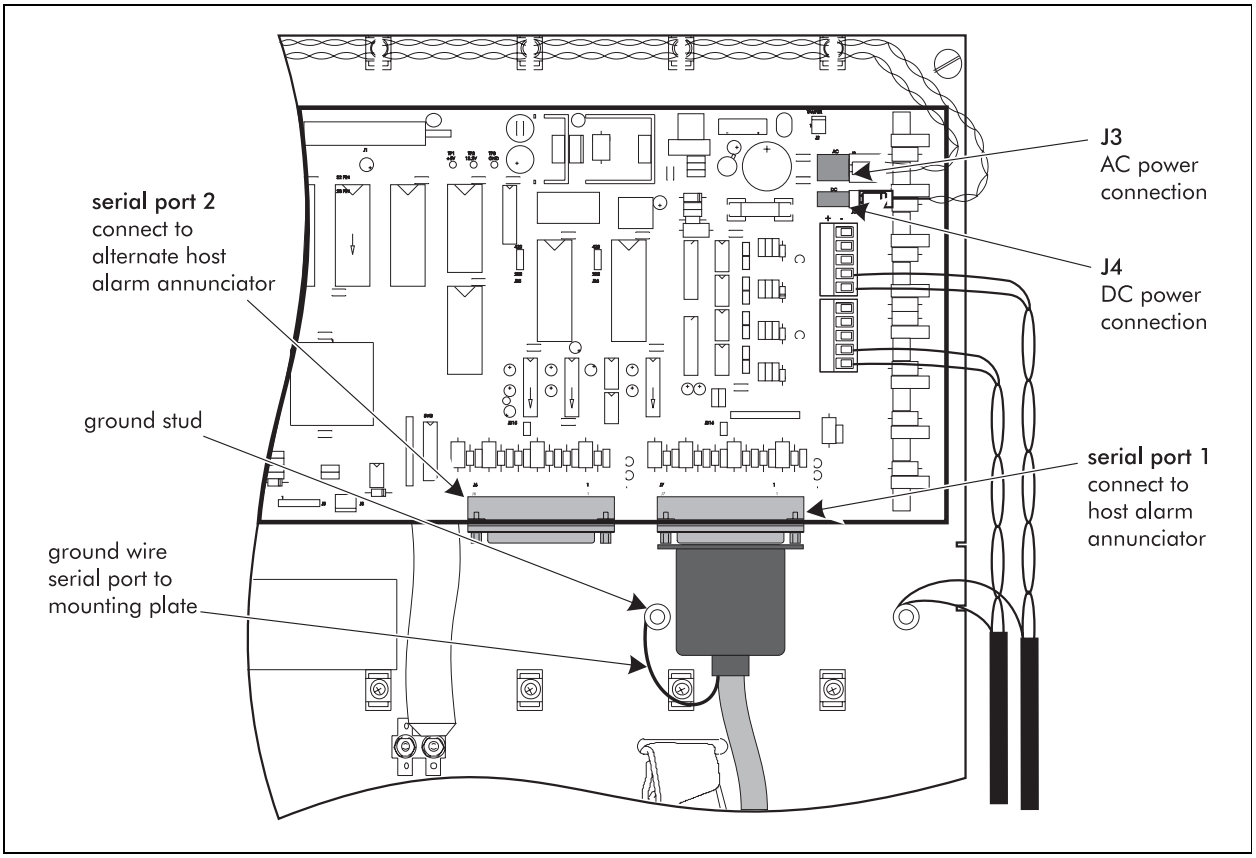


- ❑ Install one ST® connector on both ends of each fiber optic cable.
- ❑ Plug the prepared cable into the fiber optic interface module at the appropriate location. (See *Connecting the network*, page 3-2.)
- ❑ Connect the remaining end of the cabling to the next network device.

Points to remember

- minimum bend radius (dependent on cable diameter and cable type)

Network controller - connecting to the host annunciator



- ❑ Connect the RS-232 or RS-422 cable from serial port 1 on the network controller to the serial port on the alarm annunciation equipment. (i.e., Senstar 100, Perimitrax Central Controller, Intelli-FLEX Central Controller, etc.)

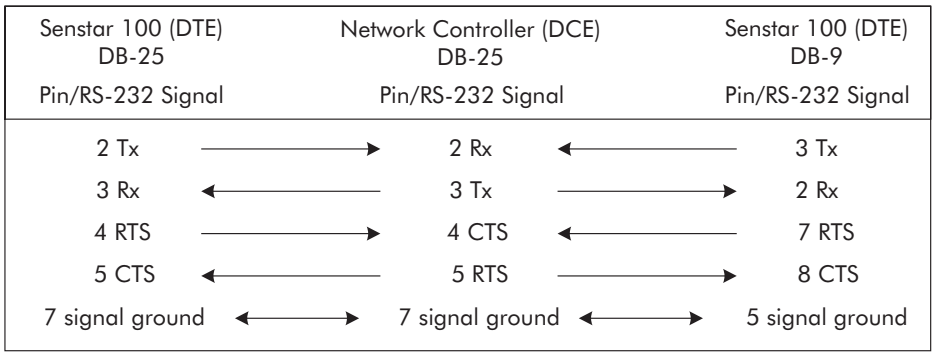
The serial ports are DB-25 female connectors. To simplify installation, remove the head shell from the DB-25 male connector before running the connector through the hole in the enclosure, then re-install the head shell.

- ❑ Ground the serial port cable to the ground stud on the mounting plate.

If you are building your own RS-422 cable, the pin assignments at the network controller serial ports are as follows:

Pin	RS-422
7	Signal GND
15	RX+
17	RX-
19	TX+
25	TX-

If you are building your own RS-232 cable, the pin assignments are as follows



- ❑ Cables supplied by Senstar-Stellar have a #4 ring terminal to connect the ground wire to the mounting plate.
- ❑ If the cable you are using does not have a ring terminal, attach the ground wire to the mounting plate.
- ❑ Connect the Sennet RS-485 Network to the network controller at terminal block(s) 1 and 2, as required by the site.

Network Controller - power connection

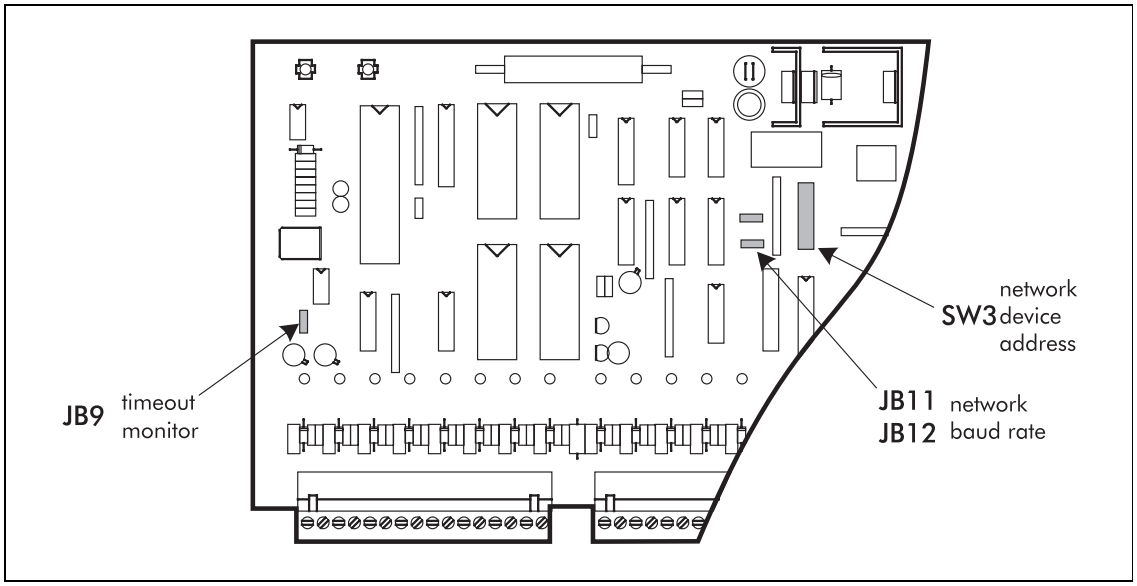
Make sure that the power supply has been wired according to *Wiring AC power to the network device*, page 3-11 or *Wiring DC power or the backup battery to the network device*, page 3-12, depending on your site requirements.

- ❑ If your network is powered using AC power connect the wiring harness to J3 on the network controller.

  OR

- ❑ If your network is powered using DC power connect the wiring harness to J4 on the network controller.

Transponder unit - settings



If the transponder unit is part of a fiber optic network, install the fiber optic interface module on the transponder unit in accordance with *Installing the fiber optic interface module*, page 3-6. Make the network communications connections in accordance with *Network communications - fiber optic cabling*, page 3-24.

Network device address

Each standard transponder unit (TU) in the system must be assigned a unique address number.

- ❑ Refer to your site plan to determine the network device address for each TU.
- ❑ Set the TU address at SW3 in accordance with the DIP-switch address table, see *appendix e - DIP-switch setting convention*.

AC fail alarm annunciation

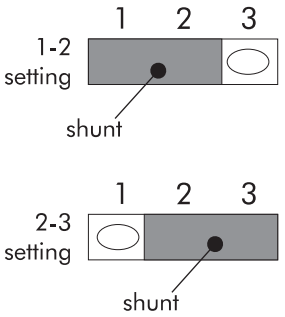
The AC fail alarm can be set to have annunciation enabled or disabled at SW3-8 as follows:

- disable alarm annunciation 'CLOSED'
- enable alarm annunciation 'OPEN'. This setting delays the fail alarm annunciation by approximately 5.5 minutes.

Position SW3-7 is reserved for future use and must be set to the closed position.

Network baud rate

❑ Set the required network baud rate at JB11 and JB12 in accordance with the table below.



The factory set baud rate is 19200.

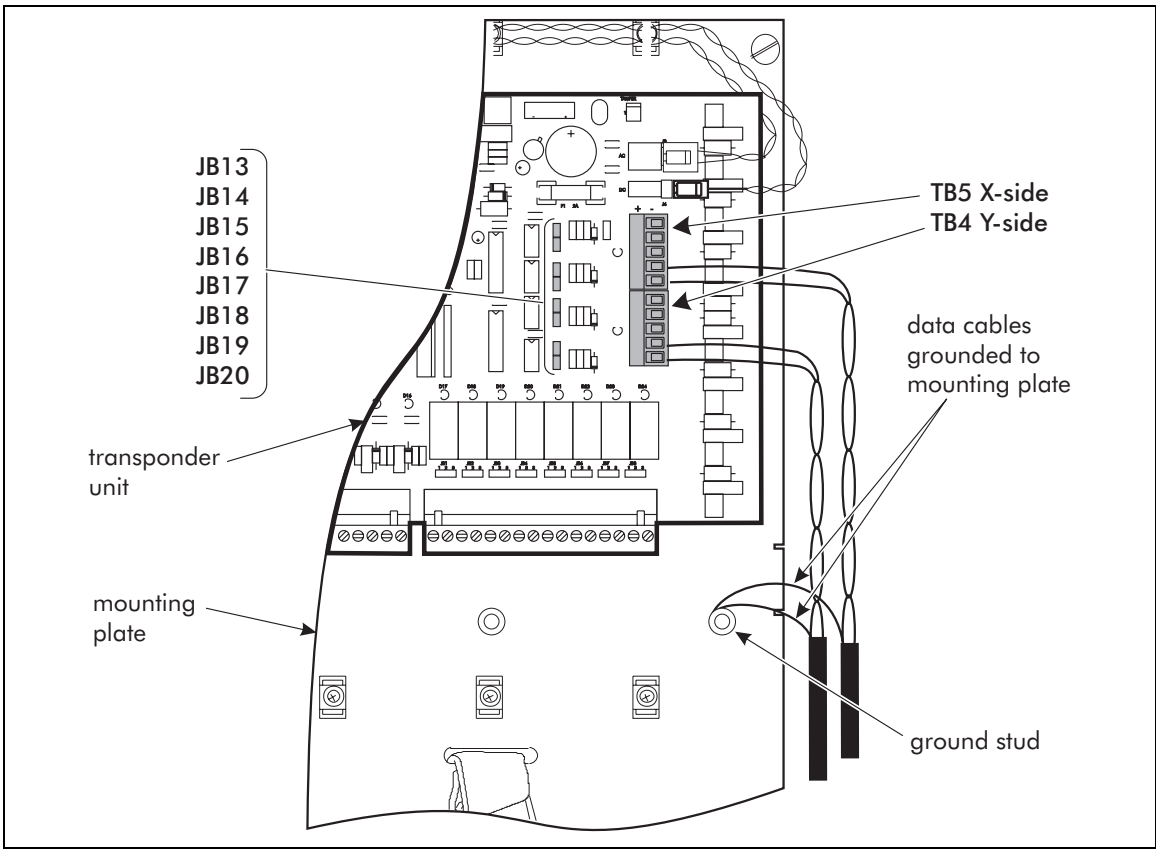
Baud rate	JB11	JB12
2400	1-2	1-2
4800	1-2	2-3
9600	2-3	1-2
19200	2-3	2-3

Timeout monitor

The timeout monitor limits the amount of time that data transfers across the cables before a communication fail alarm results. This prevents data lines from becoming crowded, which may result in a system failure.

❑ Check that JB9 has a shunt on pins 1 and 2 to enable the timeout monitor. (factory setting.)

Network communications - copper wire

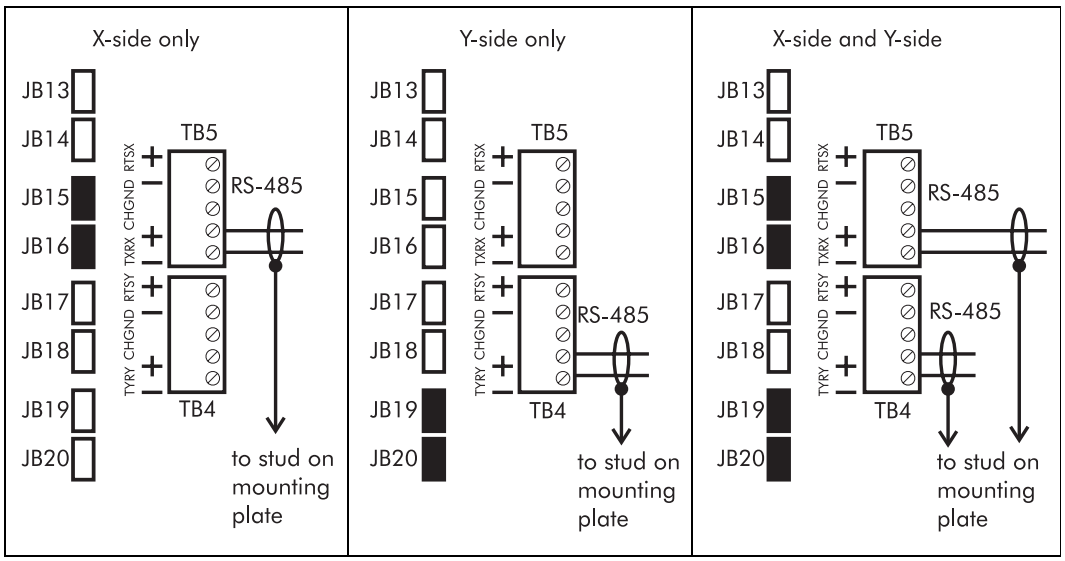


Wiring

- ❑ Connect the shield wires from the data cables to the ground stud on the mounting plate.
- ❑ Connect the transponder unit to the X and Y network data cables at the designated terminal blocks.

Jumper settings

To terminate the data signal from the RS-485 cable place the shunt over both pins of the jumper. This must be done at units located at both ends of the network or network segment, to eliminate the data signal reflections that would otherwise occur.



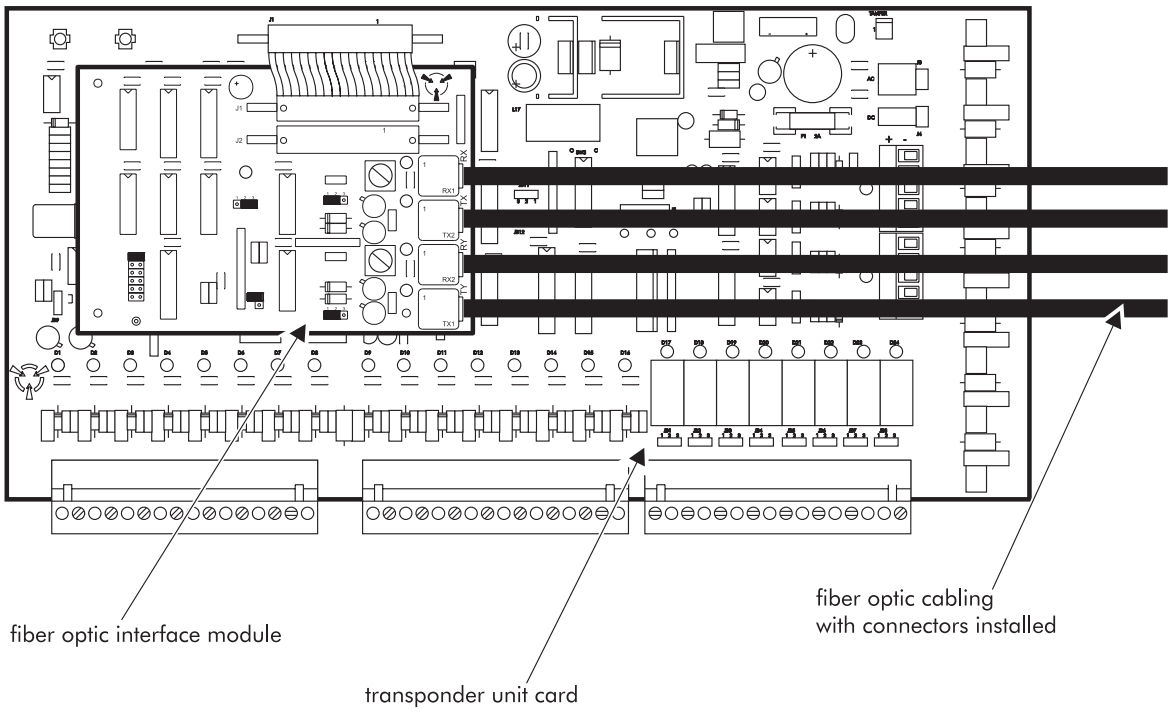
- ❑ If X-side of the network (TB5) is on the physical end of the network or network segment, install shunts at JB15 and JB16.
- ❑ If Y-side of the network (TB4) is on the physical end of the network or network segment, install shunts at JB19 and JB20.

Always install network termination shunts in pairs, as illustrated above.

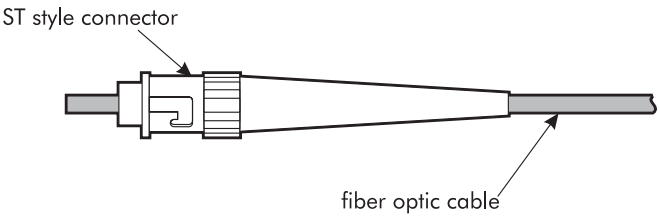
The factory setting has no shunts installed.

- ❑ Connect the remaining end of the wiring to the next network device.

Network communications - fiber optic cabling



Make sure that the fiber optic interface module has been installed. See *Installing the fiber optic interface module*, page 3-6.

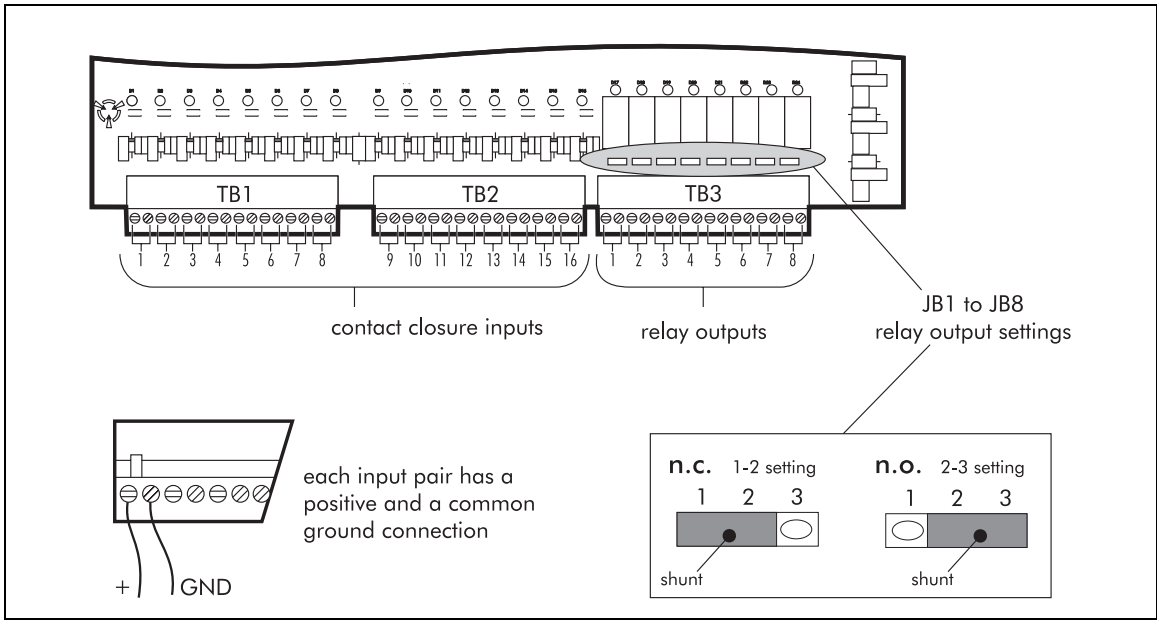


- ❑ Install one ST connector on both ends of each fiber optic cable.
- ❑ Plug the prepared cable into the fiber optic interface module at the appropriate location. (See *Connecting the network*, page 3-2.)
- ❑ Connect the remaining end of the cabling to the next network device.

Points to remember

- minimum bend radius (dependent on cable diameter and cable type).

Transponder unit - connecting to external devices



Each TU provides 16 contact closure inputs, and optionally, 8 relay contact outputs. Inputs are connected at TB1 and TB2. Each connector has 8 pairs of terminals - the far left pair on TB1 is for input 1, and the far right pair on TB2 is for input 16. Outputs are connected at TB3. The far left pair of terminals on TB3 is for output 1, and the far right pair is for output 8.

- ❑ To connect a sensor to a TU input, connect the two wires from the sensor contacts to the corresponding pair of terminals on TB1 or TB2.
- ❑ To connect a relay contact output, connect the two wires from the relay contact to the corresponding pair of terminals on TB3.

Refer to your completed device configuration forms for details.

Input supervision

Inputs can either be non-supervised, or supervised with single or dual end-of-line resistors. The inputs can handle normally open (n.o.) or normally closed (n.c.) sensor contacts.

- ❑ For each input, indicate the type of supervision and resistor values required, and indicate normally open or normally closed sensor contacts.
- ❑ If end-of-line resistor circuits are required, install the resistors at the actual sensor contacts.

Relay outputs

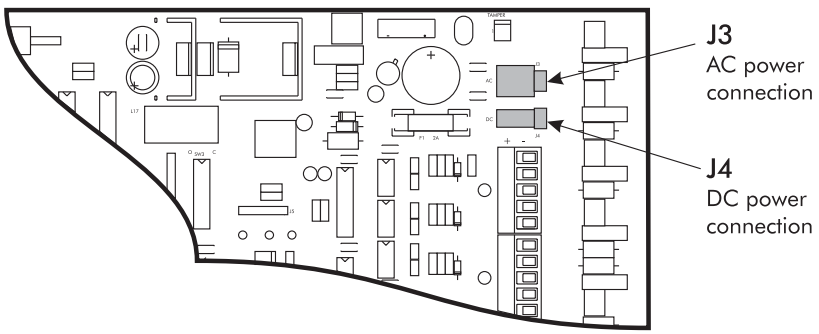
If you are using the relay outputs, set jumpers JB1 to JB8 as either open or closed when energized (Install shunts on pins 2 and 3 for open, and on pins 1 and 2 for closed).

The factory setting has all relays closed.

Senstar 100

If the network is connected to a Senstar 100 alarm annunciation system, you can also specify noise tolerance and filter settings for the inputs, and flash rate for the outputs. These settings can be programmed into the Senstar 100 system. (See the *Senstar 100 Site creation planning guide DA-030213* and *Senstar 100 Site creation installation guide DA-030207* for more details.) Other alarm annunciators may also allow programming; check with the supplier for more information.

Transponder unit - power connection



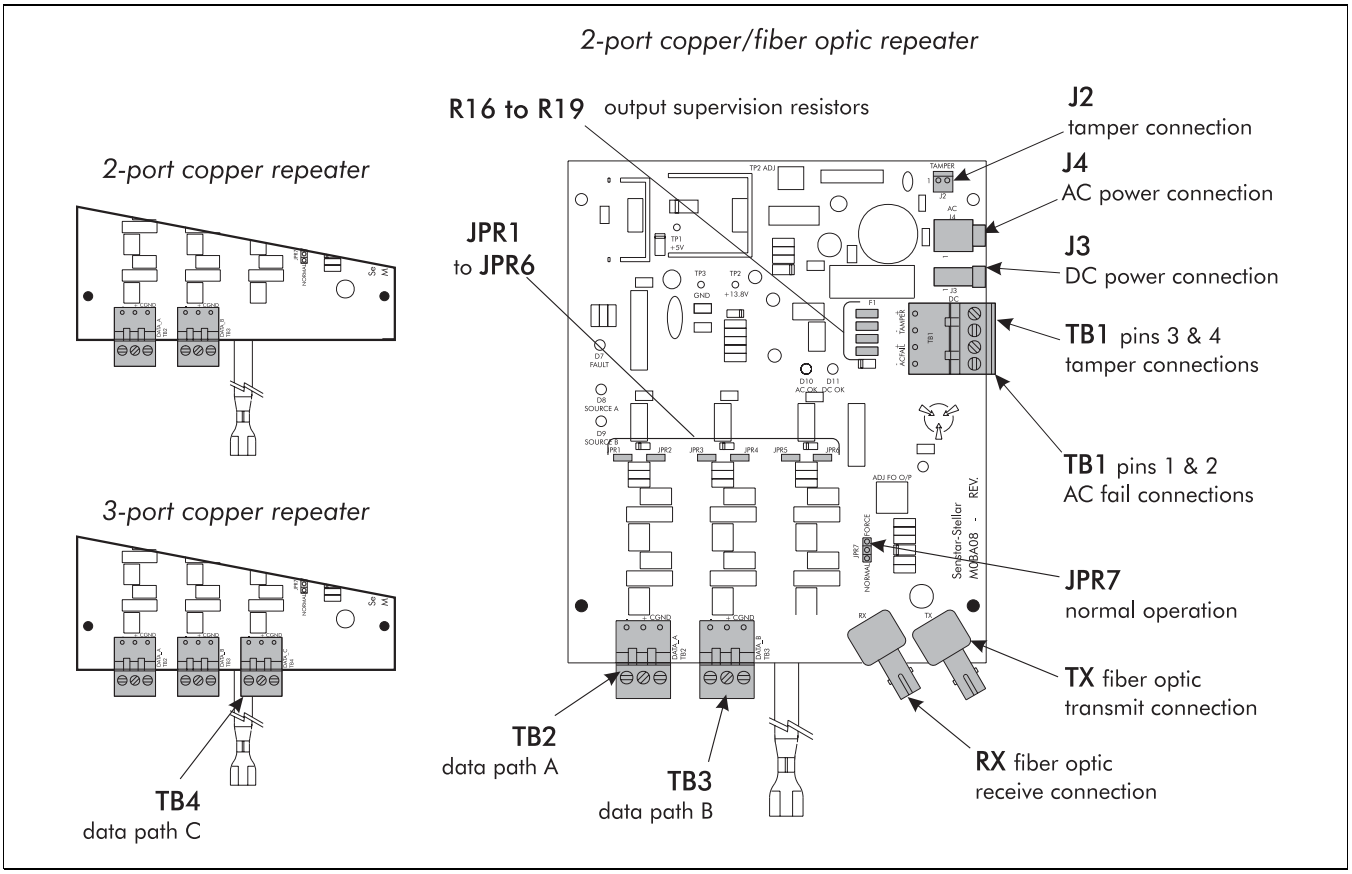
Make sure that the power supply has been wired according to *Wiring AC power to the network device*, page 3-11 or *Wiring DC power or the backup battery to the network device*, page 3-12, depending on your site requirements.

- ❑ If your network is powered using AC power connect the wiring harness to J3 on the transponder unit.

  OR

- ❑ If your network is powered using DC power connect the wiring harness to J4 on the transponder unit.

Repeater - settings



Three different types of repeater cards are available, the 2-port or 3-port copper wire-based, and the 2-port copper wire/fiber optic cable-based repeater card. The card that is used will depend on the site requirements. There can be a maximum of two connections at each data point.

Copper wire-based repeater card

The 2-port copper wire-based repeater card is capable of being configured with a data path A and a data path B. The 3-port configuration also has a data path C connection. If the repeater is on the physical end of a network or network segment, the built-in termination circuitry must be connected.

Wiring

Connect the +, - and CGND wires from:

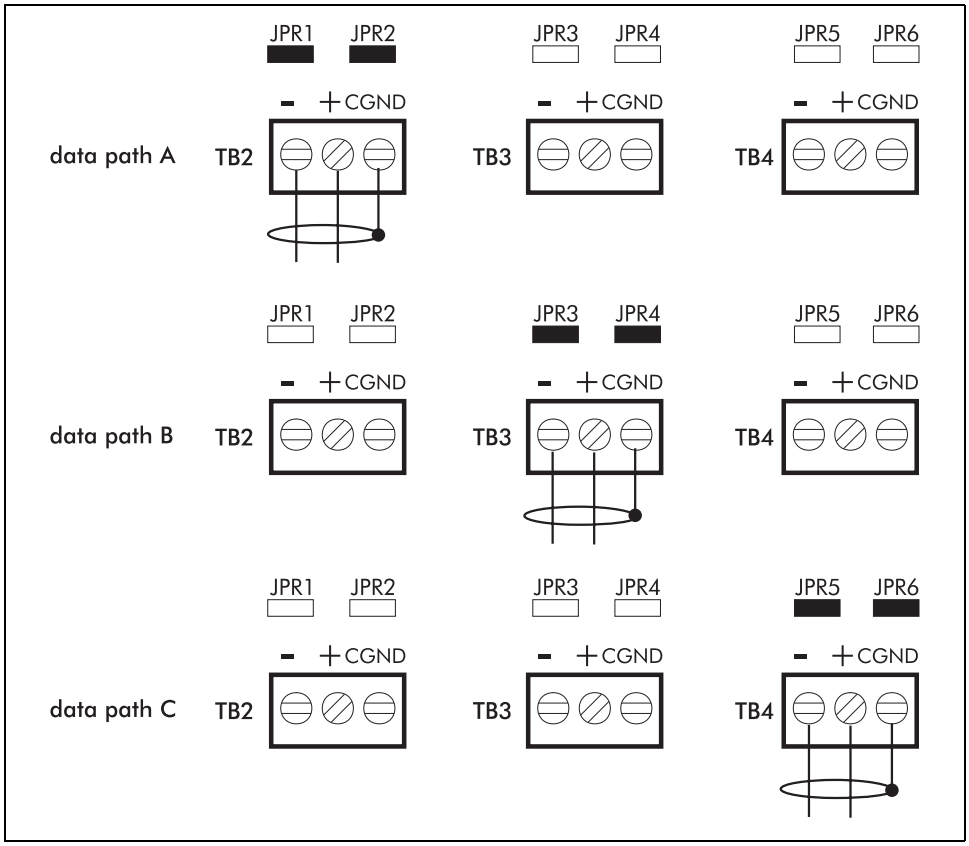
- ❑ data path A to the appropriate screw terminals on TB2;
- ❑ data path B to the appropriate screw terminals on TB3; and
- ❑ data path C to the appropriate screw terminals on TB4;

as required by the site.

Jumper settings

- ❑ If network segment A (TB2) is on the physical end of the network or network segment, ensure that shunts are installed at JPR1 and JPR2.
- ❑ If network segment B (TB3) is on the physical end of the network or network segment, ensure that shunts are installed at JPR3 and JPR4.
- ❑ If network segment C (TB4) is on the physical end of the network or network segment, ensure that shunts are installed at JPR5 and JPR6.

Always install network termination shunts in pairs, as illustrated.



2-port fiber optic repeater card

Wiring

- ❑ Connect the receiving data line to the RX port.
- ❑ Connect the transmitting data line to the TX port.

Jumper settings

A shunt must be installed at JPR7 on pins 2 and 3 for normal fiber optic operation.

Force operation is used for factory testing.

If the installation includes both fiber optic cable and copper wire, follow the additional instructions at *Copper wire-based repeater card*, page 3-27.

Tamper and AC fail outputs

The repeater card includes tamper and AC fail outputs that can be connected as inputs to a nearby network device.

The tamper and AC fail outputs are normally configured for single 2.2 kΩ resistor supervision. Resistors R16, tamper, and R18, AC fail, can be changed on-site, if required. Resistors R17, tamper, and R19, AC fail, can be added if dual-resistor supervision is required.

- ❑ If no supervision is specified, replace the resistors with a jumper. If a different value is specified, replace with resistors of the appropriate value. Refer to the completed device configuration forms.
- ❑ To connect a device to the repeater card, connect the two wires from the device to the corresponding pair of terminals on TB2, TB3 or TB4 as required. Refer to your device configuration forms to see which pair of terminals to use. Set the corresponding jumper for normally open or normally closed relay output, as shown on the completed device configuration forms.

Tamper

- ❑ Connect the wiring harness from the tamper switch on the enclosure to J2 on the repeater card.
- ❑ Make hard-wired connections from pin 4 (+) and pin 3 (-) on TB1 on the repeater card, to an unused input on a transponder card.

AC Fail

If the AC Fail output from a repeater is connected to the transponder, the + terminal of the repeater AC fail output must be connected to the left terminal (+) of the transponder input terminal pair.

- ❑ Make hard-wired connections from pin 2 (+) and pin 1 (-) on TB1 on the repeater card, to an unused input on a transponder card. (Refer to the appropriate completed device configuration form to determine which inputs are unused.)

Repeater - power connection

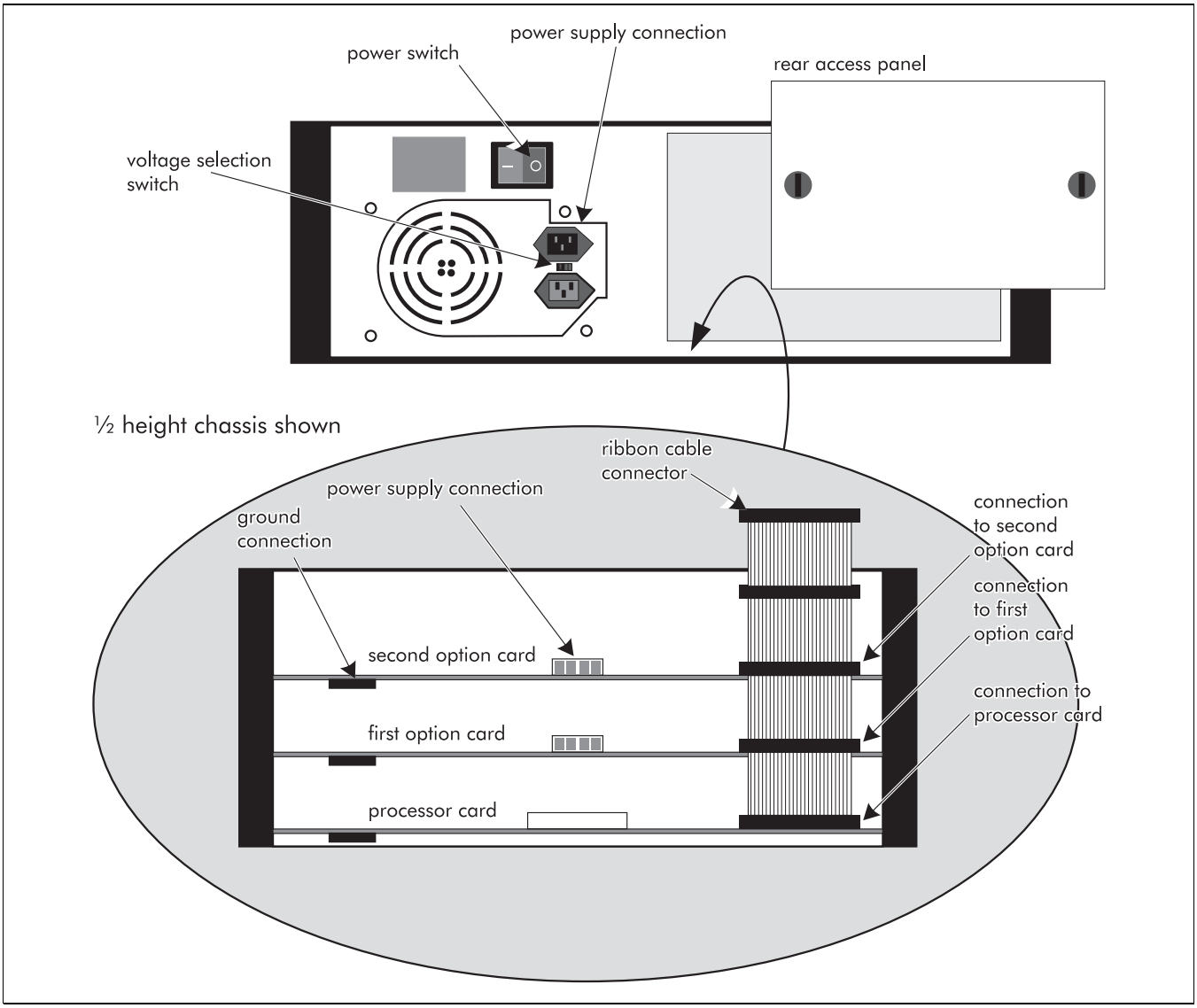
Make sure that the power supply has been wired according to *Wiring AC power to the network device*, page 3-11 or *Wiring DC power or the backup battery to the network device*, page 3-12, depending on your site requirements.

- ❑ If your network is powered using AC power connect the wiring harness to J4 on the repeater.

  OR

- ❑ If your network is powered using DC power connect the wiring harness to J3 on the repeater.

Large transponder unit - installation

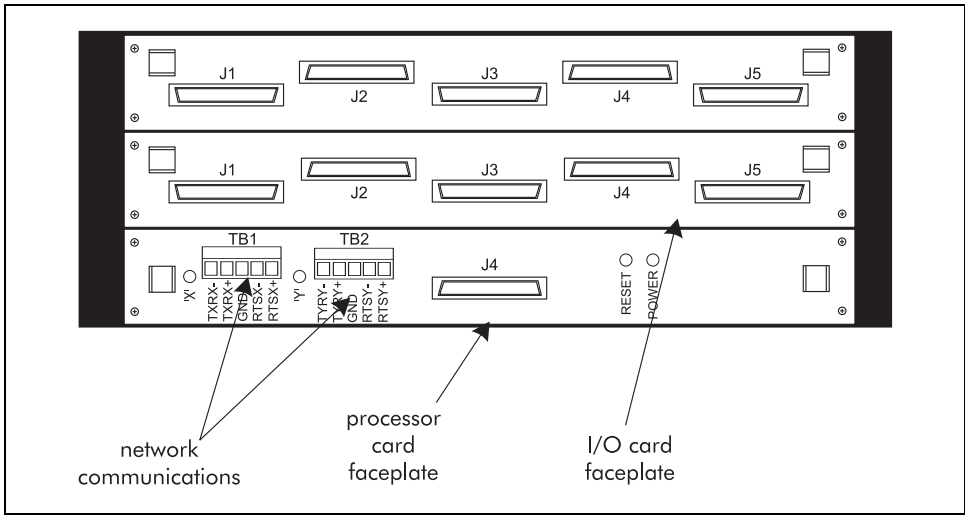


The LTU is a complete unit with its own chassis. It can be installed in a 19-inch rack, in a cabinet or on a wall. Before the LTU is powered up the processor card and any relay or 1/2 relay cards must be set up.

CAUTION *Use an antistatic wrist strap when handling any cards. If this is not possible, ground yourself by touching the metal rack or chassis BEFORE touching the card.*

- ❑ From the rear of the LTU chassis open the access panel.
- ❑ Disconnect the circuit card ground lug spade connectors from the ground posts.

- ❑ Disconnect the power supply connectors from the circuit cards.
- ❑ Disconnect the ribbon cable connectors from the circuit cards. From the front of the LTU chassis unscrew the faceplate of the processor card.
- ❑ Pull the faceplate complete with the processor card from the LTU chassis.



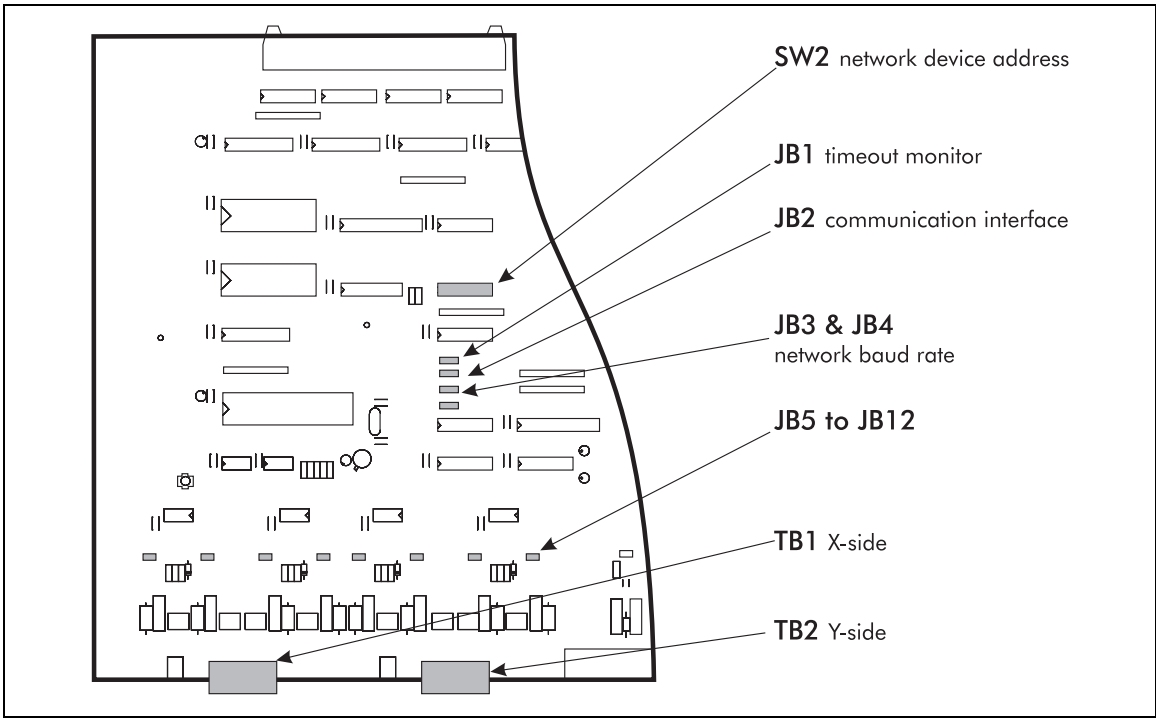
- ❑ Setup the network device address, network baud rate, timeout monitor, and network communication jumpers in accordance with *Large transponder unit - processor card settings*, page 3-32. Refer to your completed device configuration forms for the appropriate settings.
- ❑ Replace the processor card in the LTU chassis and secure it in place.
- ❑ Remove each relay card from the LTU chassis and set the shunts in accordance with *Large transponder unit - connecting to external devices*, page 3-34 and your completed device configuration forms.
- ❑ Replace the I/O cards in the LTU chassis and secure them in place.
- ❑ Reconnect the ribbon cable, power supply and ground lug space connectors.

The ribbon cable must be installed sequentially. i.e., processor card to connector 1, option 1 to connector 2, . . . option 4 to connector 5.

- ❑ Replace the access panel on the chassis.
- ❑ Select the required voltage to operate the LTU in accordance with your site specifications.
- ❑ Install the LTU chassis in the desired location. Refer to the site plan for the exact location.
- ❑ On the front of the processor card faceplate connect the LTU to the network. See *Network communications - copper wire*, page 3-33.

If the unit is wall mounted all cards must be removed and the chassis must be screwed to the wall.

Large transponder unit - processor card settings



Network device address

Each large transponder unit (LTU) in the system must be assigned a unique address number.

- ❑ Refer to your site plan to determine the network device address for each LTU.
- ❑ Set the LTU address at SW2-1 to SW2-6 in accordance with the DIP-switch address table, see *appendix e, DIP-switch setting convention*.

Positions SW2-7 and SW2-8 are reserved for future use. They must be set to the closed position.

Communication interface

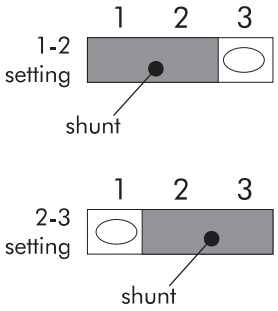
- ❑ Install a shunt over pins 1 and 2 at JB2.

  (This option is not currently supported by software.)

Network baud rate

❑ Set the required network baud rate at JB3 and JB4 in accordance with the table below.

The factory set baud rate is 19200.



Baud rate	JB3	JB4
2400	1-2	1-2
4800	1-2	2-3
9600	2-3	1-2
19200	2-3	2-3

Timeout monitor

The timeout monitor limits the amount of time that data transfers across the cables before a communication fail alarm results. This prevents data lines from becoming crowded, which may result in a system failure.

❑ Check that JB1 has a shunt on pins 1 and 2 to enable the timeout monitor. (factory setting)

Network communications - copper wire

Wiring

❑ Connect the large transponder unit to the X and Y network data cables at the designated terminal blocks.

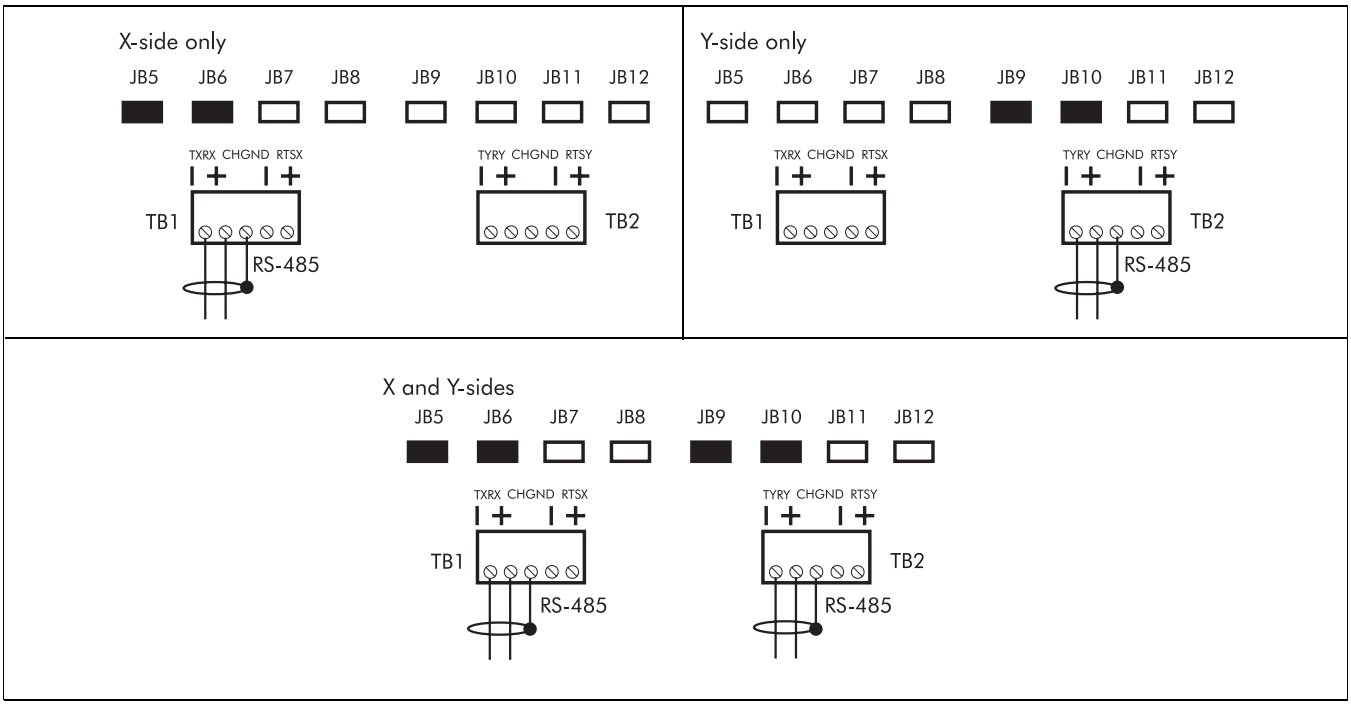
Jumper settings

To terminate the data signal from the RS-485 wiring place the shunt over both pins of the jumper. This must be done at units located at both ends of the network or network segment, to eliminate the data signal reflections that would otherwise occur.

❑ If X-side of the network (TB1) is on the physical end of the network or network segment, install shunts at JB5 and JB6.

❑ If Y-side of the network (TB2) is on the physical end of the network or network segment, install shunts at JB9 and JB10.

Always install network termination shunts in pairs, as illustrated below.

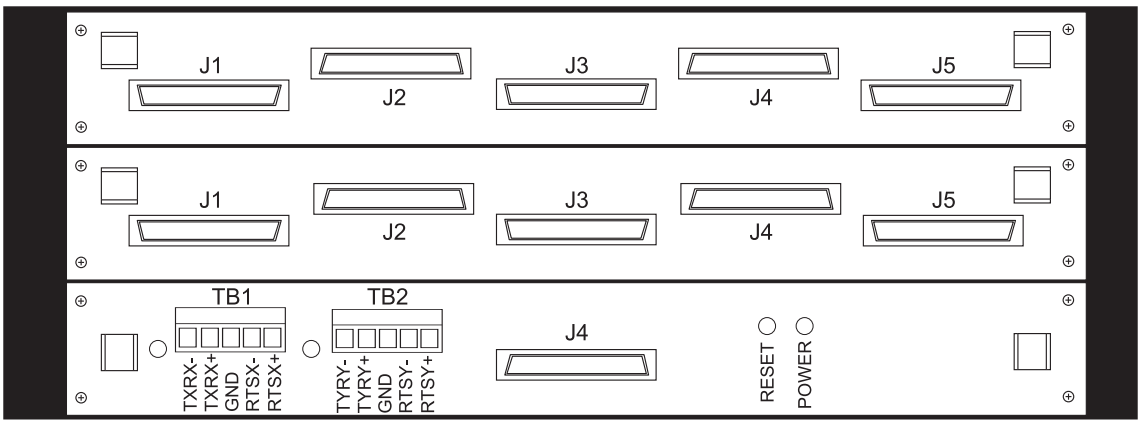


The factory setting has no shunts installed.

❑ Connect the remaining end of the wiring to the next network device.

Large transponder unit - connecting to external devices

Each LTU can accommodate a maximum of 2 or 4 input/output cards. Three types are available - 64 input/64 output relay card, 64 input/32 output relay card, and the 64 input/64 output lamp driver card. Connections to external devices are made at each input/output card faceplate. Input connections are made at J1 and J2 connection ports. Output connections are made at J3, J4 and J5 connection ports. *(Default pinouts are listed in appendix a)*



Input supervision

Inputs can be setup as non-supervised or supervised, with single or dual end-of-line resistor circuits. The inputs can handle normally open (n.o.) or normally closed (n.c.) sensor contacts.

Refer to your completed device configuration forms for the type of end-of-line supervision and resistor values needed, and the sensor contacts used.

- If end-of-line resistor circuits are required, install the resistors at the actual sensor contacts.

Relay outputs

One pair of output pins is allocated per relay. One output pin is connected to the relay common pin (COM). The second output pin is connected to the 3-pin header. The position of the shunt on the header determines the n.o. or n.c. characteristic.

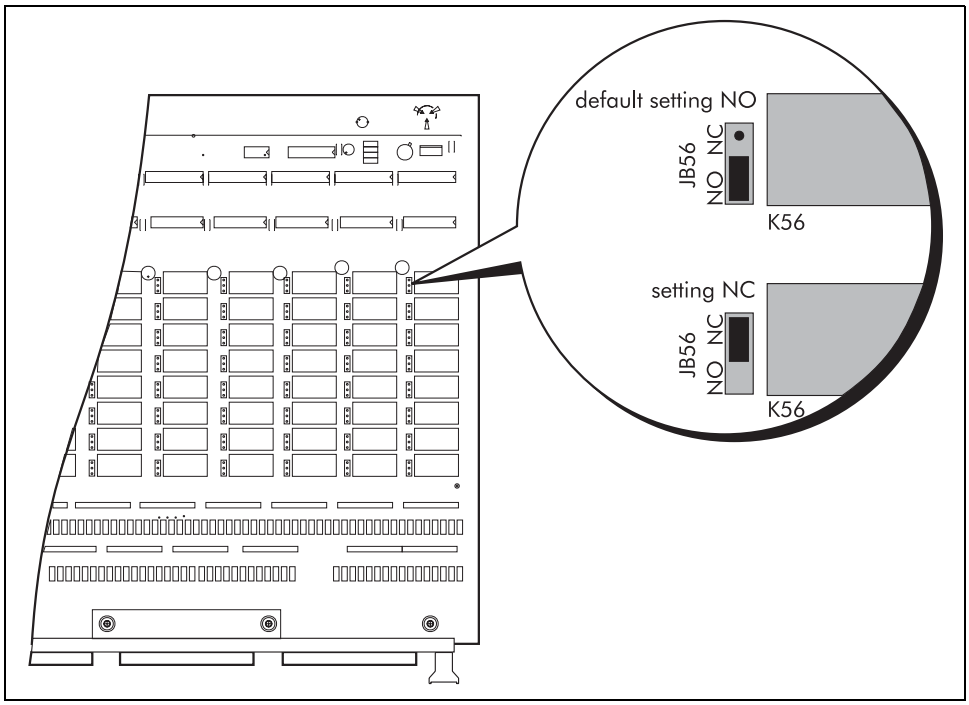
Relay contacts are rated for 24 V. The maximum current rating is 1A. The relays are organized in the following manner:

- K1 to K24 are connected to J3
- K25 to K48 are connected to J4
- K49 to K64 are connected to J5

To ensure that the relays power up in a known state, state changes are delayed for approximately 7.2 seconds after the LTU is powered up. This gives the Sennet network sufficient time to download the correct output configuration to the LTU.

On the 64 input/64 output and 64 input/32 output relay cards the relay contacts

can be set as normally open (n.o.) or normally closed (n.c.) when energized (set shunts on pins 2 and 3 for open, and on pins 1 and 2 for closed).



The factory setting has all relays normally open.

The pin-out connections for the LTU cards are listed in ***Appendix a - device configuration forms.***

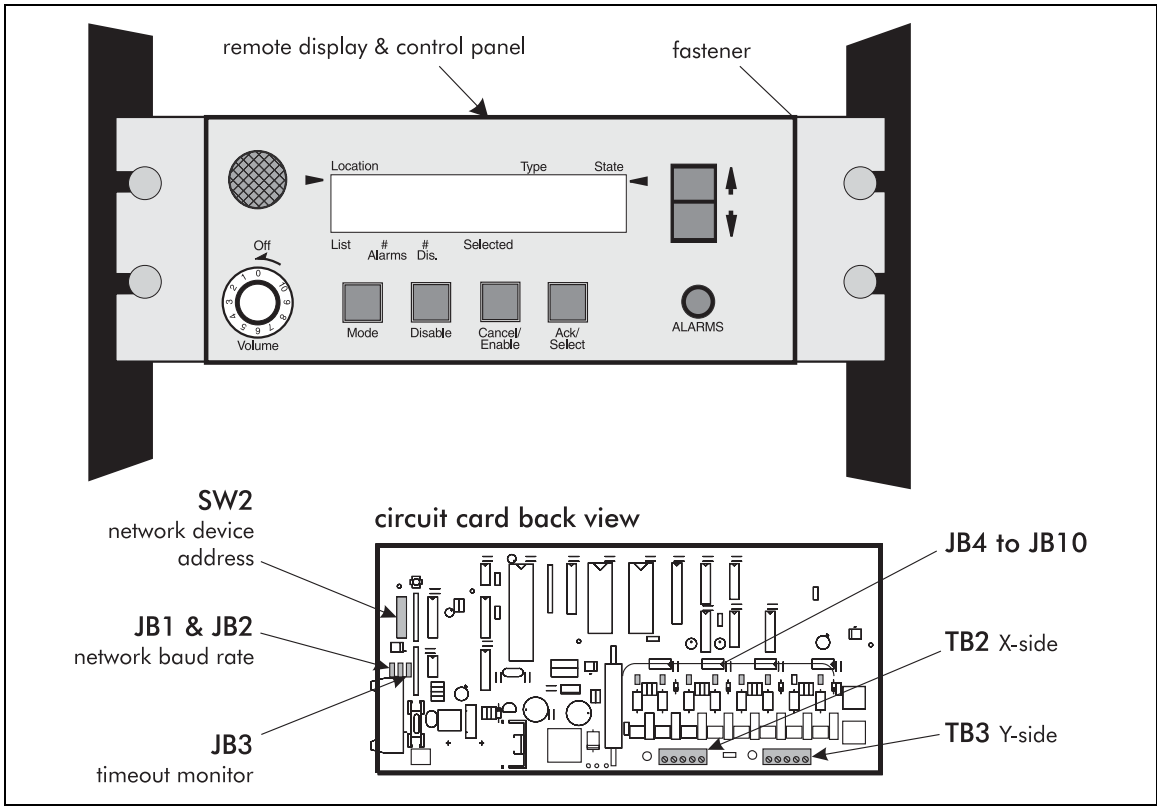
Senstar 100

If the network is connected to a Senstar 100 alarm annunciation system, you can also specify noise tolerance and filter settings for the inputs, and flash rate for the outputs. These settings can be programmed into the Senstar 100 system. Other alarm annunciators may also allow programming; check with the supplier for more information.

Large transponder unit - power connection

Connect the AC main power to the LTU using the supplied line cord. It is recommended that the AC main power supply used be battery backed from a UPS.

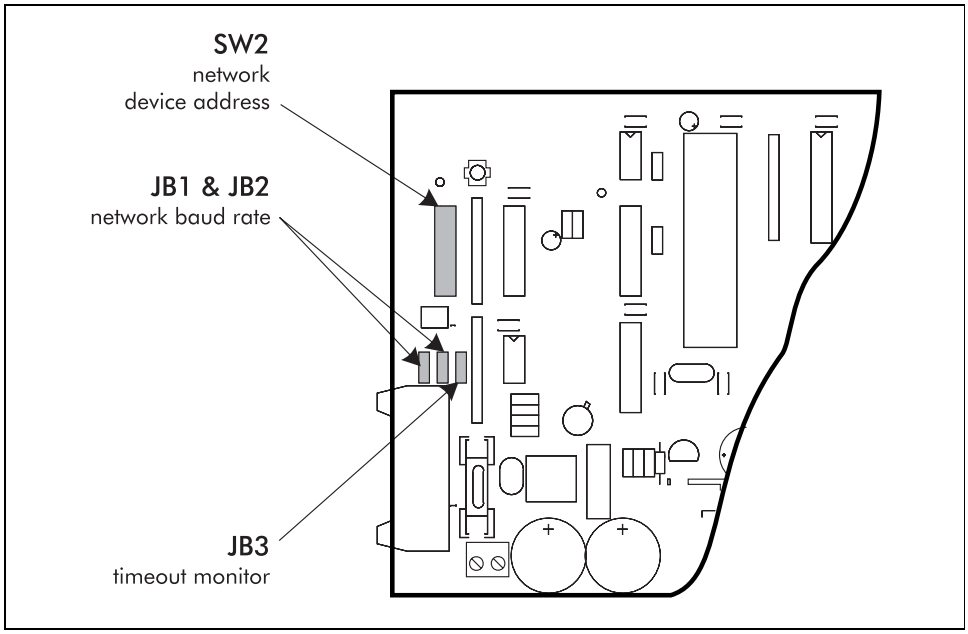
Remote display and control panel - installation



The remote display and control panel is a complete unit that includes the circuit card and the LCD screen and faceplate. This unit can be installed on a wall, in a 19-inch rack, or on a desktop.

- ❑ Set up the network device address, network baud rate, timeout monitor, network communication jumpers and network communication wiring in accordance with *Remote display and control panel - settings*, page 3-38. Refer to your completed device configuration forms for the appropriate settings.
- ❑ Mount the unit in a 19-inch rack, on a wall or desktop.

Remote display and control panel - settings



Network device address

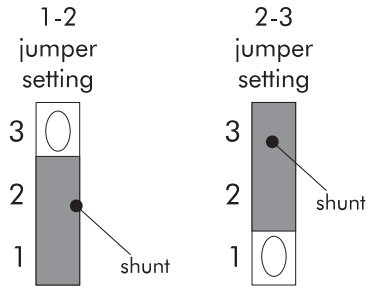
Each remote display and control panel (RDCP) in the system must be assigned a unique address number.

- ❑ Refer to your site plan to determine the network device address for each RDCP.
- ❑ Set the RDCP address at SW2-1 to SW2-6 in accordance with the DIP-switch address table, see *appendix e*.

Positions SW2-7 and SW2-8 are reserved for future use. They must be set to the closed position.

Network baud rate

- ❑ Set the required network baud rate at JB1 and JB2 in accordance with the table below.



The factory set baud rate is 19200.

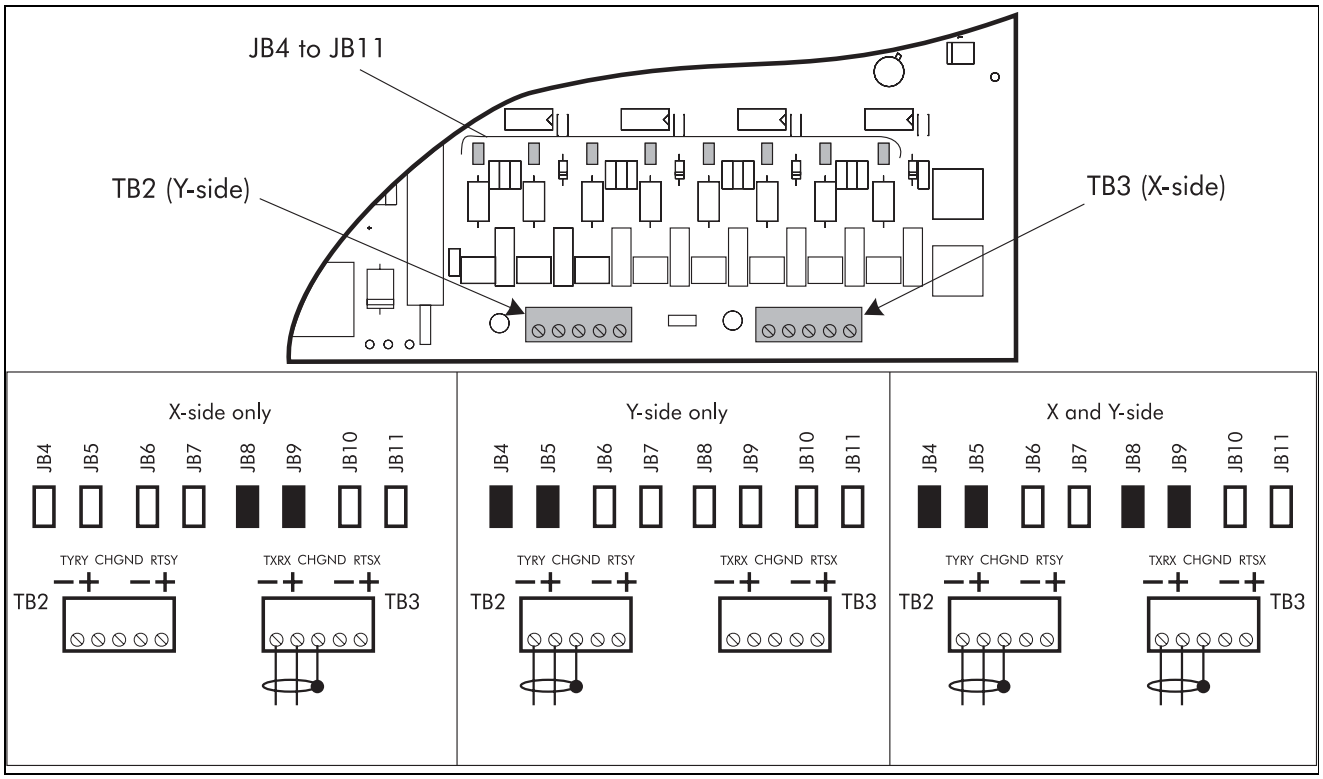
Baud rate	JB1	JB2
2400	1-2	1-2
4800	1-2	2-3
9600	2-3	1-2
19200	2-3	2-3

Timeout monitor

The timeout monitor limits the amount of time that data transfers across the cables before a communication fail alarm results. This prevents data lines from becoming crowded, which may result in a system failure.

❑ Check that JB3 has a shunt on pins 1 and 2 to enable the timeout monitor. (factory setting)

Network communications - copper wire



Wiring

❑ Connect the Y-side network connection cable to terminal block TB2, and the X-side network connection cable to terminal block TB3 as follows:

- Negative wire to terminal 1
- Positive wire to terminal 2

Jumper settings

To terminate the data signal from the RS-485 cable place the shunt over both pins of the jumper. This must be done at units located at both ends of the network or network segment, to eliminate the data signal reflections that would otherwise occur.

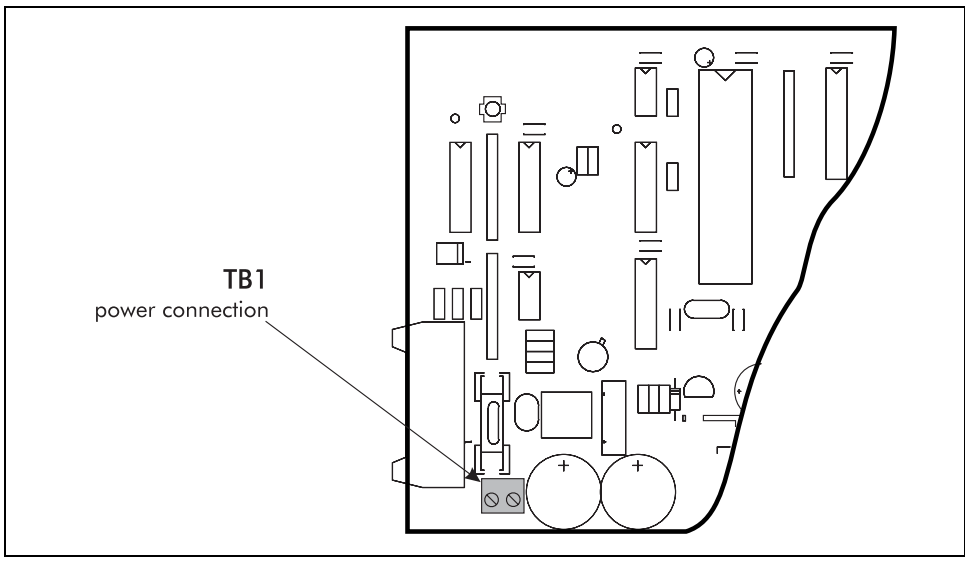
- ❑ If X-side of the network (TB3) is on the physical end of the network or network segment, install shunts at JB8 and JB9.
- ❑ If Y-side of the network (TB2) is on the physical end of the network or network segment, install shunts at JB4 and JB5.

Always install network termination shunts in pairs, as illustrated above.

The factory setting has no shunts installed.

- ❑ Connect the remaining end of the wiring to the next network device.

Remote display and control panel - power connection



- ❑ connect the main power supply cable to terminal block TB1.

The power connection is NOT polarity dependent.

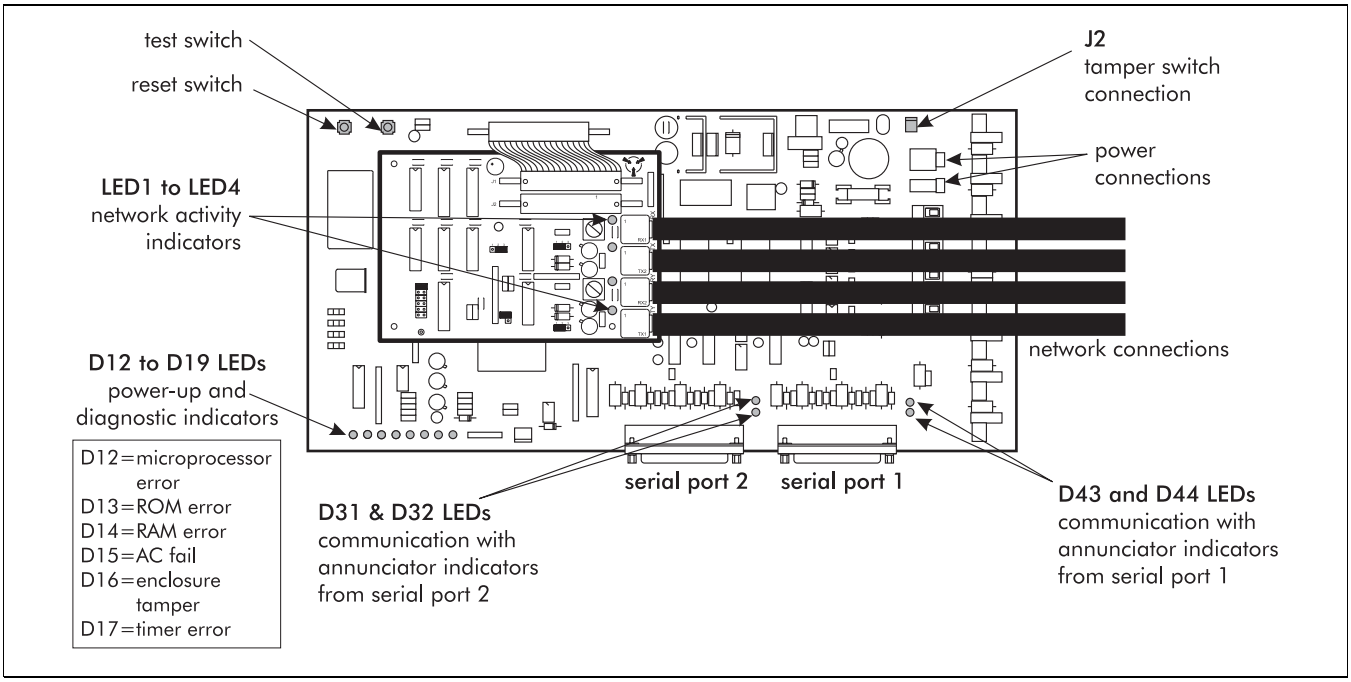
4 Powering up procedures

After all of the devices have been installed, setup and wired, they must be powered up. This chapter describes the power up procedures for each network device.

The power up procedures for the Perimitrax Sensor Module are found in the *Perimitrax System setup guide (A3DA0302)*.

The power up procedures for the Intelli-FLEX multiplex version processor are found in the *Intelli-FLEX product guide (multiplex version) (C6DA0402)*.

Network controller - fiber optic cable

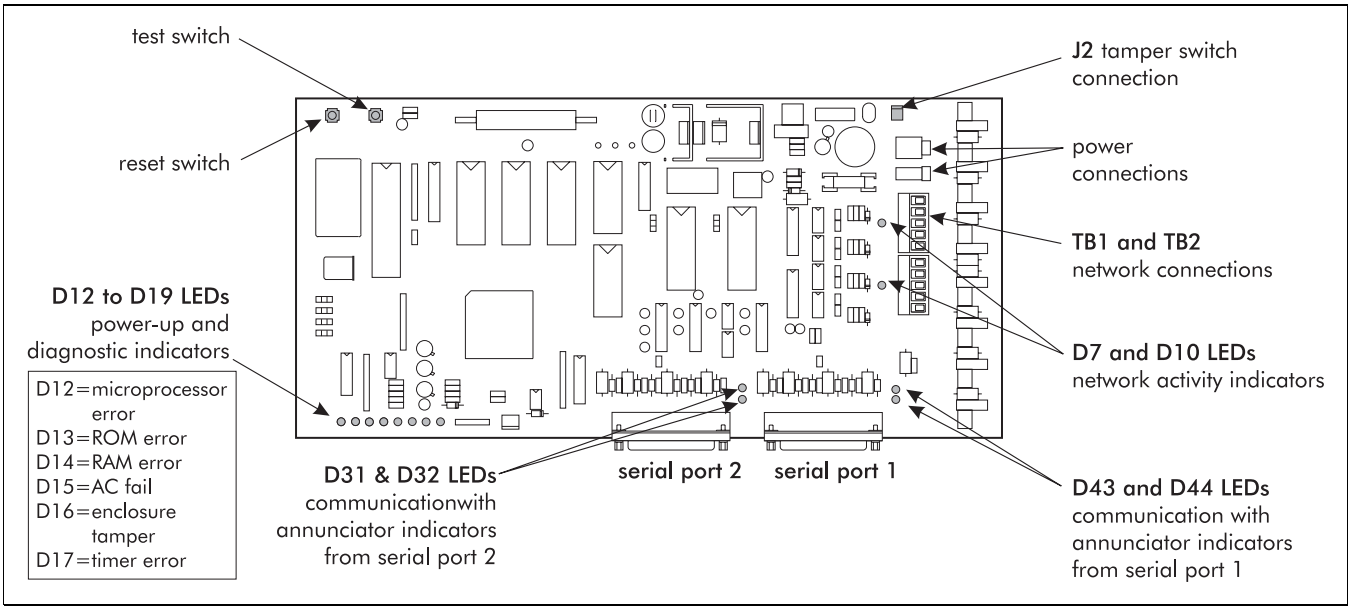


Open the enclosure door and apply power to the network controller. The following should occur:

- the eight red LEDs (D12-D19) turn on and off in sequence as the network controller performs its startup diagnostics
- if the network controller passes the startup diagnostics, all eight LEDs turn on for approximately one second, then all turn off except for D16 (and, if the network controller is not running on AC power, D15 remains on indicating AC fail)
- D16 remains on, indicating an enclosure tamper (the door is open). Press the enclosure tamper switch to check that D16 turns off. If you do not have an enclosure tamper switch, install a shunt on tamper switch connection J2 to turn D16 off
- if the network controller is connected to an operational Senstar 100 or other alarm annunciation system, the two green LEDs labelled D43 and D44 flash to indicate communication with the annunciator from serial port 1. (LEDs D31 and D32 communicate from serial port 2)
- the four green LEDs, on the fiber optic interface module, labelled LED1 through LED4 turn on to indicate network activity on the two sides of the network

If the network controller fails to perform any of the above processing, press the Reset switch to restart the network controller. If the problem persists, refer to *appendix c, Troubleshooting*.

Network controller - copper wire



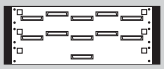
Open the enclosure door and apply power to the network controller. The following should occur:

- the eight red LEDs (D12-D19) turn on and off in sequence as the network controller performs its startup diagnostics
- if the network controller passes the startup diagnostics, all eight LEDs turn on for approximately one second, then all turn off except for D16 (and, if the network controller is not running on AC power, D15 remains on indicating AC fail)
- D16 remains on, indicating an enclosure tamper (the door is open). Press the enclosure tamper switch to check that D16 turns off. If you do not have an enclosure tamper switch, install a shunt on tamper switch connection J2 to turn D16 off
- if the network controller is connected to an operational Senstar 100 or other alarm annunciation system, the two green LEDs labelled D43 and D44 flash to indicate communication with the annunciator from serial port 1. (LEDs D31 and D32 communicate from serial port 2)
- the two green LEDs labelled D7 and D10 turn on, steady, to indicate network activity on the two sides of the network

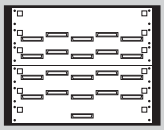
If the network controller fails to perform any of the above processing, press the Reset switch to restart the network controller. If the problem persists, refer to *appendix c, Troubleshooting*.

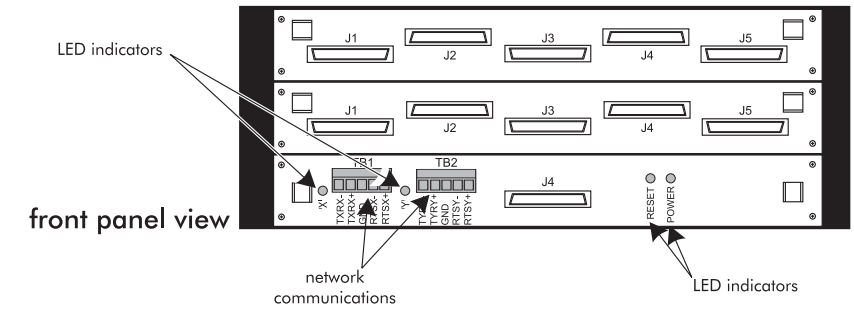
Large transponder unit

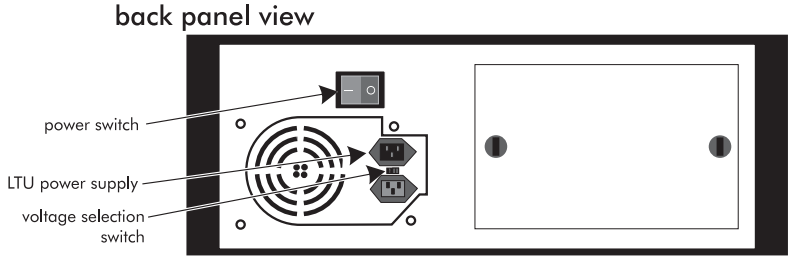
½ chassis LTU
128 input/128 output
maximum



full chassis LTU
256 input/256 output
maximum





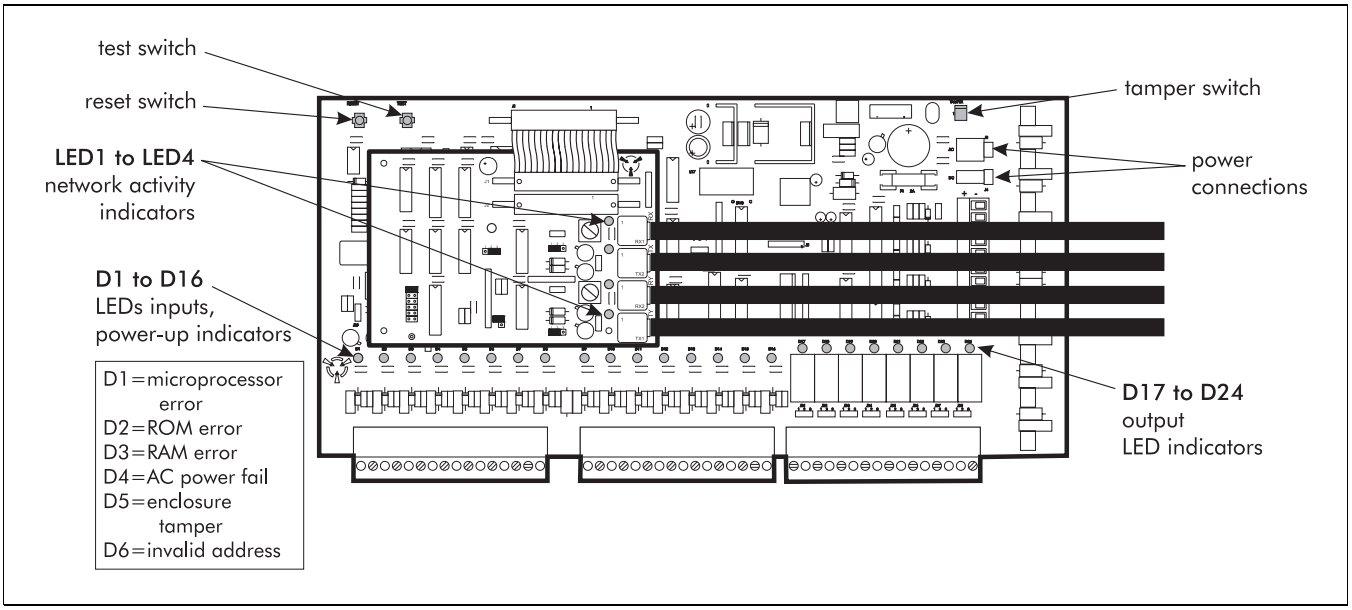


Turn the power switch ON. The following should occur:

- the POWER LED and RESET LED should light up and remain lit
- assuming the large transponder unit is connected to a network and if the network controller has been powered up, the 'X' and 'Y' LEDs flash alternately to indicate network activity on both sides of the network. If the LTU is not connected to a network, the 'X' and 'Y' LEDs will remain off

If the large transponder unit fails to perform any of the above processing, refer to *appendix c, Troubleshooting*.

Standard transponder unit - fiber optic cable



Open the enclosure door and apply power to the transponder. The following should occur:

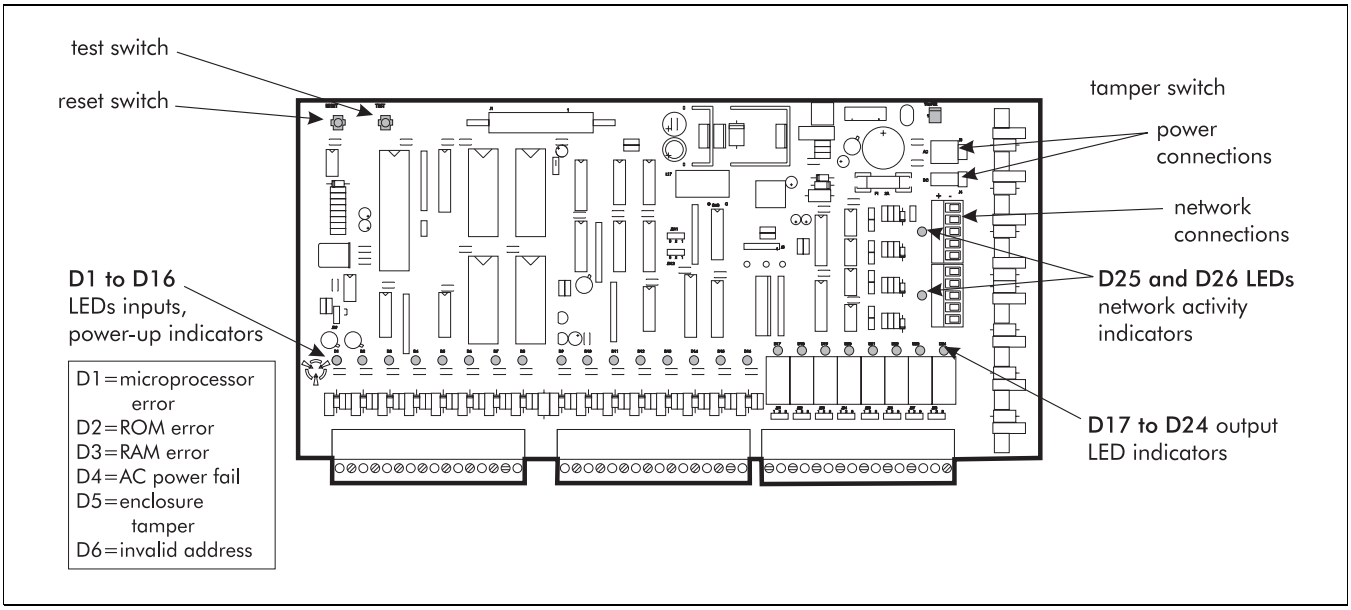
- the 16 red LEDs (D1-D16) turn on and off in sequence as the transponder performs its startup diagnostics
- if the transponder passes the startup diagnostics, all 16 LEDs turn on for approximately one second, then indicate the status of the connected input
- the 8 output LEDs (D17-D24) may be OFF, ON, or Flashing depending on the database
- assuming the transponder unit is connected to a network and if the network controller has been powered up, the four green LEDs labelled LED1 through LED4 flash alternately to indicate network activity on the two sides of the network
- if the network and the annunciator are powered up, and the annunciator has been programmed, the LEDs then show the status of the input sensors:

off	= normal (non-alarm) state
on (steady)	= alarm state
flashing	= tamper state

To display error conditions on the LEDs, press and hold the Test switch.

If the transponder unit fails to perform any of the above processing, press the Reset switch to restart the unit. If the problem persists, refer to *appendix c, Troubleshooting*.

Standard transponder unit - copper wire



Open the enclosure door and apply power to the transponder. The following should occur:

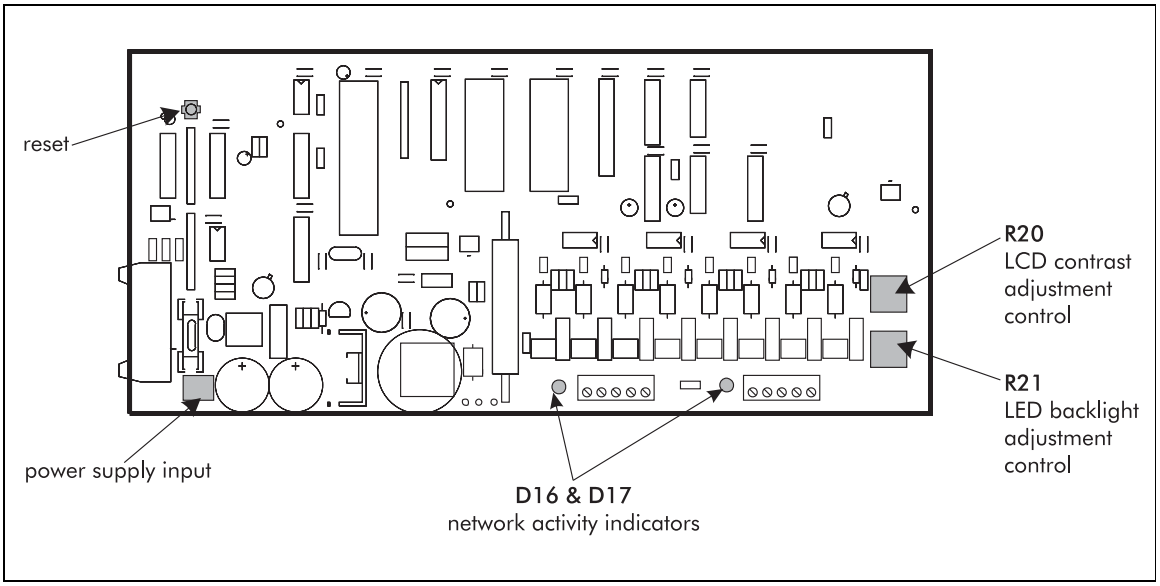
- the 16 red LEDs (D1-D16) turn on and off in sequence as the transponder performs its startup diagnostics
- if the transponder passes the startup diagnostics, all 16 LEDs turn on for approximately one second, then indicate the status of the connected input
- the 8 output LEDs (D17-D24) may be OFF, ON, or Flashing depending on the database
- assuming the transponder unit is connected to a network and if the network controller has been powered up, the two green LEDs labelled D25 and D26 flash alternately to indicate network activity on the two sides of the network
- if the network and the annunciator are powered up, and the annunciator has been programmed, the LEDs then show the status of the input sensors:

off	= normal (non-alarm) state
on (steady)	= alarm state
flashing	= tamper state

To display error conditions on the LEDs, press and hold the Test switch.

If the transponder unit fails to perform any of the above processing, press the Reset switch to restart the unit. If the problem persists, refer to *appendix c, Troubleshooting*.

Remote display and control panel

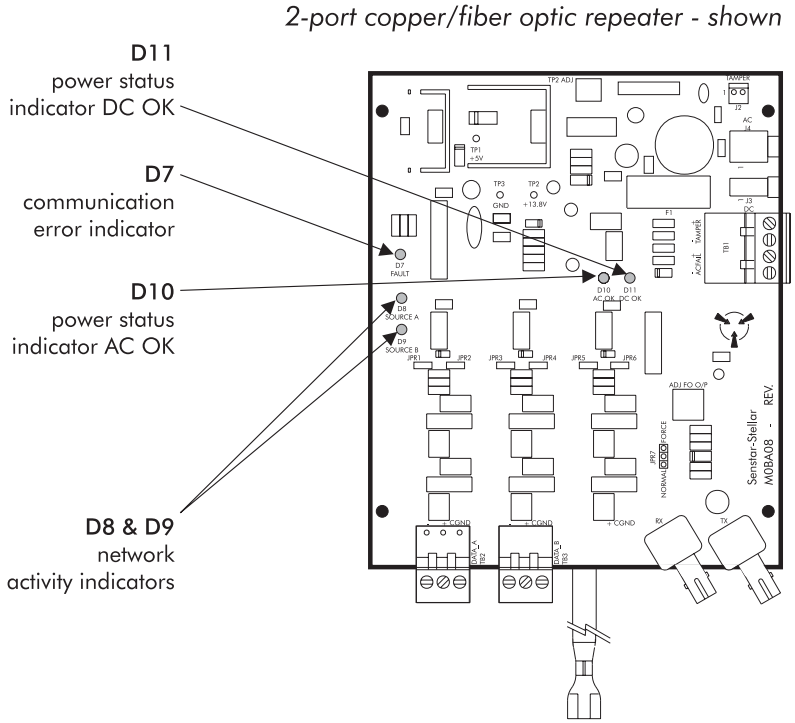


Apply power to the remote display and control panel. The following should occur:

- assuming the remote display and control panel is connected to a network and if the network controller has been powered up, LEDs D16 and D17 should flash alternately to indicate network activity on both sides of the network. If the remote display and control panel is not connected to a network, LEDs D16 and D17 will remain off
- when power is applied, the sonalert will chirp and the LCD will display “waiting for setup”
- set the LCD contrast using the control R20
- set the LED backlight intensity using the control R21

If the remote display and control panel fails to perform any of the above processing, press the Reset switch to restart. If the problem persists, refer to *appendix c, Troubleshooting*.

Repeaters



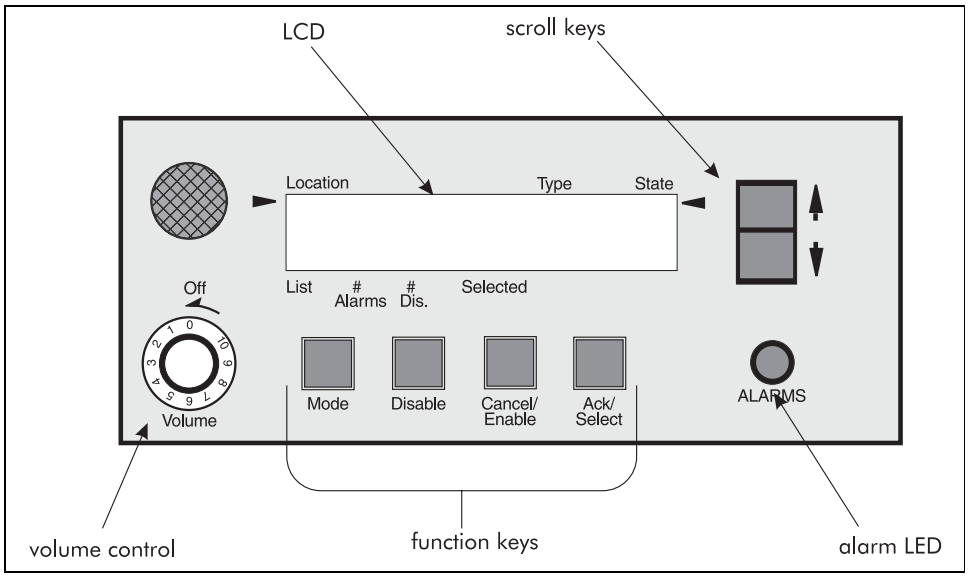
Open the enclosure door and apply power to the repeater. The following should occur:

- the two green LEDs labelled D10 (AC OK) and D11 (DC OK) turn on if AC power is present. If the repeater is powered only by DC power, only D11 (DC OK) turns on
- if the network controller and transponders have been powered up, the two green LEDs labelled D8 and D9 flash to indicate network activity on the network.
- if there is a communication error D7 will light up, otherwise it will remain off.

If the repeater fails to perform any of the above indications, refer to *appendix c, Troubleshooting*.

5 Processing alarms at the remote display and control panel

Control panel components



The Sennet remote display and control panel consists of a 4-line by 40-character capacity LCD, a row of function keys, a volume control knob, scroll keys and an alarm LED.

- **LCD** - The first three lines display sensor status information. The fourth line of the LCD displays the status of the LCD, i.e., the list type and number of alarms to be processed, and selected status of the alarm displayed on the first line of the LCD.
- **Mode** - When the Sennet remote display and control panel is idle this key allows the operator to toggle between a list that includes all sensors and their status and a list that includes only disabled sensors. The operator can scroll through these lists using the Up/Down scroll keys.
- **Disable** - The disable key allows the operator to disable sensors. Disabling the sensor prevents it from sending an alarm signal to the Sennet remote display and control panel. This key has the same function as **Access** on the Senstar 100 controller.

- **Cancel/Enable** - The Cancel/Enable key allows the operator to cancel an alarm or to enable a sensor that has been disabled.
- **Ack/Select** - A single press of this key will acknowledge all incoming alarms simultaneously, regardless of the number.
- **Volume control** - The volume control knob controls the volume of the audible alarm.
- **Scroll keys** - These two keys allow the operator to scroll through alarm lists.
- **Alarm LED** - The alarm LED will light up when one or more alarms have been received by the Sennet remote display and control panel. The LED will remain lit until all of the incoming alarms have been acknowledged and processed.

Acknowledge alarms

As alarms are annunciated at the Sennet remote display and control panel they are added to the Unacknowledged Alarms list and an audible alarm will sound at the Sennet remote display and control panel.

❑ Press the **Ack/Select** key to acknowledge all unacknowledged alarms.

The audible alarm will cease and the alarms will be moved from the Unacknowledged to the Acknowledged Alarms list.

The alarms are now ready for processing.

Disable Sensor

The annunciation capability of a sensor can be disabled.

❑ Press the **MODE** key until the **LIST** field of the status line displays **ALL**.

❑ Scroll through the list until the desired sensor is displayed on the top line of the LCD.

❑ Press the **Disable** key. The State field on the top line of the LCD shall change to **DISABL**.

The action of disabling a sensor will raise an alarm at the Senstar 100 video display unit (VDU). This alarm must be acknowledged at the Senstar 100 VDU in order to shut off the audible alarm.

Enable Sensor

- ❑ Press the **Cancel/Enable** key. The **State** field on the top line of the LCD shall clear.

Viewing lists

Four types of lists can be displayed on the Sennet remote display and control panel LCD.

All sensors list

The Sennet remote display and control panel can display a list of all sensors that are accessible at the Sennet remote display and control panel. This listing contains the sensor designation as well as its status.

- ❑ Press the **MODE** key until the **LIST** field of the status line displays **ALL**.

  The number of acknowledged, unprocessed alarms and disabled sensors are displayed in the **# Alarms** and **# Dis.** fields respectively.

- ❑ Use the scroll keys to scroll through the list of sensors, as required.

TIP - To scroll quickly through the list, press and hold the up or down key.

Disabled sensors list

- ❑ Press the **MODE** key until the **LIST** field of the status line displays **DISABL**.

  The number of unprocessed alarms and disabled sensors are displayed in the **# Alarms** and **# Dis**. fields respectively. The **State** field for all of the sensors in this list should read **DISABL**.

- ❑ Use the scroll keys to scroll through the list of disabled sensors, as required.

Unacknowledged alarms list

The list of unacknowledged alarms is generated as alarms occur. The status line will display **UNACKN** in the List field, and the number of unacknowledged, unprocessed alarms and disabled sensors in the **# Alarms** and **# Dis.** fields respectively.

Acknowledged alarms list

As alarms are acknowledged, they are moved from the unacknowledged alarm list to the acknowledged alarm list. The status line will display **ACKN** in the List field, and the number of acknowledged, unprocessed alarms and disabled sensors in the **# Alarms** and **# Dis.** fields respectively.

appendices

a - device configuration forms

b - specifications

c - troubleshooting

d - maintenance procedures

e - device address settings

f - spare parts list

g - M0KT0500 repeater

a Device configuration forms

This appendix contains the Sennet device configuration forms. These forms are to be completed by the site designer. The completed forms are used by the installer to configure each device in the network. One form is required for each Sennet network device. The completed forms should be stored with the corresponding device.

The following device configuration forms are included:

form		network layout	device installation
network controller	page a-3	page 2-11	page 3-14
large transponder unit - processor card	page a-5	page 2-12	page 3-30
large transponder unit - inputs setup	page a-9	page 2-13	- - -
large transponder unit - outputs setup	page a-9	page 2-13	- - -
standard transponder unit	page a-13	page 2-12	page 3-21
remote display and control panel	page a-17	page 2-14	page 3-37
repeater	page a-19	page 2-15	page 3-27
fiber optic interface module	page a-21	page 2-4	page 3-6

The device configuration forms indicate the physical location of the device, network device address, DIP-switch and jumper settings, and network connections.

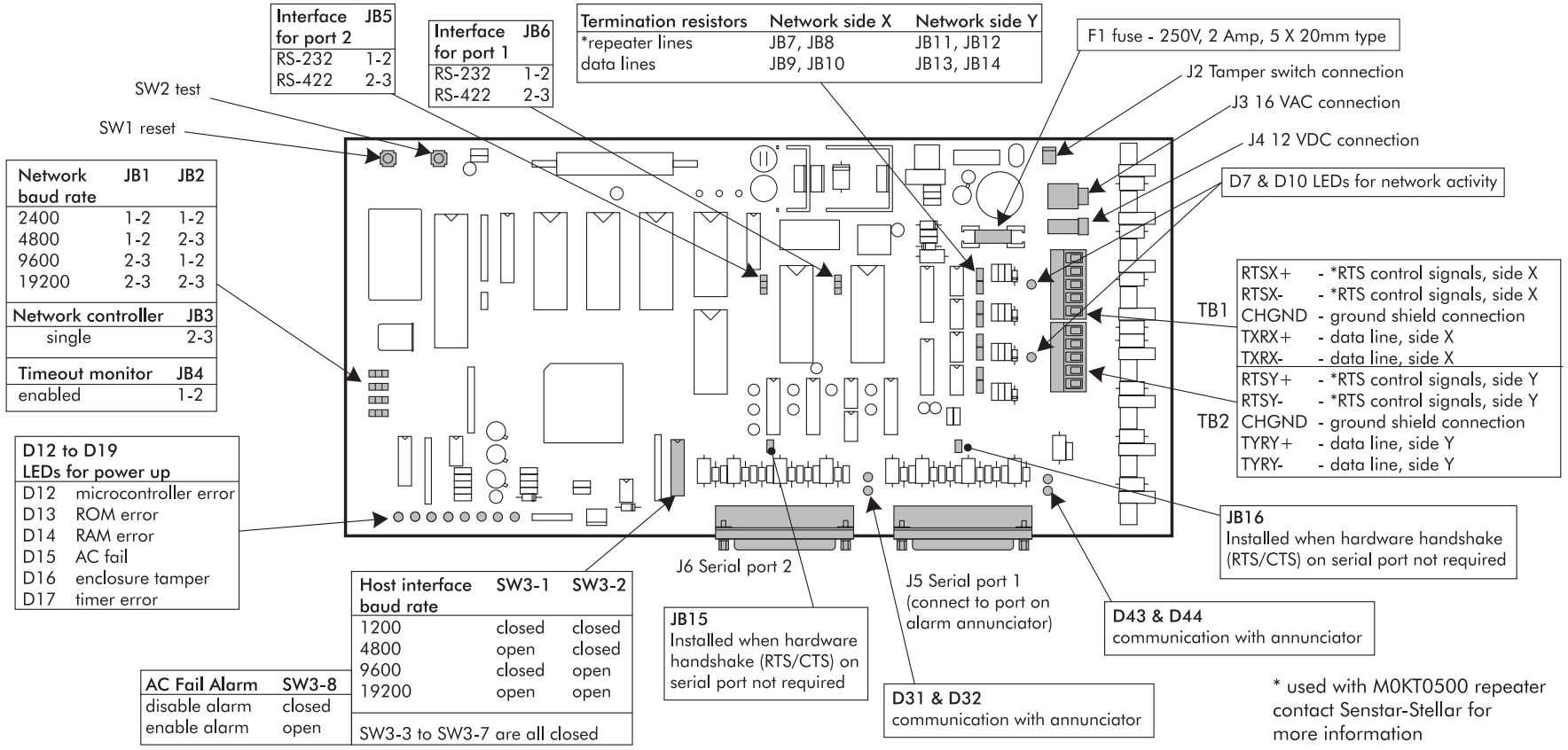
The device configuration forms for the standard and large transponder units also indicate input/output point details (i.e., normal state, requirement for supervision resistors, noise tolerance, location and/or input type and filter).

The device configuration form for the repeater also indicates external connections (i.e., AC fail, tamper).

- ❑ Fill out one form for each device in the network (i.e., if you have 13 transponders, fill out 13 copies of the transponder configuration form).
- ❑ Indicate the settings by marking the boxes. Where there are no setup options, the boxes are already marked.

The network baud rate must be the same for all devices on the network.

Network controller



Network controller 1 Network (1-34) # _____

Location _____

Network controller setup

DIP-switch settings (SW3) - host annunciator baud rate			
		open	closed
baud rate setting	SW3-1	❑	❑
	SW3-2	❑	❑
reserved for future use	SW3-3	❑	☑
	SW3-4	❑	☑
	SW3-5	❑	☑
	SW3-6	❑	☑
	SW3-7	❑	☑
		enable	disable
AC fail alarm annunciation (enabled default)	SW3-8	❑	❑

Jumper settings			
		1-2	2-3
network baud rate (default setting 19200)	JB1	❑	❑
	JB2	❑	❑
single network controller	JB3	❑	☑
timeout monitor (enabled)	JB4	☑	❑
interface to host annunciator (serial port 2)		RS-232	RS-422
	JB5	❑	❑
(serial port 1)	JB6	❑	❑
RTS/CTS hardware handshake		not reqd	reqd
(serial port 2)	JB15	❑	❑
(serial port 1)	JB16	❑	❑

network termination		installed	not installed
* (RTSX+/RTSX-, side X RTS control line)	JB7	❑	❑
	JB8	❑	❑
(TXRX+/TXRX-, side X data line)	JB9	❑	❑
	JB10	❑	❑
* (RTSY+/RTSY-, side Y RTS control line)	JB11	❑	❑
	JB12	❑	❑
(TYRY+/TYRY-, side Y data line)	JB13	❑	❑
	JB14	❑	❑

network termination jumpers must be installed in pairs

* used with M0KT0500 repeater.
Contact Senstar-Stellar for more information.

host interface serial port - baud rate setting table

	1200	4800	9600	19200
SW3-1	closed	open	closed	open
SW3-2	closed	closed	open	open

network baud rate - setting table

	2400	4800	9600	19200
JB1	1-2	1-2	2-3	2-3
JB2	1-2	2-3	1-2	2-3

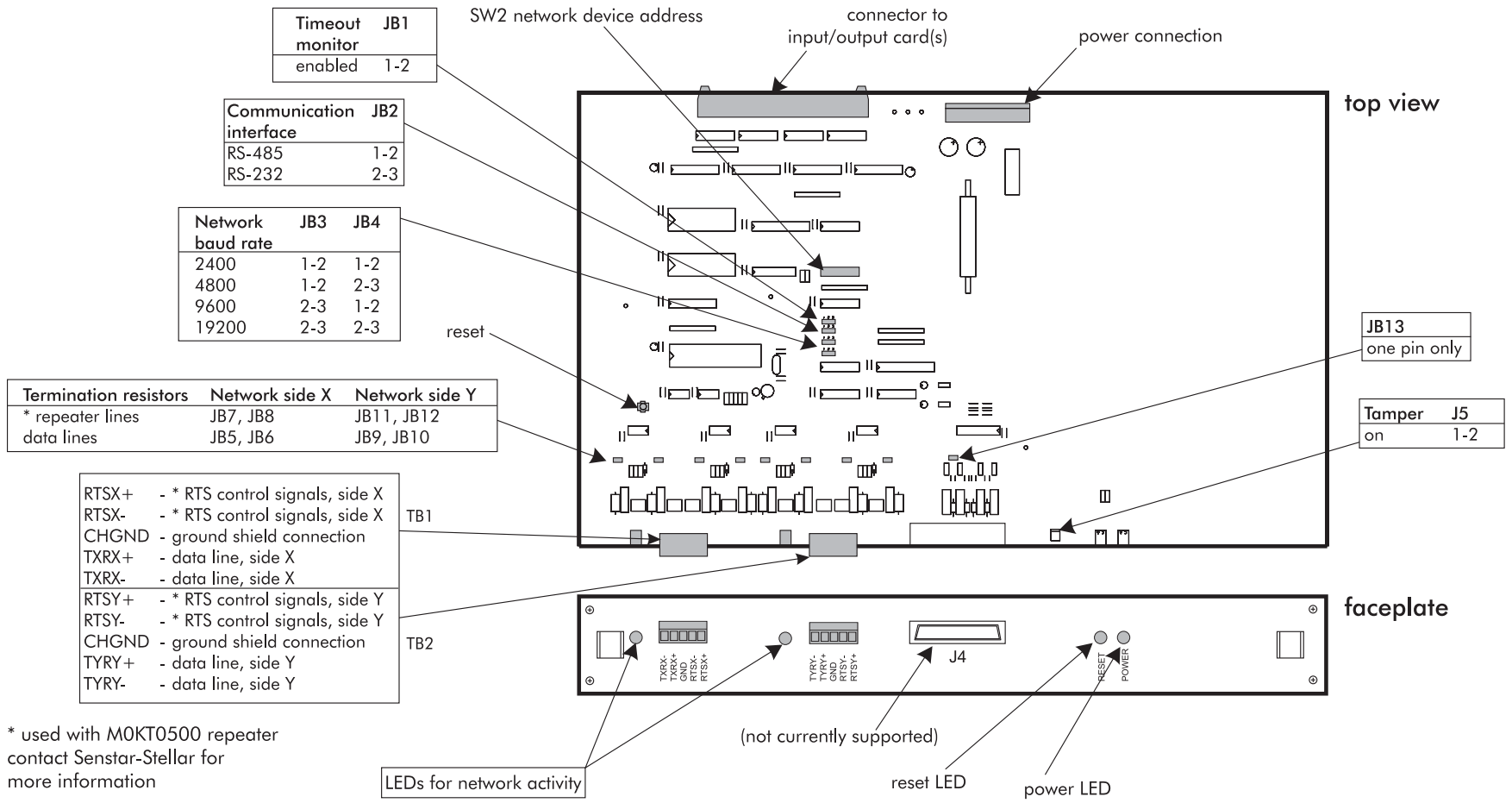
Network connections

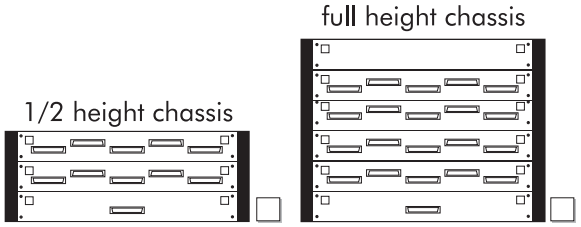
(Enter connection data for current network controller - connections *from* a large transponder unit (LTU), transponder unit (TU), control panel (RDCP) or repeater to this network controller, and connections *to* a LTU, TU, RDCP or repeater from this network controller)

X-SIDE	*FROM*									*TO*							
	❑LTU #_____	❑Repeater #_____								❑LTU #_____	❑Repeater #_____						
	❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic					❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic			
	❑RDCP#_____	❑	❑	❑						❑RDCP#_____	❑	❑	❑				
	❑* RTSX+/RTSX-	❑* RTS_OUT+/RTS_OUT-			❑RX-side	❑TX-side		* RTSX+/RTSX-		❑* RTSX+/RTSX-	❑* RTS_OUT+/RTS_OUT-			❑RX-side	❑TX-side		
	❑TXRX+/TXRX-	❑DATA_*+/DATA_*-						TXRX+/TXRX-		❑TXRX+/TXRX-	❑DATA_*+/DATA_*-						

Y-SIDE	*FROM*									*TO*							
	❑LTU #_____	❑Repeater #_____								❑LTU #_____	❑Repeater #_____						
	❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic					❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic			
	❑RDCP#_____	❑	❑	❑						❑RDCP#_____	❑	❑	❑				
	❑* RTSY+/RTSY-	❑* RTS_OUT+/RTS_OUT-			❑RX-side	❑TX-side		* RTSY+/RTSY-		❑* RTSY+/RTSY-	❑* RTS_OUT+/RTS_OUT-			❑RX-side	❑TX-side		
	❑TYRY+/TYRY-	❑DATA_*+/DATA_*-						TYRY+/TYRY-		❑TYRY+/TYRY-	❑DATA_*+/DATA_*-						

Large transponder unit (LTU) - processor card





Large transponder unit address (1-62): _____

Network #: _____

Location: _____

Large transponder unit setup

LTU # Location

DIP-switch settings (SW2) - network device address (refer to appendix e)		open	closed
	SW2-1	❑	❑
	SW2-2	❑	❑
	SW2-3	❑	❑
	SW2-4	❑	❑
	SW2-5	❑	❑
	SW2-6	❑	❑
reserved for future use	SW2-7	❑	☑
	SW2-8	❑	☑

Jumper settings		1-2	2-3
timeout monitor enabled	JB1	☑	❑
communication interface	JB2	☑	❑
		RS-485	RS-232
network baud rate (default setting 19200)	JB3	❑	❑
	JB4	❑	❑
	JB13	☑ one pin only	

network baud rate - setting table

	2400	4800	9600	19200
JB3	1-2	1-2	2-3	2-3
JB4	1-2	2-3	1-2	2-3

network termination		installed	not installed
(TXRX+/TXRX-, side X data line)	JB5	❑	❑
	JB6	❑	❑
* (RTSX+/RTSX-, side X RTS control line)	JB7	❑	❑
	JB8	❑	❑
(TYRY+/TYRY-, side Y data line)	JB9	❑	❑
	JB10	❑	❑
* (RTSY+/RTSY-, side Y RTS control line)	JB11	❑	❑
	JB12	❑	❑

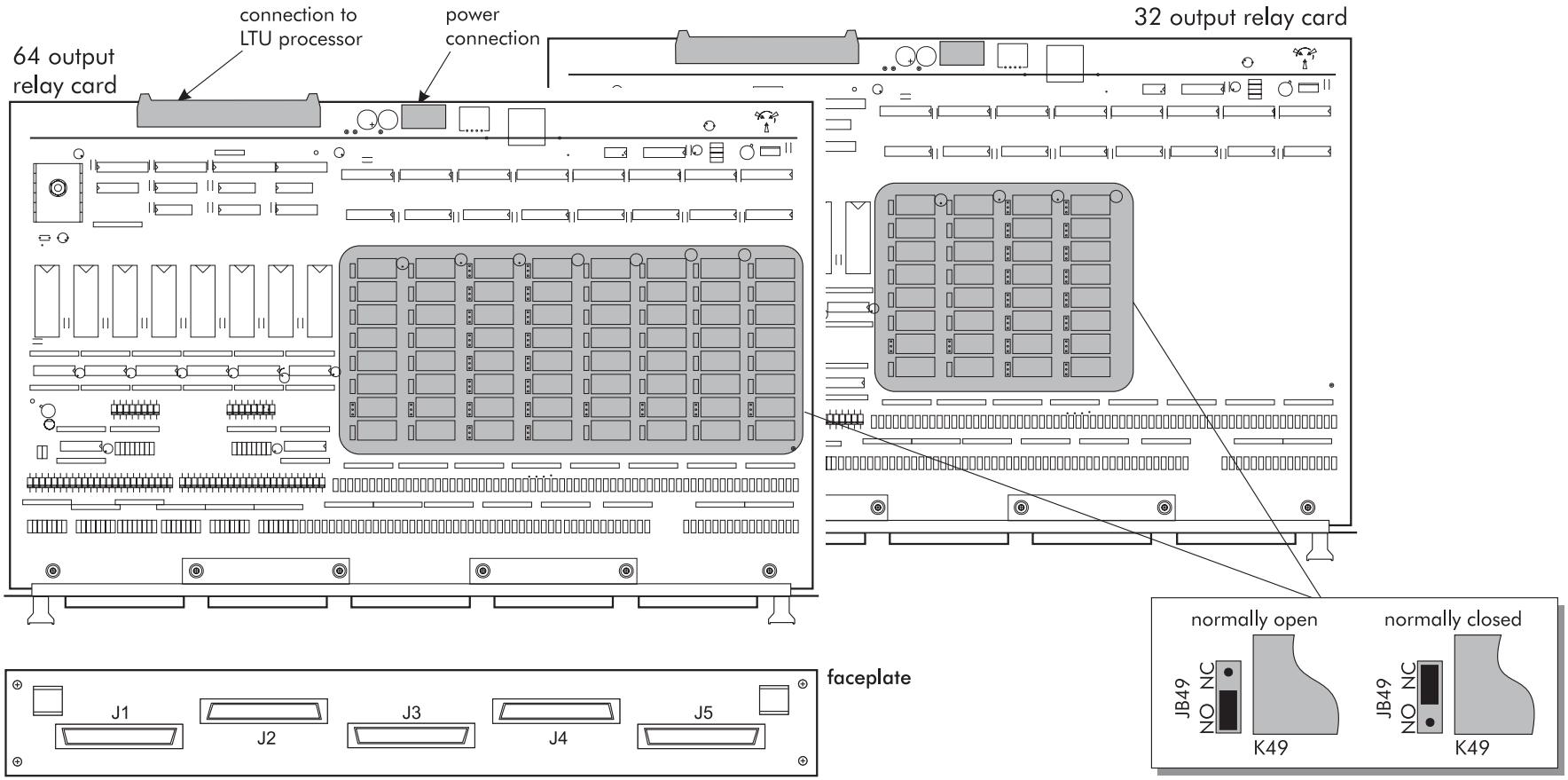
network termination jumpers must be installed in pairs
* used with M0KT0500 repeater.
Contact Senstar-Stellar for more information.

Network connections

(Enter connection data for current large transponder unit - connections *from* a network controller (NC) large transponder unit (LTU), transponder unit (TU), control panel (RDCP) or repeater to this LTU, and connections *to* an NC, LTU, TU, RDCP or repeater from this LTU.)

	FROM						*TO*					
X-SIDE	❑LTU #_____	❑Repeater #_____					❑LTU #_____	❑Repeater #_____				
	❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic		❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic	
	❑RDCP#_____	❑	❑	❑			❑RDCP#_____	❑	❑	❑		
	❑* RTSX+/RTSX-	❑* RTS_OUT+/RTS_OUT-			❑RX-side ❑TX-side	** RTSX+/RTSX-*	❑* RTSX+/RTSX-	❑* RTS_OUT+/RTS_OUT-			❑RX-side ❑TX-side	
	❑TXRX+/TXRX-	❑DATA_*+/DATA_*-				*TXRX+/TXRX-*	❑TXRX+/TXRX-	❑DATA_*+/DATA_*-				
Y-SIDE	*FROM*						*TO*					
	❑LTU #_____	❑Repeater #_____					❑LTU #_____	❑Repeater #_____				
	❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic		❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic	
	❑RDCP#_____	❑	❑	❑			❑RDCP#_____	❑	❑	❑		
	❑* RTSY+/RTSY-	❑* RTS_OUT+/RTS_OUT-			❑RX-side ❑TX-side	** RTSY+/RTSY-*	❑* RTSY+/RTSY-	❑* RTS_OUT+/RTS_OUT-			❑RX-side ❑TX-side	
	❑TYRY+/TYRY-	❑DATA_*+/DATA_*-				*TYRY+/TYRY-*	❑TYRY+/TYRY-	❑DATA_*+/DATA_*-				

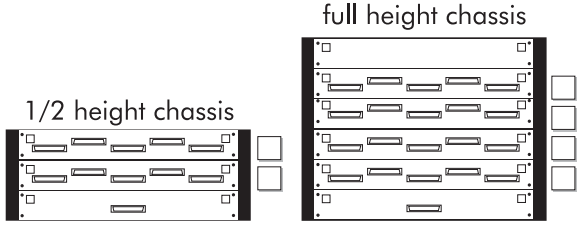
Large transponder unit (LTU) - relay card (64/64 or 32/32)



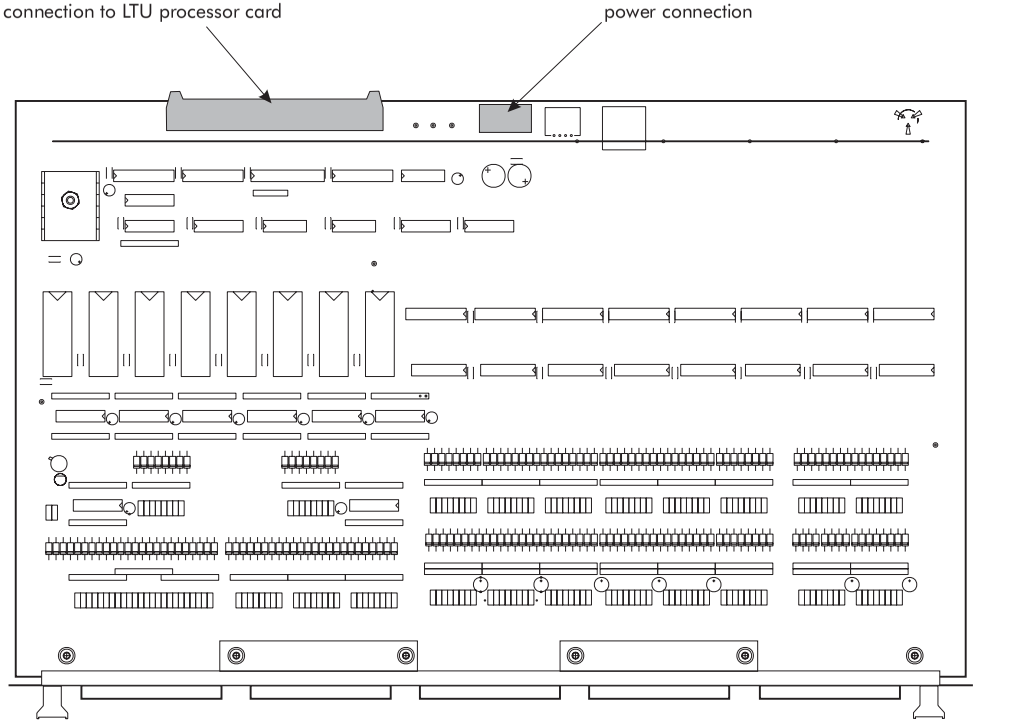
Large transponder unit address (1-62): _____

Card type: ___64/64 relay card ___32/32 relay card

Card location



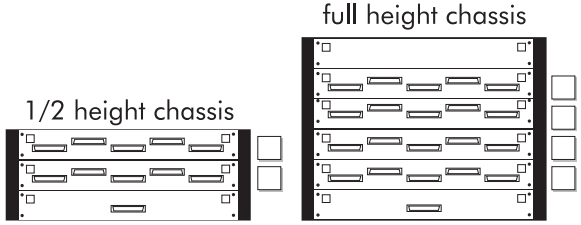
Large transponder unit (LTU) - lamp driver



Large transponder unit address (1-62): _____

Card type: lamp driver

Card location

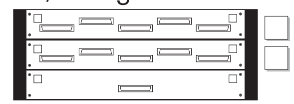


Large transponder unit setup outputs

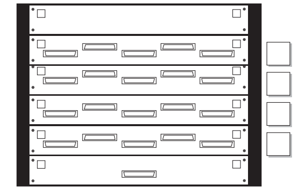
32 points can be represented on this sheet. Make additional copies as required.

Card location

1/2 height chassis



full height chassis



Large transponder unit address (1-62):

Card type: 64/64 relay card 32/32 relay card lamp driver

Output point	Normal state	flash rate (100 ms)	Output point	Normal state	flash rate (100 ms)	Output point	Normal state	flash rate (100 ms)
	☐on ☐off			☐on ☐off			☐on ☐off	
	☐on ☐off			☐on ☐off			☐on ☐off	
	☐on ☐off			☐on ☐off			☐on ☐off	
	☐on ☐off			☐on ☐off			☐on ☐off	
	☐on ☐off			☐on ☐off			☐on ☐off	
	☐on ☐off			☐on ☐off			☐on ☐off	
	☐on ☐off			☐on ☐off			☐on ☐off	
	☐on ☐off			☐on ☐off			☐on ☐off	
	☐on ☐off			☐on ☐off			☐on ☐off	
	☐on ☐off			☐on ☐off			☐on ☐off	
	☐on ☐off			☐on ☐off				

Large transponder unit setup inputs

		Supervision resistors			Programming use only				
Input point	Normal state	R1	R2	Location and/or input type	Noise tolerance (volts)				Filter (10ms) (0-250)
	☐open ☐closed				☐0.0	☐0.1	☐0.2	☐0.3	
	☐open ☐closed				☐0.0	☐0.1	☐0.2	☐0.3	
	☐open ☐closed				☐0.0	☐0.1	☐0.2	☐0.3	
	☐open ☐closed				☐0.0	☐0.1	☐0.2	☐0.3	
	☐open ☐closed				☐0.0	☐0.1	☐0.2	☐0.3	
	☐open ☐closed				☐0.0	☐0.1	☐0.2	☐0.3	

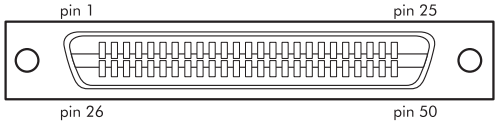
Large transponder unit setup inputs

Input point	Normal state	Supervision resistors R1	Supervision resistors R2	Location and/or input type	Programming use only: Noise tolerance (volts)	Programming use only: Filter (10ms) (0-250)
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	
	❑open ❑closed				❑0.0 ❑0.1 ❑0.2 ❑0.3	

Default pinouts - Large transponder unit (LTU)

Input points *- relay card (64/64 or 64/32)*

AMP receptacle Champ 1 PC series 50-pin mating cable connector. Exact part number depends on wire size and type.



point	conn	pin #		point	conn	pin #		point	conn	pin #		point	conn	pin #		point	conn	pin #	
		+	gnd			+	gnd			+	gnd			+	gnd			+	gnd
input 1	J1	1	9	input 14	J1	16	20	input 27	J1	33	39	input 40	J2	8	10	input 53	J2	25	30
input 2	J1	2	9	input 15	J1	17	20	input 28	J1	34	39	input 41	J2	11	19	input 54	J2	26	30
input 3	J1	3	9	input 16	J1	18	20	input 29	J1	35	40	input 42	J2	12	19	input 55	J2	27	30
input 4	J1	4	9	input 17	J1	21	29	input 30	J1	36	40	input 43	J2	13	19	input 56	J2	28	30
input 5	J1	5	10	input 18	J1	22	29	input 31	J1	37	40	input 44	J2	14	19	input 57	J2	31	39
input 6	J1	6	10	input 19	J1	23	29	input 32	J1	38	40	input 45	J2	15	20	input 58	J2	32	39
input 7	J1	7	10	input 20	J1	24	29	input 33	J2	1	9	input 46	J2	16	20	input 59	J2	33	39
input 8	J1	8	10	input 21	J1	25	30	input 34	J2	2	9	input 47	J2	17	20	input 60	J2	34	39
input 9	J1	11	19	input 22	J1	26	30	input 35	J2	3	9	input 48	J2	18	20	input 61	J2	35	40
input 10	J1	12	19	input 23	J1	27	30	input 36	J2	4	9	input 49	J2	21	29	input 62	J2	36	40
input 11	J1	13	19	input 24	J1	28	30	input 37	J2	5	10	input 50	J2	22	29	input 63	J2	37	40
input 12	J1	14	19	input 25	J1	31	39	input 38	J2	6	10	input 51	J2	23	29	input 64	J2	38	40
input 13	J1	15	20	input 26	J1	32	39	input 39	J2	7	10	input 52	J2	24	29				

Ground contacts with similar pin numbers are common. These contacts are connected to common ground points.

Output points

point	conn	pin #		point	conn	pin #		point	conn	pin #		point	conn	pin #		point	conn	pin #	
output 1	J3	1	2	output 14	J3	27	28	output 27	J4	5	6	output 40	J4	31	32	output 53	J5	9	10
output 2	J3	3	4	output 15	J3	29	30	output 28	J4	7	8	output 41	J4	33	34	output 54	J5	11	12
output 3	J3	5	6	output 16	J3	31	32	output 29	J4	9	10	output 42	J4	35	36	output 55	J5	13	14
output 4	J3	7	8	output 17	J3	33	34	output 30	J4	11	12	output 43	J4	37	38	output 56	J5	15	16
output 5	J3	9	10	output 18	J3	35	36	output 31	J4	13	14	output 44	J4	39	40	output 57	J5	17	18
output 6	J3	11	12	output 19	J3	37	38	output 32	J4	15	16	output 45	J4	41	42	output 58	J5	19	20
output 7	J3	13	14	output 20	J3	39	40	output 33	J4	17	18	output 46	J4	43	44	output 59	J5	21	22
output 8	J3	15	16	output 21	J3	41	42	output 34	J4	19	20	output 47	J4	45	46	output 60	J5	23	24
output 9	J3	17	18	output 22	J3	43	44	output 35	J4	21	22	output 48	J4	47	48	output 61	J5	25	26
output 10	J3	19	20	output 23	J3	45	46	output 36	J4	23	24	output 49	J5	1	2	output 62	J5	27	28
output 11	J3	21	22	output 24	J3	47	48	output 37	J4	25	26	output 50	J5	3	4	output 63	J5	29	30
output 12	J3	23	24	output 25	J4	1	2	output 38	J4	27	28	output 51	J5	5	6	output 64	J5	31	32
output 13	J3	25	26	output 26	J4	3	4	output 39	J4	29	30	output 52	J5	7	8				

Default pinouts - Large transponder unit (LTU) - lamp driver

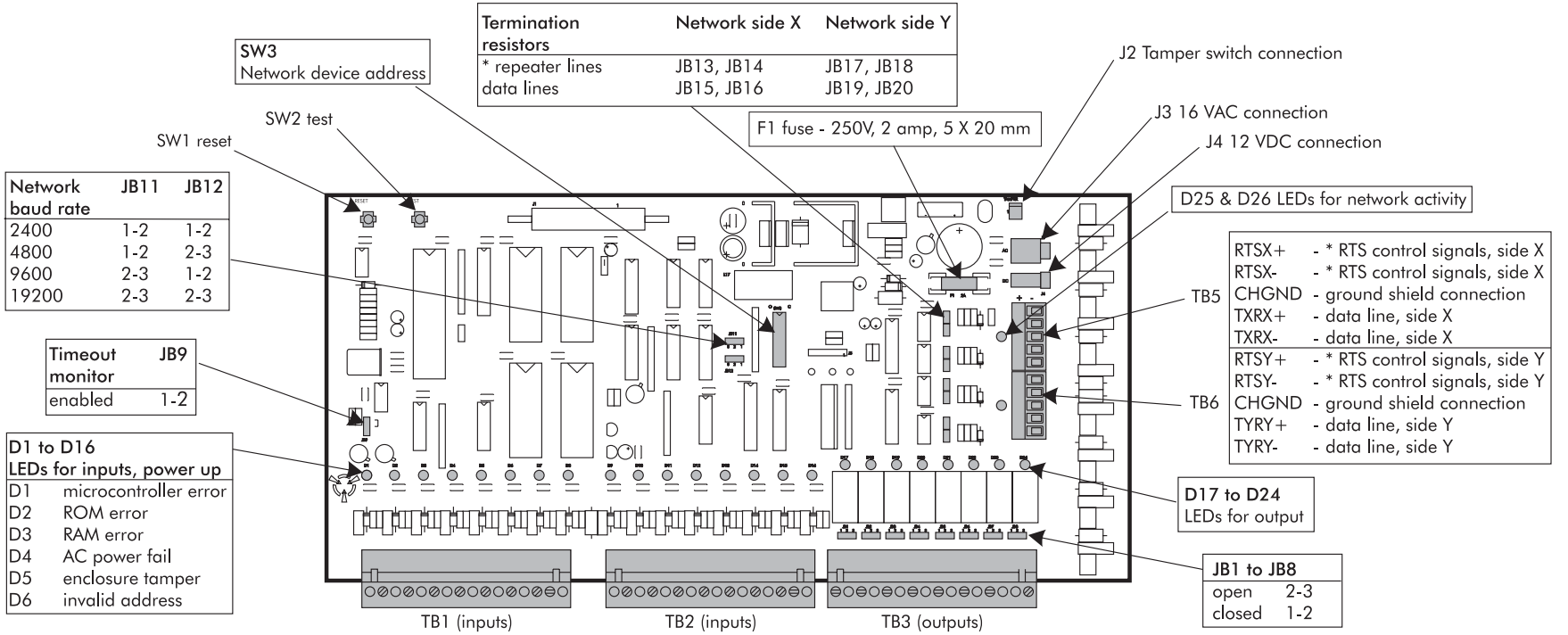
Input points

point	conn	pin #		point	conn	pin #		point	conn	pin #		point	conn	pin #		point	conn	pin #	
		+	gnd			+	gnd			+	gnd			+	gnd			+	gnd
input 1	J1	1	9	input 14	J1	16	20	input 27	J1	33	39	input 40	J2	8	10	input 53	J2	25	30
input 2	J1	2	9	input 15	J1	17	20	input 28	J1	34	39	input 41	J2	11	19	input 54	J2	26	30
input 3	J1	3	9	input 16	J1	18	20	input 29	J1	35	40	input 42	J2	12	19	input 55	J2	27	30
input 4	J1	4	9	input 17	J1	21	29	input 30	J1	36	40	input 43	J2	13	19	input 56	J2	28	30
input 5	J1	5	10	input 18	J1	22	29	input 31	J1	37	40	input 44	J2	14	19	input 57	J2	31	39
input 6	J1	6	10	input 19	J1	23	29	input 32	J1	38	40	input 45	J2	15	20	input 58	J2	32	39
input 7	J1	7	10	input 20	J1	24	29	input 33	J2	1	9	input 46	J2	16	20	input 59	J2	33	39
input 8	J1	8	10	input 21	J1	25	30	input 34	J2	2	9	input 47	J2	17	20	input 60	J2	34	39
input 9	J1	11	19	input 22	J1	26	30	input 35	J2	3	9	input 48	J2	18	20	input 61	J2	35	40
input 10	J1	12	19	input 23	J1	27	30	input 36	J2	4	9	input 49	J2	21	29	input 62	J2	36	40
input 11	J1	13	19	input 24	J1	28	30	input 37	J2	5	10	input 50	J2	22	29	input 63	J2	37	40
input 12	J1	14	19	input 25	J1	31	39	input 38	J2	6	10	input 51	J2	23	29	input 64	J2	38	40
input 13	J1	15	20	input 26	J1	32	39	input 39	J2	7	10	input 52	J2	24	29				

Output points

point	conn	pin #		point	conn	pin #		point	conn	pin #		point	conn	pin #		point	conn	pin #	
		+	—			+	—			+	—			+	—			+	—
output 1	J3	1	2	output 14	J3	27	28	output 27	J4	5	6	output 40	J4	31	32	output 53	J5	9	10
output 2	J3	3	4	output 15	J3	29	30	output 28	J4	7	8	output 41	J4	33	34	output 54	J5	11	12
output 3	J3	5	6	output 16	J3	31	32	output 29	J4	9	10	output 42	J4	35	36	output 55	J5	13	14
output 4	J3	7	8	output 17	J3	33	34	output 30	J4	11	12	output 43	J4	37	38	output 56	J5	15	16
output 5	J3	9	10	output 18	J3	35	36	output 31	J4	13	14	output 44	J4	39	40	output 57	J5	17	18
output 6	J3	11	12	output 19	J3	37	38	output 32	J4	15	16	output 45	J4	41	42	output 58	J5	19	20
output 7	J3	13	14	output 20	J3	39	40	output 33	J4	17	18	output 46	J4	43	44	output 59	J5	21	22
output 8	J3	15	16	output 21	J3	41	42	output 34	J4	19	20	output 47	J4	45	46	output 60	J5	23	24
output 9	J3	17	18	output 22	J3	43	44	output 35	J4	21	22	output 48	J4	47	48	output 61	J5	25	26
output 10	J3	19	20	output 23	J3	45	46	output 36	J4	23	24	output 49	J5	1	2	output 62	J5	27	28
output 11	J3	21	22	output 24	J3	47	48	output 37	J4	25	26	output 50	J5	3	4	output 63	J5	29	30
output 12	J3	23	24	output 25	J4	1	2	output 38	J4	27	28	output 51	J5	5	6	output 64	J5	31	32
output 13	J3	25	26	output 26	J4	3	4	output 39	J4	29	30	output 52	J5	7	8				

Standard transponder unit (TU)



* used with M0KT0500 repeater
Contact Senstar-Stellar for more information.

Standard transponder unit address (1-62): _____

Network #: _____

Location: _____

Standard transponder unit setup

TU # Location

DIP-switch settings (SW2)		
network device address (see appendix e)		
	open	closed
SW3-1	❑	❑
SW3-2	❑	❑
SW3-3	❑	❑
SW3-4	❑	❑
SW3-5	❑	❑
SW3-6	❑	❑
SW3-7	❑	☑
AC fail alarm annunciation		
	enable	disable
SW3-8	❑	❑

Jumper settings			
Relay outputs			
	closed (1-2)	open (2-3)	
JB1	❑	❑	
JB2	❑	❑	
JB3	❑	❑	
JB4	❑	❑	
JB5	❑	❑	
JB6	❑	❑	
JB7	❑	❑	
JB8	❑	❑	

		1-2	2-3
timeout monitor enabled	JB9	☑	❑
(reserved)	JB10	❑	❑
network baud rate (default setting 19200)	JB11	❑	❑
	JB12	❑	❑

network baud rate - setting table

	2400	4800	9600	19200
JB11	1-2	1-2	2-3	2-3
JB12	1-2	2-3	1-2	2-3

network termination		installed	not installed
* (RTSX+/RTSX-, side X RTS control line)	JB13	❑	❑
	JB14	❑	❑
(TXRX+/TXRX-, side X data line)	JB15	❑	❑
	JB16	❑	❑
* (RTSY+/RTSY-, side Y RTS control line)	JB17	❑	❑
	JB18	❑	❑
(TYRY+/TYRY-, side Y data line)	JB19	❑	❑
	JB20	❑	❑

network termination jumpers must be installed in pairs
* used with M0KT0500 repeater.
Contact Senstar-Stellar for more information.

Network connections

(Enter connection data for current transponder unit - connections ***from*** a network controller (NC) large transponder unit (LTU), transponder unit (TU), control panel (RDCP) or repeater to this TU, and connections ***to*** an NC, LTU, TU, RDCP or repeater from this TU.)

	FROM					*TO*				
X-SIDE	❑LTU #_____ ❑TU#_____ ❑RDCP#_____	❑Repeater #_____	Data Path A	Data Path B	Data Path C	Fiber optic	** RTSX+/RTSX-* *TXRX+/TXRX-*	X-SIDE	❑LTU #_____ ❑TU#_____ ❑RDCP#_____	❑Repeater #_____	Data Path A	Data Path B	Data Path C	Fiber optic
	❑* RTSX+/RTSX- ❑TXRX+/TXRX-	❑* RTS_OUT+/RTS_OUT- ❑DATA_*+/DATA_*-	❑	❑	❑	❑RX-side ❑TX-side			❑* RTSX+/RTSX- ❑TXRX+/TXRX-	❑* RTS_OUT+/RTS_OUT- ❑DATA_*+/DATA_*-	❑	❑	❑	❑RX-side ❑TX-side
Y-SIDE	❑LTU #_____ ❑TU#_____ ❑RDCP#_____	❑Repeater #_____	Data Path A	Data Path B	Data Path C	Fiber optic	** RTSY+/RTSY-* *TYRY+/TYRY-*	Y-SIDE	❑LTU #_____ ❑TU#_____ ❑RDCP#_____	❑Repeater #_____	Data Path A	Data Path B	Data Path C	Fiber optic
	❑* RTSY+/RTSY- ❑TYRY+/TYRY-	❑* RTS_OUT+/RTS_OUT- ❑DATA_*+/DATA_*-	❑	❑	❑	❑RX-side ❑TX-side			❑* RTSY+/RTSY- ❑TYRY+/TYRY-	❑* RTS_OUT+/RTS_OUT- ❑DATA_*+/DATA_*-	❑	❑	❑	❑RX-side ❑TX-side

Standard transponder unit setup (Cont'd)

TU# Location

Input point	Normal state	Supervision resistors R1	R2	Location and/or input type	Programming use only: Noise tolerance (volts)				Programming use only: Filter (10ms) (0-250)
1	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
2	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
3	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
4	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
5	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
6	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
7	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
8	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
9	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
10	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
11	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
12	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
13	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
14	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
15	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	
16	❑open ❑closed				❑0.0	❑0.1	❑0.2	❑0.3	

Output point	jumper	Programming use only: 1-2 (n.c.)	2-3 (n.o.)	flash rate (100ms) (0-25)	Output point	jumper	Programming use only: 1-2 (n.c.)	2-3 (n.o.)	flash rate (100ms) (0-25)
1	JB1	❑	❑		5	JB5	❑	❑	
2	JB2	❑	❑		6	JB6	❑	❑	
3	JB3	❑	❑		7	JB7	❑	❑	
4	JB4	❑	❑		8	JB8	❑	❑	

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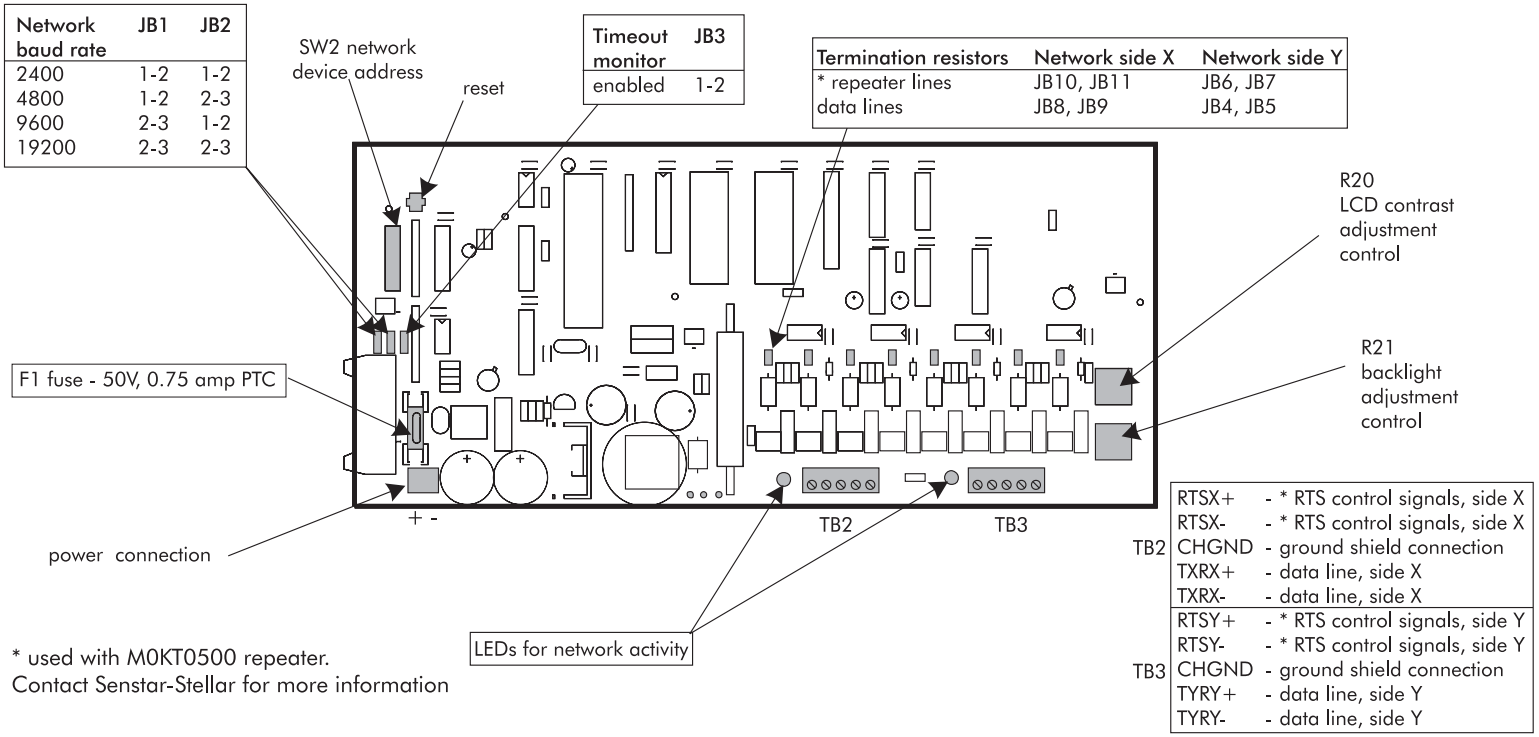
Remote display and control panel (RDCP)



Remote display and control panel (1-62): _____

Network #: _____

Location: _____

Remote display and control panel setup

RDCP # Location

DIP-switch settings (SW2) - network device address (refer to appendix e)		open	closed
	SW2-1	❑	❑
	SW2-2	❑	❑
	SW2-3	❑	❑
	SW2-4	❑	❑
	SW2-5	❑	❑
	SW2-6	❑	❑
reserved for future use	SW2-7	❑	☑
	SW2-8	❑	☑

Jumper settings		1-2	2-3
network baud rate (default setting 19200)	JB1	❑	❑
	JB2	❑	❑
timeout monitor enabled	JB3	☑	❑

network baud rate - setting table

	2400	4800	9600	19200
JB1	1-2	1-2	2-3	2-3
JB2	1-2	2-3	1-2	2-3

network termination		installed	not installed
(TYRY+/TYRY-, side Y data line)	JB4	❑	❑
	JB5	❑	❑
* (RTSY+/RTSY-, side Y RTS control line)	JB6	❑	❑
	JB7	❑	❑
(TXRX+/TXRX-, side X data line)	JB8	❑	❑
	JB9	❑	❑
* (RTSX+/RTSX-, side X RTS control line)	JB10	❑	❑
	JB11	❑	❑

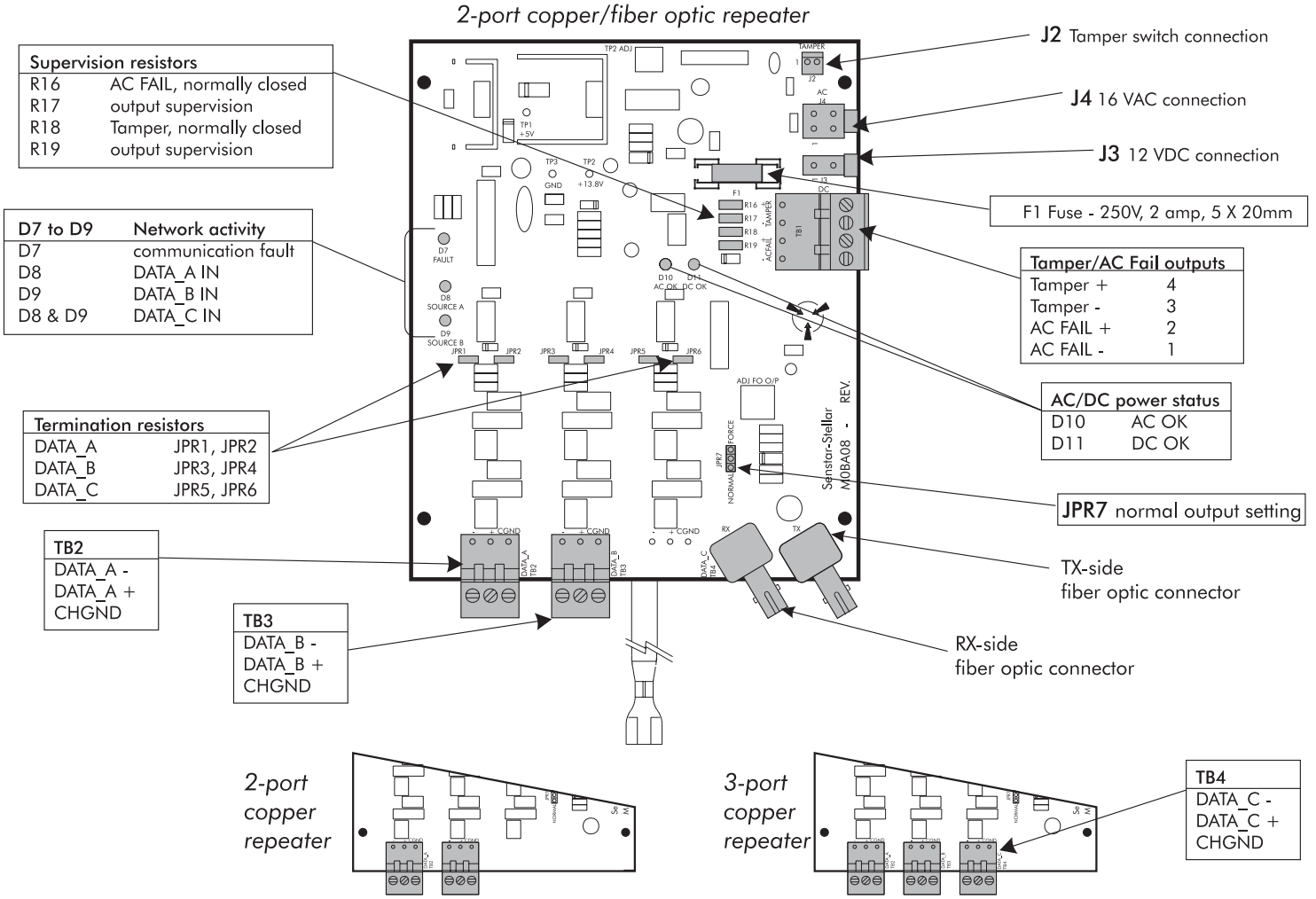
network termination jumpers must be installed in pairs
* used with M0KT0500 repeater.
Contact Senstar-Stellar for more information.

Network connections

(Enter connection data for current remote display and control panel (RDCP) - connections *from* a network controller (NC) large transponder unit (LTU), transponder unit (TU), control panel (RDCP) or repeater to this RDCP, and connections *to* an NC, LTU, TU, RDCP or repeater from this RDCP.)

	FROM						*TO*					
X-SIDE	❑LTU #_____	❑Repeater #_____					❑LTU #_____	❑Repeater #_____				
	❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic		❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic	
	❑RDCP#_____	❑	❑	❑			❑RDCP#_____	❑	❑	❑		
	❑* RTSX+/RTSX-	❑* RTS_OUT+/RTS_OUT-			❑RX-side	❑TX-side	❑* RTSX+/RTSX-	❑* RTS_OUT+/RTS_OUT-			❑RX-side	❑TX-side
	❑TXRX+/TXRX-	❑DATA_*+/DATA_*-					❑TXRX+/TXRX-	❑DATA_*+/DATA_*-				
						** RTSX+/RTSX-*						
						TXRX+/TXRX-						
Y-SIDE	*FROM*						*TO*					
	❑LTU #_____	❑Repeater #_____					❑LTU #_____	❑Repeater #_____				
	❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic		❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic	
	❑RDCP#_____	❑	❑	❑			❑RDCP#_____	❑	❑	❑		
	❑* RTSY+/RTSY-	❑* RTS_OUT+/RTS_OUT-			❑RX-side	❑TX-side	❑* RTSY+/RTSY-	❑* RTS_OUT+/RTS_OUT-			❑RX-side	❑TX-side
	❑TYRY+/TYRY-	❑DATA_*+/DATA_*-					❑TYRY+/TYRY-	❑DATA_*+/DATA_*-				
						** RTSY+/RTSY-*						
						TYRY+/TYRY-						

Repeater



Repeater # _____ **Network #** _____

Network path: _____ **Location** _____

Repeater setup

Repeater # Location

JPR1 - JPR6 (network termination)						
JPR1, JPR2 (DATA_A+/DATA_A-)	❑installed	❑not installed		JPR5, JPR6 (DATA_C+/DATA_C-)	❑installed	❑not installed
JPR3, JPR4 (DATA_B+/DATA_B-)	❑installed	❑not installed		JPR7	☑normal	❑force

R16, R17 (AC FAIL normally closed output supervision)				*R18, R19* (Tamper normally closed output supervision)			
	❑none	❑single	❑dual		❑none	❑single	❑dual
R16	none	none	____ (resistor in parallel)	R18	none	none	____ (resistor in parallel)
R17	0Ω	____	____ (resistor in series)	R19	0Ω	____	____ (resistor in series)

External connections (fill in value only if used)

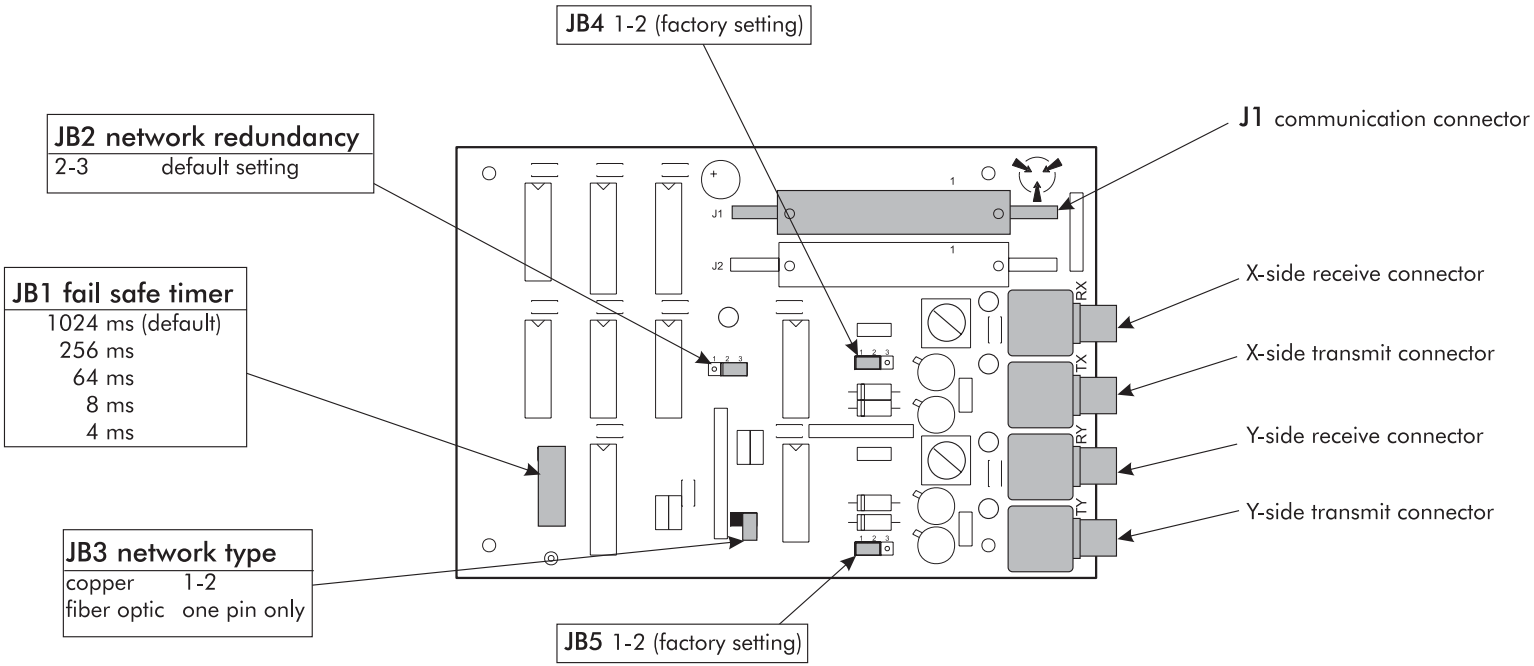
From:	*To*:			
AC FAIL +/-	LTU # ____	TU # ____	Input point # ____	Other ____
TAMPER +/-	LTU # ____	TU # ____	Input point # ____	Other ____

Network connections

(Enter connection data for current repeater - connections ***from*** a network controller (NC) large transponder unit (LTU), transponder unit (TU), control panel (RDCP) or repeater to this repeater, and connections ***to*** an NC, LTU, TU, RDCP or repeater from this repeater.)

	FROM						*TO*					
X-SIDE	❑LTU #_____	❑Repeater #_____				*TXRX+/TXRX-*	*X-SIDE*	❑LTU #_____	❑Repeater #_____			
	❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic			❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic
	❑RDCP#_____	❑	❑	❑				❑RDCP#_____	❑	❑	❑	
	❑TXRX+/TXRX-	❑DATA_*+/DATA_*-			❑RX-side ❑TX-side			❑TXRX+/TXRX-	❑DATA_*+/DATA_*-			❑RX-side ❑TX-side
Y-SIDE	*FROM*						*TO*					
	❑LTU #_____	❑Repeater #_____				*TYRY+/TYRY-*	*Y-SIDE*	❑LTU #_____	❑Repeater #_____			
	❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic			❑TU#_____	Data Path A	Data Path B	Data Path C	Fiber optic
	❑RDCP#_____	❑	❑	❑				❑RDCP#_____	❑	❑	❑	
	❑TYRY+/TYRY-	❑DATA_*+/DATA_*-			❑RX-side ❑TX-side			❑TYRY+/TYRY-	❑DATA_*+/DATA_*-			❑RX-side ❑TX-side

Fiber optic interface module



Network #: _____

Location: _____

Fiber optic interface module

Location

JB1 (failsafe timer timeout)		*JB2 (operating mode)*		*JB4 (test mode X-side)*	
4 ms	❑1	normal	force	normal	force
8 ms	❑2	❑1-2	☑2-3	☑1-2	❑2-3
16 ms	❑3	*JB3 (system cabling)*		*JB5 (test mode Y-side)*	
64 ms	❑4	fiber optic	copper	normal	force
256 ms	❑5	❑1 pin only	❑1-2	☑1-2	❑2-3
1024 ms	❑6 (default)				

b Specifications

General	**Hardware protocol**		• RS-485
	Speed		• up to 19,200 baud
	Input points		• 432 without repeaters; 992 with repeaters (maximum 3392 per network)
	Output points		• 216 without repeaters; 496 with repeaters (maximum 2976 per network)
	Number of devices		• one network controller and up to 27 devices per network without repeaters; up to 62 devices with repeaters
	Maximum length	**copper wire**	• 1.2 km (3/4 mile) without repeaters; 13 km (8 miles) with repeaters
		fiber optic cable	• 75 km (46 miles)
	Lightning protection		• provided on power lines and sensor input lines for all network devices. Transient protection for data lines.

Mounting plate	**Model**	• SN-EN1
	Dimensions (LxWxD)	• 349.3 x 317.5 x 82.6 mm (13¾ x 12½ x 3¼ in.)
	Weight	• 1.81 kg (4 lbs.) - (mounting plate with Network controller installed)

Outdoor enclosure	**Model**	• SN-EN3
	Dimensions (LxWxD)	• 406.4 x 406.4 x 152.4 mm (16 x 16 x 6 in.)
	Weight	• 11.34 kg (25 lbs.) - (enclosure with Network controller and AC power unit installed on Sennet mounting plate SN-EN1)

Indoor enclosure	**Model**	• SN-EN2
	Dimensions (LxWxD)	• 381.0 x 368.3 x 104.8 mm (15 x 14½ x 4-1/8 in.)
	Weight	• 9.07 kg (20 lbs.) - (enclosure with Network controller and AC power unit installed on Sennet mounting plate SN-EN1)

Network controller (NC)	**Model**	• SN-CN1
	Dimensions (LxWxD)	• 152.4 x 317.5 x 44.4 mm (6 x 12½ x 1¾ in.)
	Quantity	• one per network
	Host	• Perimitrax® Central Controller, Senstar®100 annunciator, Intelli-FLEX™ multiplex version processor or customer-supplied annunciator (protocol conversion by annunciator manufacturer may be required). Each Senstar 100 system can support up to 34 networks.
	Host interface	• RS-232/RS-422 serial data link, up to 19200 baud, using StarCom II protocol
	Controls	• DIP-switch for setting host baud rate • reset switch • diagnostic test switch
	LED indicators	• network transmit and receive • host transmit and receive • self-test status
	Connectors	• removable terminal blocks for network wiring • 2 RS-232 or RS-422 serial ports for connection to host
		• connection port for fiber optic option card
	Temperature	• 0ºC to 55ºC (32ºF to 131ºF)
	Relative humidity	• 5 to 95%, non-condensing
	Enclosure options	• weatherproof outdoor NEMA 4 or indoor, lockable, with tamper switch
	Power input options	• 12 VDC, 500 mA maximum • 16 VAC, 20 VA • 110-120 VAC, 60 Hz/220-240 VAC, 50 Hz power module • optional backup battery (AC power module)

Fiber optic option card	**Model**	• SN-FOI
	Dimensions (LxWxD)	• 83.8 x 124.5 x 44.4 mm (3.3 x 4.9 x 1.75 in.)
	Quantity	• one per network controller and standard transponder unit in a fiber optic network or network portion
	Controls	• none
	LED indicators	• network activity
	Connectors	• fiber optic network wiring connections
	Temperature	• -40ºC to 70ºC (-40ºF to 158ºF)
	Relative humidity	• 5 to 95% non-condensing
	Enclosure	• mounted on network controller and transponder units
	Power input options	• draws power from network controller and transponder unit

Large transponder unit (LTU)	**Model**	• ½ chassis - SN-T128
		• full chassis - SN-T256
	Dimensions	• ½ chassis - 19-inch rack mount 3 RU high x 500 mm (20 in.) deep
		• full chassis - 19-inch rack mount 6 RU high x 500 mm (20 in.) deep
	Weight	• ½ chassis - 10 kg (22 lbs.)
		• full chassis - 20 kg (44 lbs.)
	Quantity	• 1 to 10 large transponder units per network (Senstar 100 limit)
	Input/Output card options	• relay card (option 1) - 64 inputs/64 outputs • relay card (option 2) - 64 inputs/32 outputs • lamp driver - 64 inputs/64 outputs (drives LEDs directly)
	Inputs	• 64 supervised inputs with single- or dual-resistor line supervision per card to a maximum of 256 per LTU
	Input point states	• secure, alarm or tamper
	Output options	• 64 dry contacts to a maximum of 256 per LTU • 32 dry contacts • 64 lamp drivers
	Output point definition	• can be programmed to be n.o. or n.c., flashing, pulse, or steady state
	Output switching	• dry contacts 24 VDC, 1 A resistive • lamp drivers up to 12 mA, 12 VDC maximum voltage
	Controls	• DIP-switch for network node address • reset switch
	LED indicators	• network ‘x’ and ‘y’ activity • reset • power
	Connectors	• removable terminal blocks for network input and output wiring
	Temperature options	• 0ºC to 55ºC (32ºF to 131ºF)
	Relative humidity	• 5 to 95%, non-condensing
	Power input options	• 115 VAC, 60 Hz, 5.2 A • 230 VAC, 50 Hz, 2.6 A
	Power consumption	• maximum consumption with 64 relay cards X 4 and all relays activated will not exceed 250 W • power supply is internally fused @2.6 Amp

Standard transponder unit (TU)	**Model**	• 16 X 0 I/O - SN-TX0
		• 16 X 8 I/O - SN-TX8
	Dimensions (LxWxD)	• 152.4 x 317.5 x 44.4 mm (6 x 12½ x 1¾ in.)
	Quantity	• 1 to 62 transponders per network
	Input/Output card options	• 16 inputs/8 outputs • 16 inputs/0 outputs
	Inputs	• 16 supervised inputs with single- or dual-resistor line supervision
	Input point states	• secure, alarm or tamper
	Input point definition	• can be programmed to be n.o. or n.c., supervised or non-supervised
	Outputs	• 8 dry contacts (optional)
	Output point definition	• can be programmed to be n.o. or n.c., flashing, pulse, or steady state
	Output switching	• dry contacts 24 VDC, 1A resistive
	Controls	• DIP-switch for network node address • reset switch • diagnostic test switch
	LED indicators	• network transmit and receive • input point state • output point state • self-test status
	Connectors	• removable terminal blocks for network input and output wiring
	Temperature options	• -40ºC to 70ºC (-40ºF to 158ºF)
	Relative humidity	• 5 to 95%, non-condensing
	Enclosure options	• weatherproof outdoor NEMA 4 or indoor, lockable, with tamper switch
	Power input options	• 12 VDC, 500 mA maximum • 16 VAC, 20 VA • 110-120 VAC, 60 Hz/220-240 VAC, 50 Hz power module • backup battery for power module (AC power module)

Remote display and control panel (RDCP)	**Model**	• SN-RDP
	Dimensions (LxWxD)	• 132.6 x 317.0 x 66.7 mm (5.22 x 12.48 x 2.63 in.) NOTE: Unit is 482.6 mm (19 in.) wide with rack mount ears attached.
	Weight	• 2.27 kg (5 lbs.)
	Quantity	• 16 devices per system (Senstar 100 limit)
	Display points	• 255 alarm points per device
	Controls	• DIP-switch for network node address • reset switch • diagnostic test switch • volume adjustment potentiometer • LCD contrast adjustment potentiometer • LED backlight adjustment potentiometer
	LED indicators	• network transmit and receive • reset • power
	Connectors	• removable terminal blocks for network wiring
	Temperature options	• 0ºC to 55ºC (32ºF to 131ºF)
	Relative humidity	• 5 to 95%, non-condensing
	Power input options	• 12 VDC, 750 mA maximum • 16 VAC, 20 VA

Network repeater	**Model**	• SN-RPT1 - 2-port copper compatible repeater
		• SN-RPT2 - 3-port copper compatible repeater
		• SN-RPT3 - 2-port copper/fiber optic compatible repeater
	Dimensions (LxWxD)	• 152.4 x 127.0 x 44.4 mm (6 x 5 x 1¾ in.)
	Quantity	• 1 per 1.2 km (3/4 mile), 10 per network branch. • 1 per 27 devices in a copper wire network
	Controls	• none
	LED indicators	• network status • power status
	Connectors	• removable terminal blocks for network wiring • AC and tamper status
		• fiber optic network wiring connectors
	Temperature	• -40ºC to 70ºC (-40ºF to 158ºF)
	Relative humidity	• 5 - 95%, non-condensing
	Enclosure options	• NEMA 4 or indoor, lockable, with tamper switch
	Power input options	• 12 VDC, 500 mA maximum • 16 VAC, 20 VA • 110-120 VAC, 60 Hz/220-240 VAC, 50 Hz power module • backup battery for power module (AC power module)

C Troubleshooting

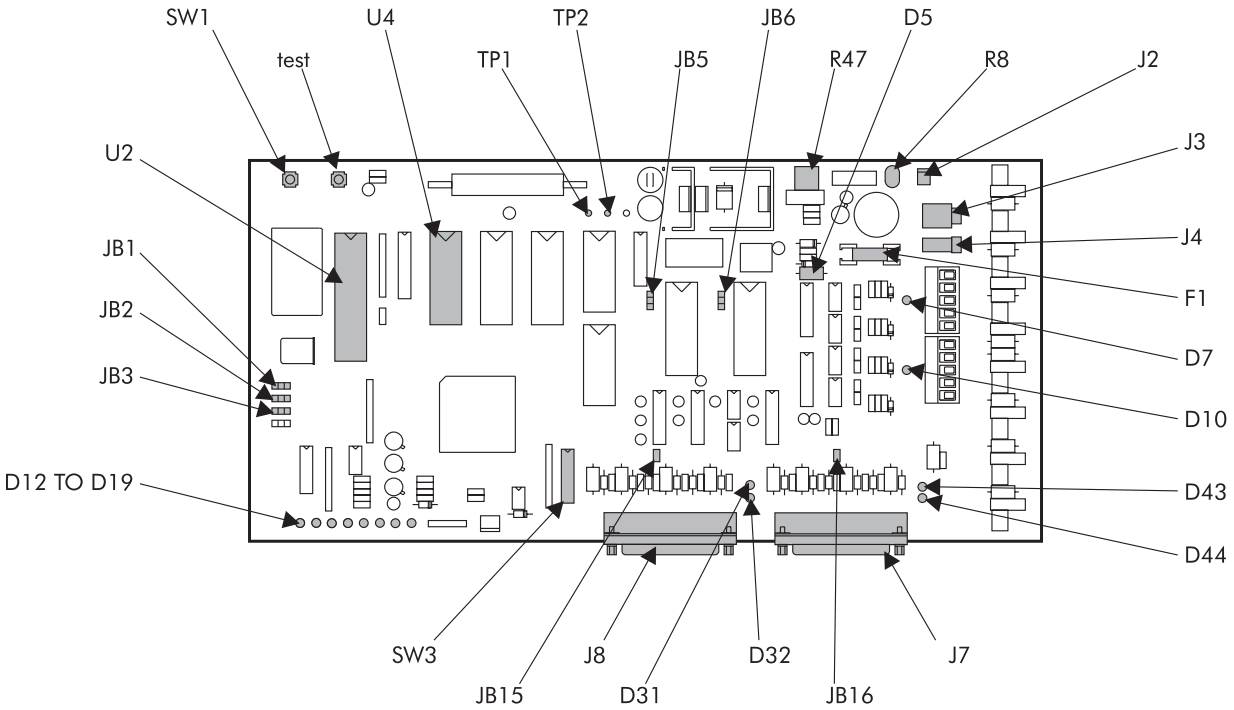
This appendix covers the known troubleshooting information for the Sennet network controller, large transponder unit, standard transponder unit, remote display and control panel and repeater.

If any hardware must be replaced, refer to Appendix d of this guide for maintenance procedures.

CAUTION	*Use an anti-static wrist strap when handling circuit cards. If this is not possible, ground yourself by touching the metal back panel* ***BEFORE*** *touching the card.*

CAUTION **High voltage**	*Disassembly of devices is to be performed by qualified personnel only.* *Disconnect power prior to servicing the device.*

Network controller



D7 & D10	network activity LEDs	J7	serial port 1
D12	microcontroller error	J8	serial port 2
D13	ROM error	JB1 & JB2	network baud rate
D14	RAM error	JB3	network controller setting
D15	AC fail	JB5	serial port 2 - RS-232/RS-422 interface
D16	enclosure tamper	JB6	serial port 1 - RS-232/RS-422 interface
D17	timer error	JB15	serial port 2 - RTS/CTS hardware handshake
D18 & D19	diagnostic LEDs	JB16	serial port 1 - RTS/CTS hardware handshake
D31 & D32	serial port 2 activity	R8	overvoltage protection
D43 & D44	serial port 1 activity	R47	charging voltage adjustment
F1	fuse	TP1	test point
J2	tamper	TP2	test point
J3	16 VAC	SW1	reset switch
J4	12 to 14 VDC		

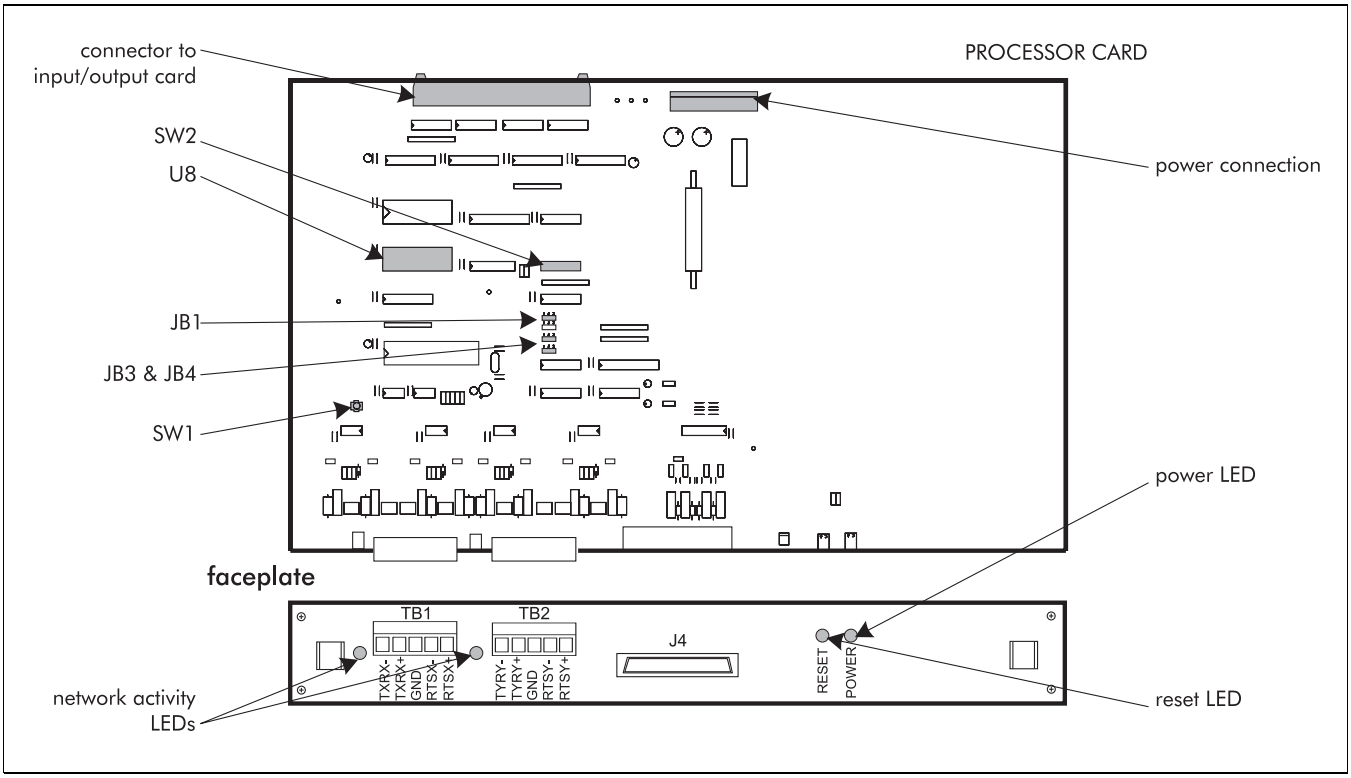
Unit is not operational, does not flash LEDs D12 through D19 in sequence on power-up.

AC powering option fault (if installed) - no power applied to logic card, and no battery power.	❑ If the AC powering option is installed, verify that the power harness is connected to J3. ❑ Check that the enclosure terminal block connections are correct. ❑ Check for 110-120 or 220-240 VAC input on the AC powering option terminal block. Ensure that the voltage selector switch is in the correct position. ❑ Check the fuse on the AC powering option. Replace if necessary. ❑ Check for 16 VAC at J3 on the card (you may connect a meter across R8). ❑ If there is still no voltage, replace the AC powering option.

Unit is not operational, does not flash LEDs D12 through D19 in sequence on power-up.(cont'd)	
DC input fault (if DC powered) - no power applied to logic card.	❑ Check for 12-14 VDC input at J4 (you may connect a meter across D5). ❑ Check the fuse at F1. Replace if necessary. ❑ Remove the battery connection at J4. If the unit operates, the battery is defective. Note: The battery may be damaged by incorrect charging voltages. Ensure that the charging voltage is 13.8V ± 0.1V at J4 with no battery connected - adjust R47 if required.
Defective circuit card.	❑ Check for the voltage as marked on the card at TP1 (5.0V ± 0.25V) and TP2 (10V to 14V). ❑ If there is no voltage and correct power is applied to card, it indicates that the on-card power supply is defective. Replace the card. ❑ If the voltage is correct and the processor is not running, verify the software at U2 and U4. Replace the card.
LEDs D12 to D19 flash in sequence continuously.	
Processor failure - watchdog timer keeps resetting card.	❑ Check that the timeout monitor jumper JB4 has a shunt on pins 1 and 2. ❑ Verify software at U2 and U4. ❑ Replace the card.
LEDs D12 to D19 flash in sequence on power-up, then LED D12, D13, D14, D17, D18 and/or D19 stay lit.	
Processor failure.	❑ Replace the card.
LEDs D12 to D19 flash in sequence on power-up, then LED D15 stays lit.	
AC power fail. Note: This is normal if the card is DC powered	❑ If the AC powering option is installed, verify that the power harness is connected to J3. ❑ Check that the enclosure terminal block connections are correct. ❑ Check for 110-120 or 220-240 VAC input on the AC powering option terminal block. Ensure that the voltage selector switch is in the correct position. ❑ Check the fuse on the AC powering option. Replace if necessary. ❑ Check for 16 VAC at J3 on the card (you may connect a meter across R8). ❑ If there is still no voltage, replace the AC powering option. ❑ If 16 VAC is present on the card and D15 remains lit, replace the card.
LEDs D12 to D19 flash in sequence on power-up, then LED D16 stays lit.	
Enclosure tamper (door open).	❑ Momentarily depress the enclosure tamper switch to confirm normal operation, or install a shunt at J2 to disable tamper reporting. ❑ If the LED stays lit, check that the tamper switch is connected. Use an ohmmeter to verify that the switch is operating; if not, replace the switch.

LEDs D12 to D19 flash in sequence on power-up, then LED D16 stays lit. (cont'd)	
Enclosure tamper (door open). (cont'd)	❑ If the switch is operating but the LED remains on, replace the card.
Unit is non-operational. LEDs D7 and/or D10 are not lit. The power-up LED sequence operates normally.	
Card failure or corresponding network side unusable.	❑ Confirm that the network connections are correct (refer to the *completed device configuration forms*). ❑ If the problem persists, replace the card.
Unit not communicating with host. No activity on LED D43 (RX1). (No activity on LED D31(RX2) if serial port 2 is being used.) LEDs D7 and/or D10 are lit.	
Communication parameters not set correctly.	❑ Ensure that the settings of JB6, JB16 and SW3 are correct, and that they match those expected by the host computer. (If serial port 2 is being used, ensure that the settings at JB5 and JB15 are also correct.) ❑ Reset the card if the settings are changed, by pressing the Reset switch.
Incorrectly wired or defective cable between J7 (serial port 1) and host computer.	❑ Ensure that the cable to host wiring is correct and working.
(Incorrectly wired or defective cable between J8 (serial port 2) and host computer.)	❑ Ensure that the cable to host wiring is correct and working.
Card failure (UART).	❑ Replace the card.
Unit not communicating with network devices. LEDs D7 and/or D10 are lit. Activity on LED D44 (TX1) and D43 (RX1) is normal. (Activity on LED D32 (TX2) and D31 (RX2) is normal if serial port 2 is being used.)	
Communication parameters not set correctly.	❑ Ensure that the settings of JB6, JB16 and SW3 are correct, and that they match those expected by the host computer. (If serial port 2 is being used, ensure that the settings at JB5 and JB15 are also correct.) ❑ Reset the card if the settings are changed, by pressing the Reset switch.
Incorrect network wiring.	❑ Confirm that the network connections are correct (refer to the *completed device configuration forms*).
Incorrect network baud rate.	❑ Ensure that the network baud rate (jumpers JB1 and JB2) matches that of all network devices. ❑ Reset the card if the jumpers are changed, by pressing the Reset switch.
Incorrect Network Controller number setting.	❑ Ensure that JB3 has a shunt on pins 2 and 3. ❑ Reset the card if the jumpers are changed, by pressing the Reset switch.
Incorrect network device addresses.	❑ Check that the network device addresses are correct (refer to the *completed device configuration forms*.)
Interface circuitry failure.	❑ Replace the card.

Large transponder unit



JB1	timeout monitor	SW1	reset switch
JB3 & JB4	network baud rate	SW2	network device address
U8	software		

Unit is not operational. Power LED not lit.

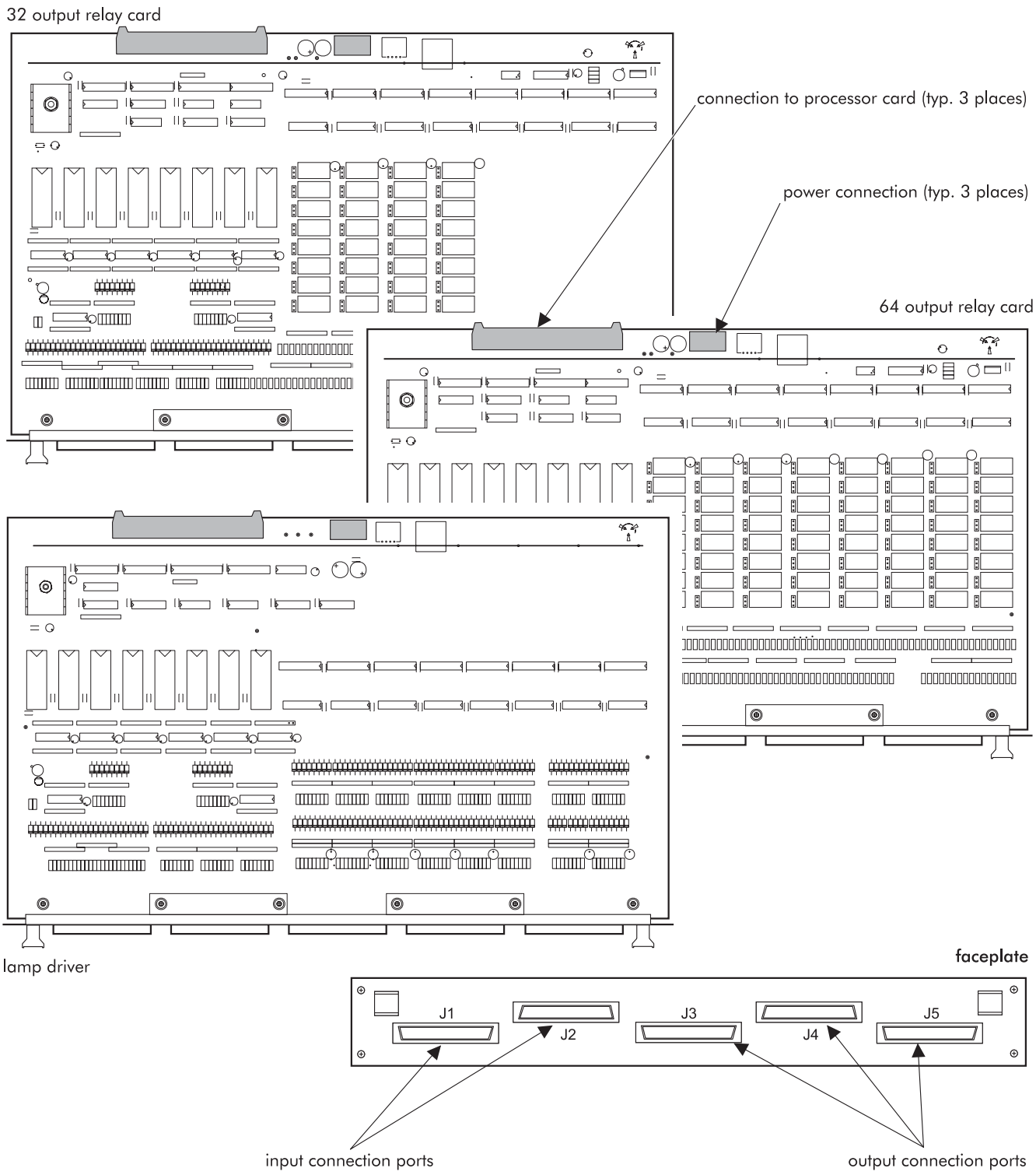
No AC power.	❑ Set the line voltage on the power supply located at the back of the LTU chassis. ❑ Plug the LTU into a functioning AC outlet. ❑ Turn power switch ON. ❑ Check that internal cable connections to processor card and I/O cards are correct.
Power supply in thermal shut down.	❑ Turn power OFF for 5 minutes, then turn it back on.
Power supply failure.	❑ Replace power supply.

Reset LED off or flashing

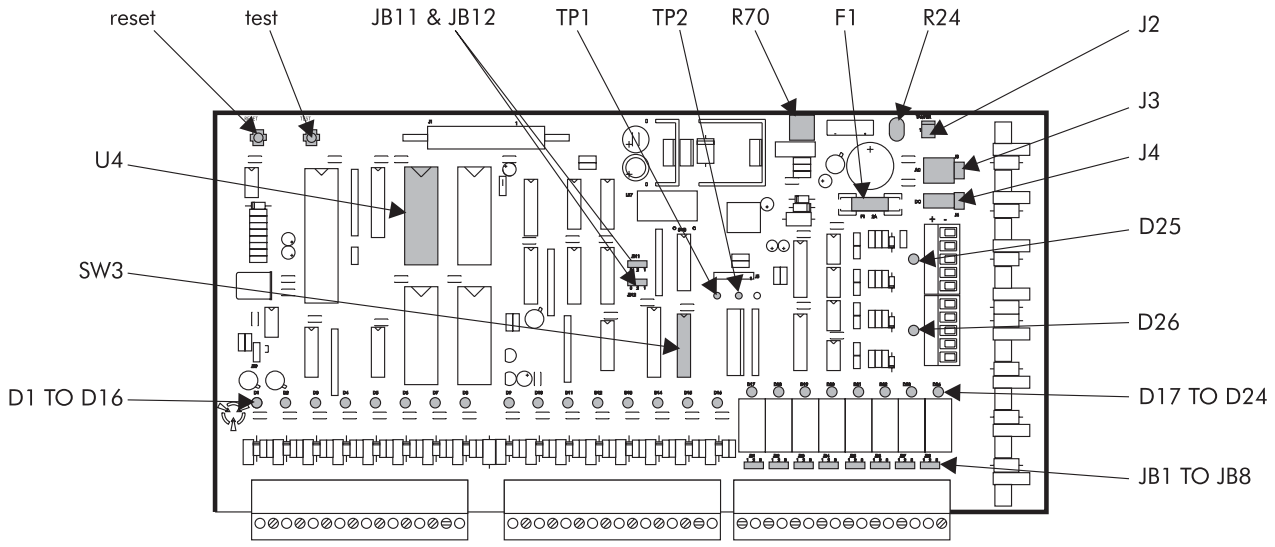
Processor failure - watchdog timer keeps resetting unit.	❑ Check that the timeout monitor jumper JB1 has a shunt on pins 1 and 2. ❑ Check software at U8. ❑ Replace LTU processor card.

No network communication.'X' poll,'Y' poll LEDs not flashing, power LED is lit.	
Incorrect network wiring.	❑ Confirm that the network connections are correct (refer to the *completed device configuration forms*).
Incorrect network baud rate.	❑ Ensure that the network baud rate (jumpers JB3 and JB4) matches that of all network devices. ❑ Reset the card if the jumpers are changed, by pressing the Reset switch.
Incorrect network device address.	❑ Ensure that SW2 is set to the correct network device address (refer to the *completed device configuration forms.)* ❑ Reset the card if the switches are changed, by pressing the Reset switch.
Network non-operational.	❑ Troubleshoot the network controller. (Refer to *Network controller*, page c-2.)
Interface circuitry failure.	❑ Replace the card.
One or more input points not reporting correctly	
Incorrect sensor connections.	❑ Confirm that the sensor connections are correct (refer to the *completed device configuration forms*).
Incorrect point configuration or line supervision limit settings.	❑ Confirm that the sensors, wiring and line supervision resistors match the point configurations. ❑ Verify that the configuration of the host program matches the line supervision resistor configuration.
Card failure.	❑ Check connections to the specific PCB. (i.e., power connection, connection to processor card, and input connections) ❑ Measure input point voltage. Note: the input point must read 5V (± 0.15V) at the connector with no sensor connected if card is working correctly. ❑ Replace the card.
One or more output points not operating correctly.	
Incorrect sensor connections.	❑ Confirm that the sensor connections are correct (refer to the *completed device configuration forms*).
Incorrect setup in host computer database.	❑ Confirm that the setup data is correct (refer to *completed device configuration forms*). ❑ On the output relay cards confirm that shunt locations are correct (refer to *completed device configuration forms*).
Defective relay driver circuitry.	❑ Check connections to the specific PCB. (i.e., power connection, connection to processor card, and input connections) ❑ Replace the card.

INPUT/OUTPUT CARDS



Standard transponder unit



NOTE: D1 to D16 are input point status LEDs unless the test switch is pressed in. The LEDs then function as listed.

D1	microcontroller error	J3	16 VAC
D2	ROM error	J4	12 to 14 VDC
D3	RAM error	JB1 to JB8	output relays
D4	AC power fail	JB11 & JB12	network baud rate
D5	enclosure tamper	R24	overvoltage protection
D6	invalid address	R70	charging voltage adjustment
D17 to D24	output LEDs	SW3	network device address
D25 & D26	network activity	TP1	test point
F1	fuse	TP2	test point
J2	tamper	U4	software chip

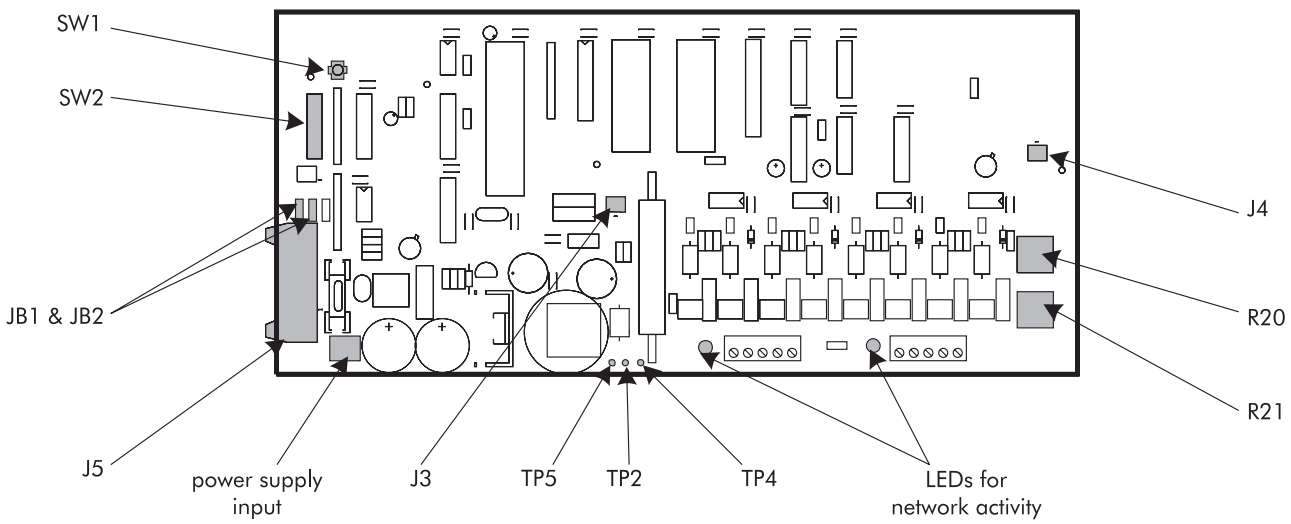
Unit is not operational, does not flash LEDs D1 through D16 in sequence on power-up.

AC powering option fault (if installed) - no power applied to logic card, and no battery power.	❑ If the AC powering option is installed, verify that the power harness is connected to J3. ❑ Check that the enclosure terminal block connections are correct. ❑ Check for 110-120 or 220-240 VAC input on the AC powering option terminal block. Ensure that the voltage selector switch is in the correct position. ❑ Check the fuse on the AC powering option. Replace if necessary. ❑ Check for 16 VAC at J3 on the card (you may connect a meter across R24). ❑ If there is still no voltage, replace the AC powering option.
DC input fault (if DC powered) - no power applied to logic card.	❑ Check for 12-14 VDC input at J4 (you may connect a meter across D32). ❑ Check the fuse at F1. Replace if necessary.

Unit is not operational, does not flash LEDs D1 through D16 in sequence on power-up. (cont'd)	
DC input fault (if DC powered) - no power applied to logic card. (cont'd)	❑ Remove the battery connection at J4. If the unit operates, the battery is defective. Note: The battery may be damaged by incorrect charging voltages. Ensure that the charging voltage is 13.8V ± 0.1V at J4 with no battery connected - adjust R70 if required.
Defective circuit card.	❑ Check for the voltage as marked on the card at TP1 (5.0V ± 0.25V) and TP2 (10V to 14V). ❑ If there is no voltage and correct power is applied to card, it indicates that the on-card power supply is defective. Replace the card. ❑ If the voltage is correct and the processor is not running, verify the software at U4. Replace the card.
LEDs D1 to D16 flash in sequence continuously.	
Processor failure - watchdog timer keeps resetting card.	❑ Check that the timeout monitor jumper JB9 has a shunt on pins 1 and 2. ❑ Verify software at U4. ❑ Replace the card.
LEDs D1 to D16 flash in sequence on power-up, then any LED except for D4 to D6 stays lit when the Test switch is pressed.	
Card failure.	❑ Check software at U4. ❑ Replace the card.
LED D4 remains lit when the Test button is pressed.	
AC power fail. Note: This is normal if the card is DC powered	❑ If the AC powering option is installed, verify that the power harness is connected to J3. ❑ Check that the enclosure terminal block connections are correct. ❑ Check for 110-120 or 220-240 VAC input on the AC powering option terminal block. Ensure that the voltage selector switch is in the correct position. ❑ Check the fuse on the AC powering option. Replace if necessary. ❑ Check for 16 VAC at J3 on the card (you may connect a meter across R24). ❑ If there is still no voltage, replace the AC powering option. ❑ If 16 VAC is present on the card and D4 remains lit, replace card.
LED D5 remains lit when the Test button is pressed.	
Enclosure tamper (door open).	❑ Momentarily depress the enclosure tamper switch to confirm normal operation, or install a shunt at J2 to disable tamper reporting. ❑ If the LED stays lit, check that the tamper switch is connected. Use an ohmmeter to verify that the switch is operating; if not, replace the switch. ❑ If the switch is operating but the LED remains on, replace the card.

LEDs D1 to D16 flash in sequence on power-up, then LED D6 remain lit when the Test switch is pressed.	
Incorrect network device address.	❑ Ensure that SW3 is set to the correct network device address (refer to the *completed device configuration forms.)* ❑ Reset the card if the switches are changed, by pressing the Reset switch.
Unit is not operational. No activity on network LEDs D25 and D26. Power up LED sequence is correct.	
Incorrect network wiring.	❑ Confirm that network is connected properly (refer to *completed device configuration forms*).
Incorrect network baud rate.	❑ Ensure that the network baud rate (jumpers JB11 and JB12) matches that of all network devices. Reset the card if jumpers need to be changed.
Network is non-operational.	❑ Troubleshoot the network controller. (Refer to *Network controller*, page c-2.)
Interface circuitry failure.	❑ Replace the card.
One or more input points is not showing the correct state.	
Incorrect sensor connections.	❑ Confirm that the sensor connections are correct (refer to the *completed device configuration forms*).
Incorrect point configuration or line supervision limit settings.	❑ Confirm that the sensors, wiring and line supervision resistors match the point configurations. ❑ Verify that the configuration of the host program matches the line supervision resistor configuration.
Card failure.	❑ Check PCB voltage at TP1 (5.0 ± 0.25 V) and TP2 (10 to 14 V). ❑ Measure input point voltage. Note: the input point must read 5.0 ± 0.25V at the connector with no sensor connected if card is working correctly. ❑ Replace the card.
One or more output points is non-operational (open or shorted) - the corresponding status LED (D17 through D24) is operating correctly. (Note: the status LED is lit when the relay is energized. Open or closed contact operation with respect to the energized relay is set at corresponding jumper JB1 through JB8.)	
Power supply input voltage too low.	❑ Ensure that the voltage at TP2 is at least 10V. If input voltages are correct, replace the card.
Defective relay.	❑ Replace the card.
One or more output points not operating correctly.	
Incorrect sensor connections	❑ Confirm that the sensor connections are correct (refer to the *completed device configuration forms*).
Incorrect setup in host computer database.	❑ Confirm that the setup data is correct (refer to c*ompleted device configuration forms*). ❑ On the output relay cards confirm that shunt locations are correct (refer to *completed device configuration forms*).
Defective relay driver circuitry.	❑ Replace the card.

Remote display and control panel



J3	backlight connector	SW1	reset switch
J4	Piezo connector	SW2	network device address
J5	LCD connector	TP2	Gnd
JB1 & JB2	network baud rate	TP4	Vin
R20	LCD contrast adjustment control	TP5	+5V
R21	backlight adjustment control		

Blank screen.	
Unit off.	❑ Verify that external power supply is operational and properly connected to the power supply input connector. ❑ Measure the voltage at test point TP5 (5.0 ±0.25 V). ❑ Power supply failure. Replace the remote display and control panel.
Connection to LCD panel.	❑ Check that the cable is connected at J5 and J3.
Contrast/backlight set too low.	❑ Check adjustments at R20 for contrast, R21 for backlight.
Unit failure.	❑ Replace the remote display and control panel.

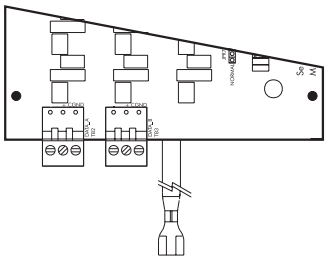
No sound.	
Volume adjustment too low.	❑ Check that cable is connected to J4. ❑ Check volume (generate an alarm). Adjust volume on front of unit.

No network communication. Network LEDs flashing.	
Incorrect network wiring.	❑ Confirm that the network connections are correct (refer to the *completed device configuration forms*).

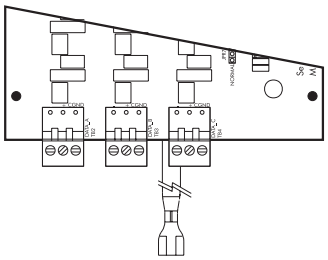
No network communication. Network LEDs flashing. (cont'd)	
Incorrect network baud rate.	❑ Ensure that the network baud rate (jumpers JB1 and JB2) matches that of all network devices. ❑ Reset the card if the jumpers are changed by pressing SW1.
Incorrect network device address.	❑ Ensure that SW2 is set to the correct network device address (refer to the *completed device configuration forms.)* ❑ Reset the card if the switches are changed by pressing SW1.
Network is non-operational.	❑ Troubleshoot the network controller. (Refer to *Network controller*, page c-2.)
Incorrect setup in host computer database.	❑ Check system database.
Interface circuitry failure.	❑ Replace the card.

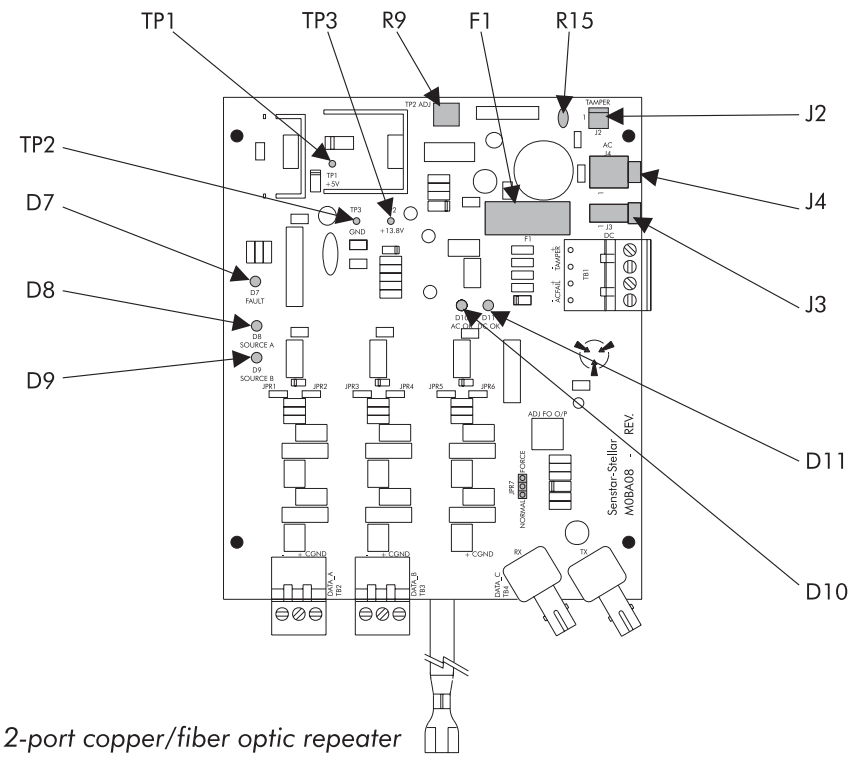
Repeater

2-port copper repeater



3-port copper repeater





2-port copper/fiber optic repeater

D7	fault	J3	12 VDC power connection
D8	source A	J4	16VAC power connection
D9	source B	R9	charging voltage adjustment
D10	AC OK	R15	overvoltage protection
D11	DC OK	TP1	test point
F1	fuse	TP2	test point
J2	tamper	TP3	test point

Unit is not operational, LEDs D10 (AC OK) and D11 (DC OK) are not lit. (Unit is AC powered.)

AC powering option fault (if installed) - no power applied to logic card, and no battery power.	❑ If the AC powering option is installed, verify that the power harness is connected to J4. ❑ Check that the enclosure terminal block connections are correct. ❑ Check for 110-120 or 220-240 VAC input on the AC powering option terminal block. Ensure that the voltage selector switch is in the correct position. ❑ Check the fuse on the AC powering option. Replace if necessary. ❑ Check for 16 VAC at J4 on the card (you may connect a meter across R15). ❑ If there is still no voltage, replace the AC powering option.

Unit is not operational, LEDs D10 (AC OK) and D11 (DC OK) are not lit. (Unit is AC powered.) (cont'd)	
AC powering option fault (if installed) - no power applied to logic card, and no battery power. (cont'd)	❑ Remove the battery connection at J3. If the unit operates, the battery is defective. Note: The battery may be damaged by incorrect charging voltages. Ensure that the charging voltage is 13.8V ± 0.1V at J3 with no battery connected - adjust R9 if required. AC input voltage must be 16 VAC.
Defective circuit card.	❑ Check for the voltage as marked on the card at TP1 (5.0V ± 0.25V) and TP2 (13.8V ± 0.1V). ❑ If there is no voltage and correct power is applied to card, it indicates that the on-card power supply is defective. Replace the card.
Unit is not operational, LED D11 (DC OK) is not lit. (Unit is DC powered.)	
DC input fault - no power applied to the logic card.	❑ Check for 6 to 14 VDC input at J3 (you may connect a meter across D6).
On-card DC fuse is blown.	❑ Check the fuse at F1. Replace if necessary.
Defective circuit card.	❑ Check for the voltage as marked on card at TP1 (5 ± 0.5 V). If there is no voltage and correct power is applied to the card, this indicates that the on-card power supply is defective. Replace the card.
No activity on D8 (SOURCE A) LED. (Network controller is on the A side of the repeater.)	
Network A-side is non-operational.	❑ Troubleshoot the network controller, (Refer to *Network controller*, page c-2.), and/or other repeaters on the A side of the repeater.
Network wiring is incorrect on the A side of the repeater.	❑ Confirm that the network is wired correctly (refer to the *completed device configuration forms*).
Interface circuitry failure	❑ Replace the card.
No activity on D9 (SOURCE B) LED. Activity at D8 (SOURCE A) LED. (Network controller is on the A side of the repeater.)	
No devices on the B side of the repeater are operational.	❑ Troubleshoot all devices and/or other repeaters on the B side of the repeater.
Network wiring incorrect on the B side of the repeater.	❑ Confirm that the network is wired correctly (refer to the *completed device configuration forms*). ❑ Check for reversed data connections.
Interface circuitry failure	❑ Replace the card.
No activity on D9 (SOURCE B) LED. (Network controller is on the B side of the repeater.)	
Network B side is non-operational.	❑ Troubleshoot the network controller and/or other repeaters on the B side of the repeater.
Network wiring is incorrect on the B side of the repeater	❑ Confirm that the network is wired correctly (refer to the *completed device configuration forms*).
Interface circuitry failure	❑ Replace the card.

No activity on D8 (SOURCE A) LED. Activity on D9 (SOURCE B) LED. (Network controller is on the B side of the repeater.)	
No devices on A side of repeater are operational.	❑ Troubleshoot all devices and/or other repeaters on the A side of the repeater.
Network wiring incorrect on the A side of the repeater.	❑ Confirm that the network is wired correctly (refer to the device configuration forms). ❑ Check for reversed data connections.
Interface circuitry failure.	❑ Replace the card.
D8 (SOURCE A) or D9 (SOURCE B) LEDs are on or flashing when the network is disconnected.	
Interface circuitry failure.	❑ Replace the card.
Fault LED D7 is ON.	
Errors have been detected in the data flow through the repeater.	❑ Power down the repeater. Note: This may cause communication failures in the network. ❑ Power up and verify normal activity at D8/D9.

d Maintenance procedures

Fuse Replacement

CAUTION

Disconnect the power source to the device before replacing the fuse.

Always replace the fuse with one of the same type and rating.

Some of the network devices include a fuse. If the fuse blows, replace it with a new fuse of equal value.

network device	110-120V	220-240V
AC option (network controller, transponder unit, repeater)	3AG type, 250V, ½ Amp, fast blow	5 X 20mm, 250V, ¼ Amp, fast blow
large transponder unit	not field replaceable	
remote display and control panel	Polyfuse/not field replaceable	
DC/SLA battery (network controller, transponder unit, repeater)	250V, 2 Amp, fast blow, 5 X 20mm type	

Network controller, standard transponder unit, repeater

The network controller and transponder cards are mounted on the corner mounting posts and are also attached to the mounting plate by a center screw.

Each repeater card includes two supports that are inserted into the holes in the centre of the mounting plate. The card is then mounted on the permanent side mounts and the centre mounts. Two repeater cards can be installed in one enclosure.

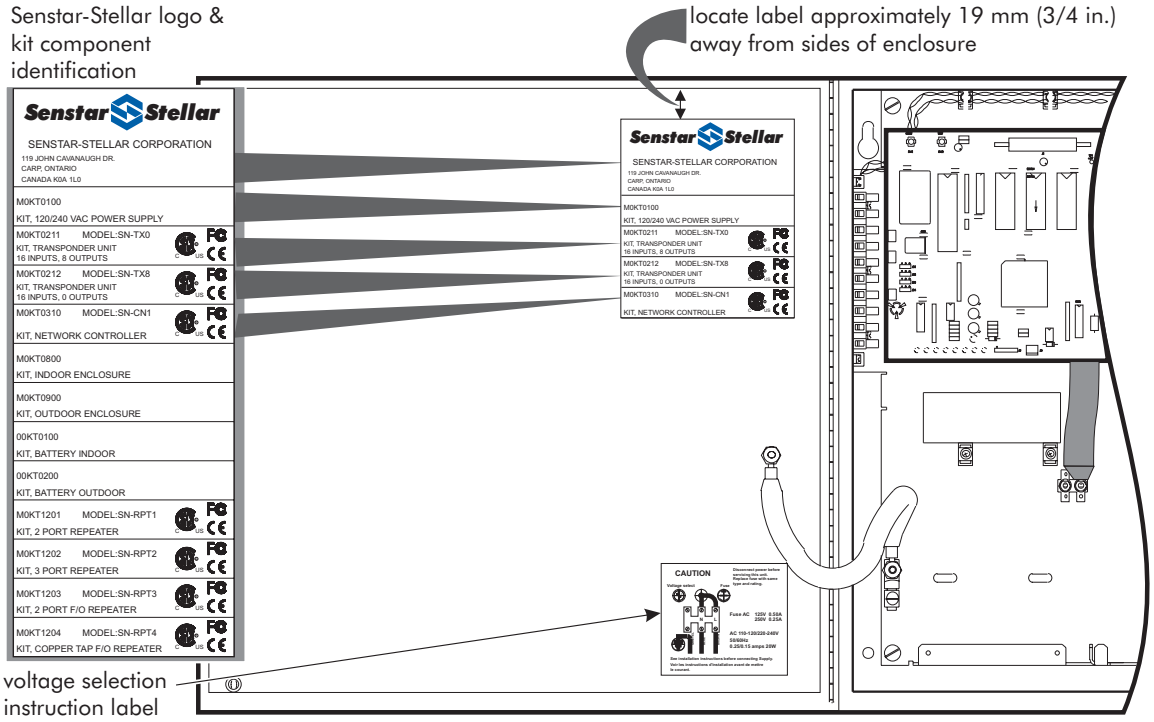
Each enclosure also includes:

- ground strap
- hook & loop strap for battery
- template for mounting the enclosure
- battery harness with 1/4 in. disconnect terminals
- battery harness with 3/16 in. disconnect terminals

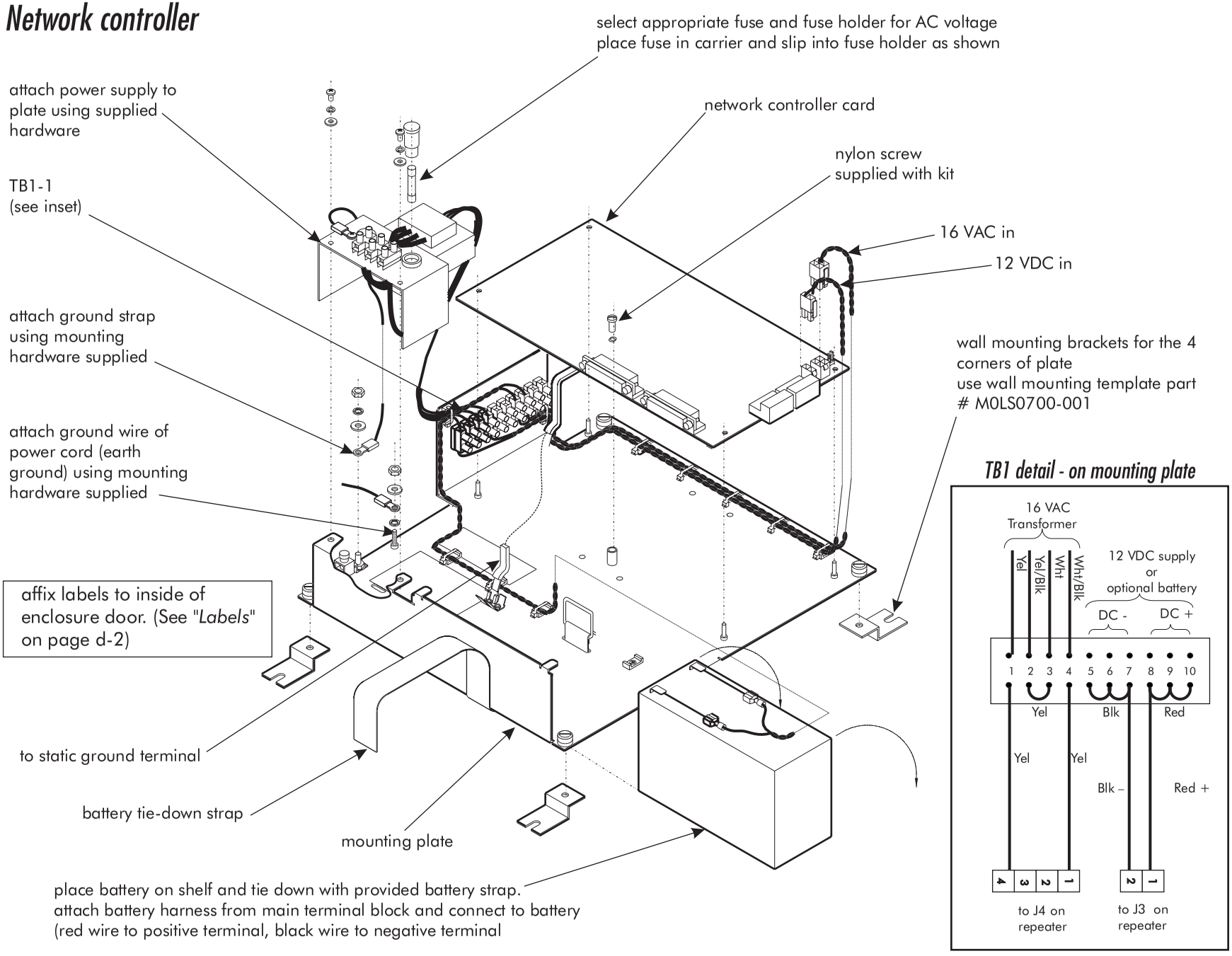
Labels

Each kit includes a sheet of labels. The labels describe the kit components that are installed in the enclosure as well as the enclosure itself. The 120/240 VAC power supply also includes a voltage selection instruction label.

❑ Affix the Senstar-Stellar logo label, the appropriate component labels, and the voltage selection instruction label to the inside of the enclosure door.

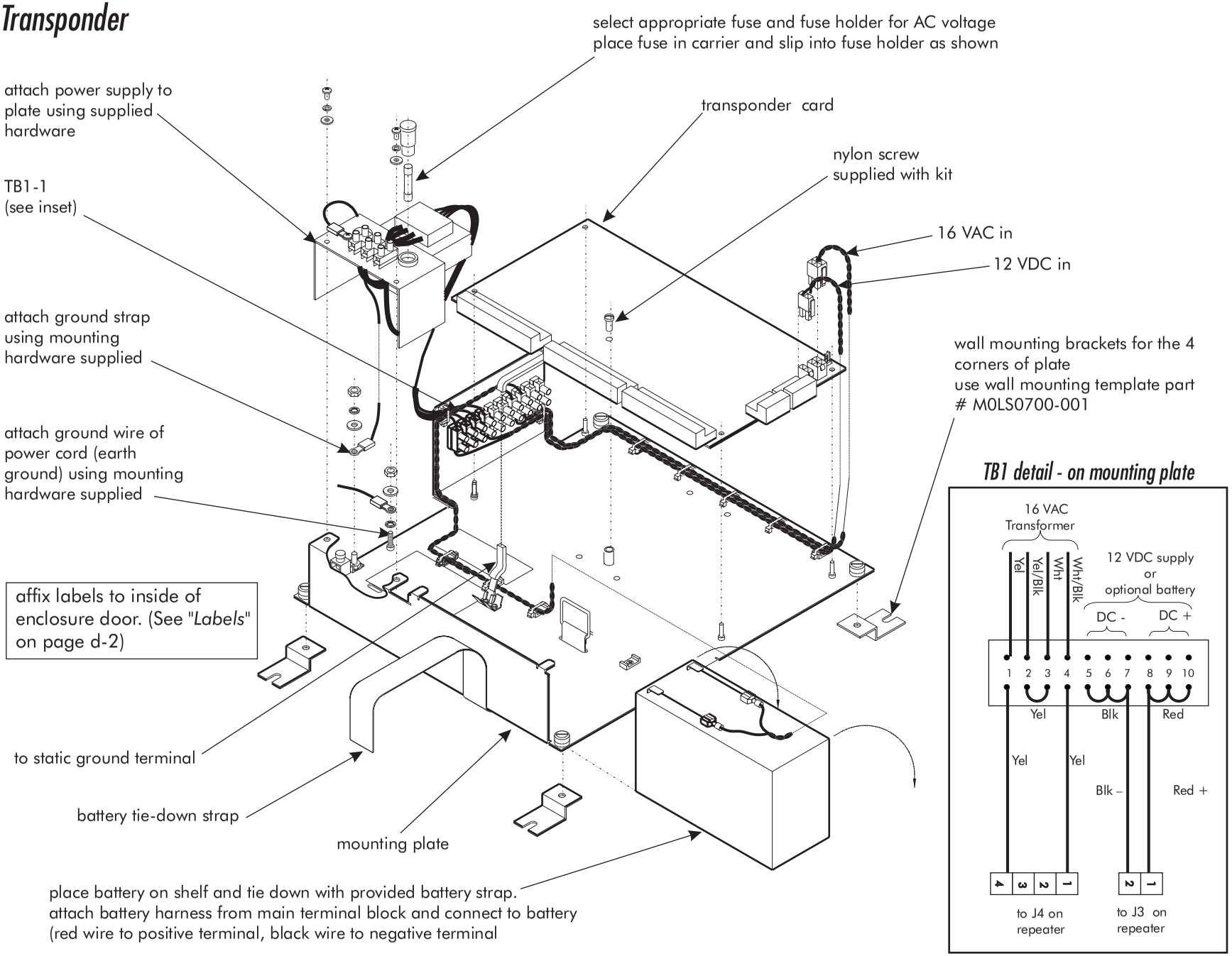


Network controller



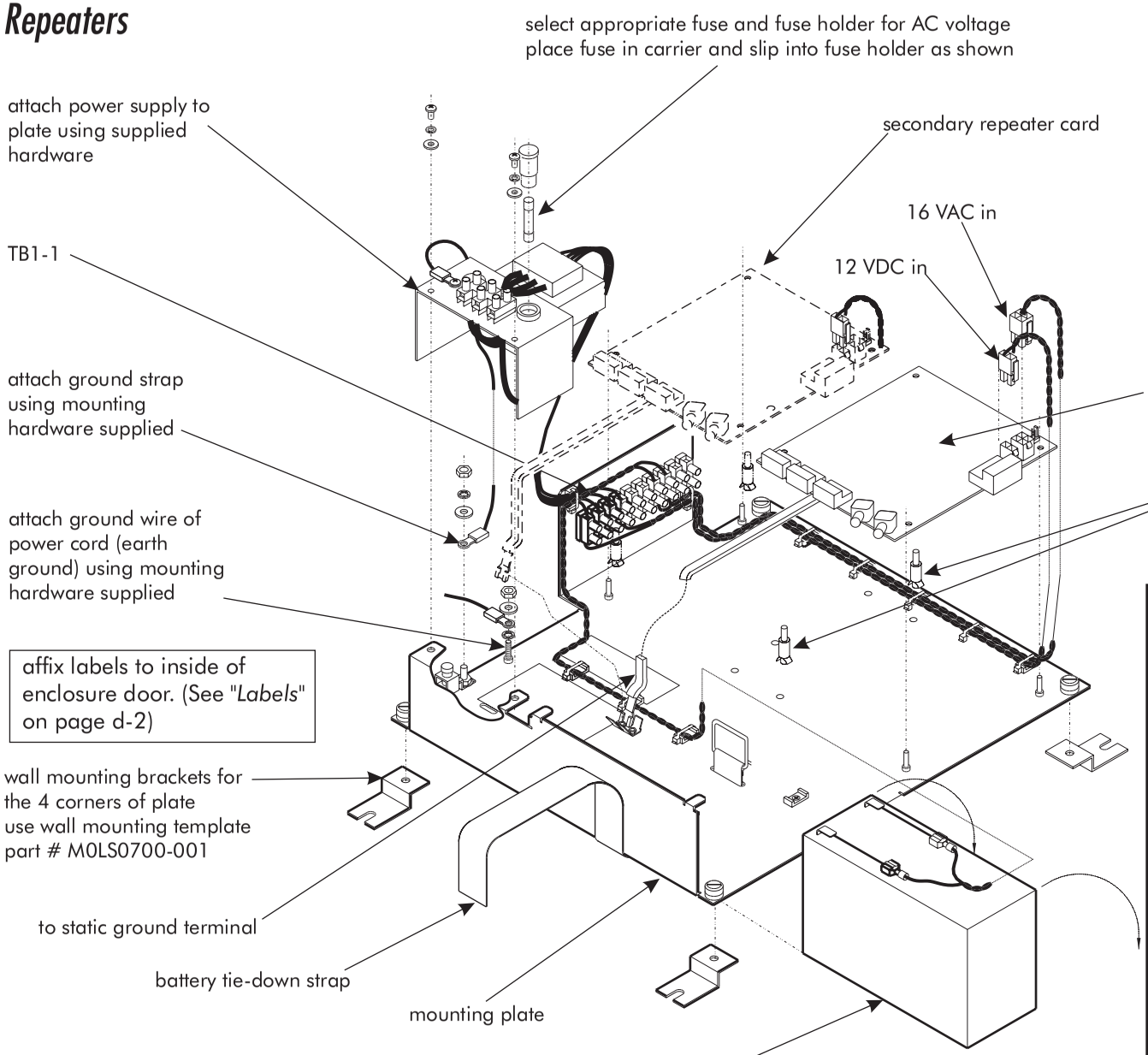
TB1 detail - on mounting plate

Transponder

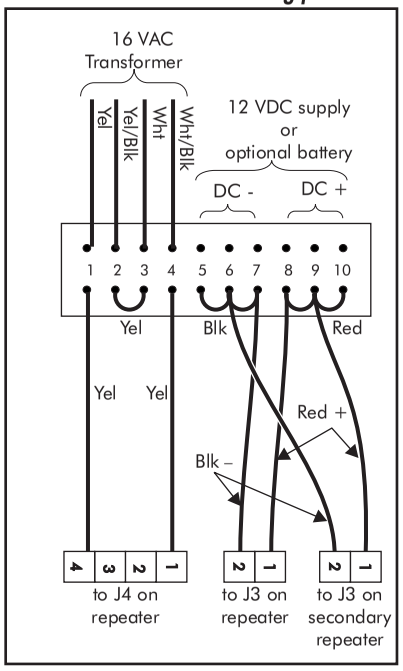


TB1 detail - on mounting plate

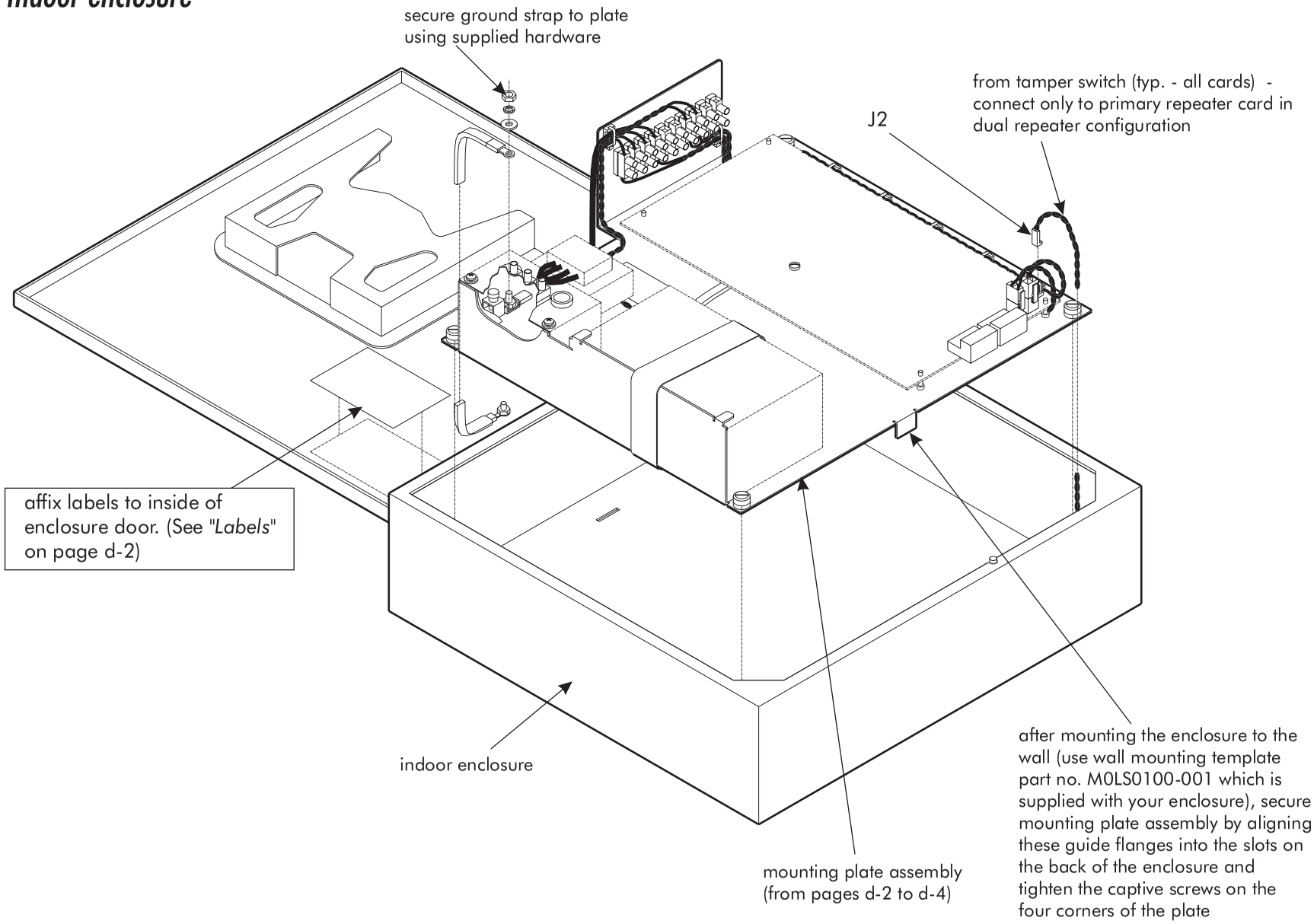
Repeaters



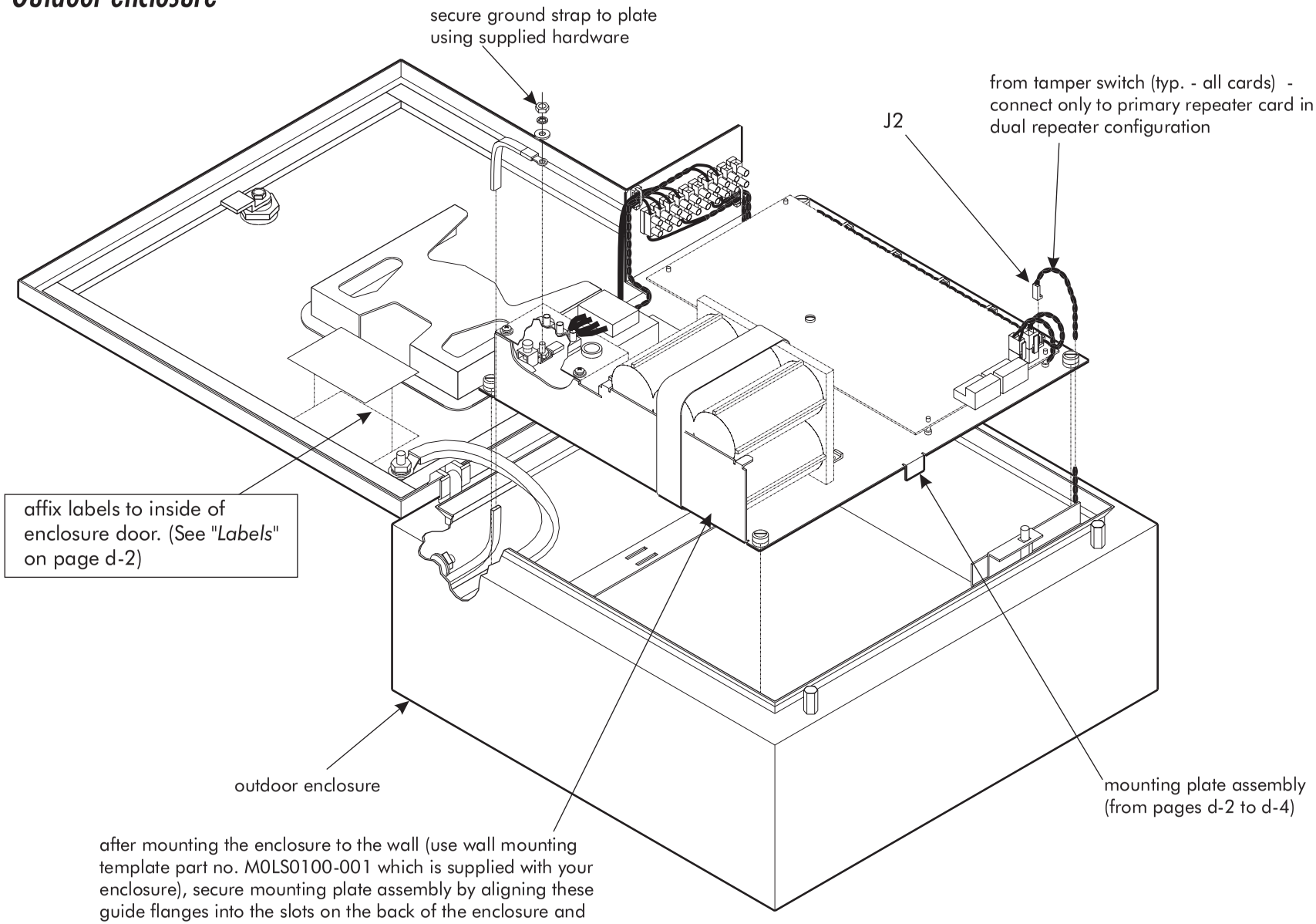
TB1 detail - on mounting plate



Indoor enclosure



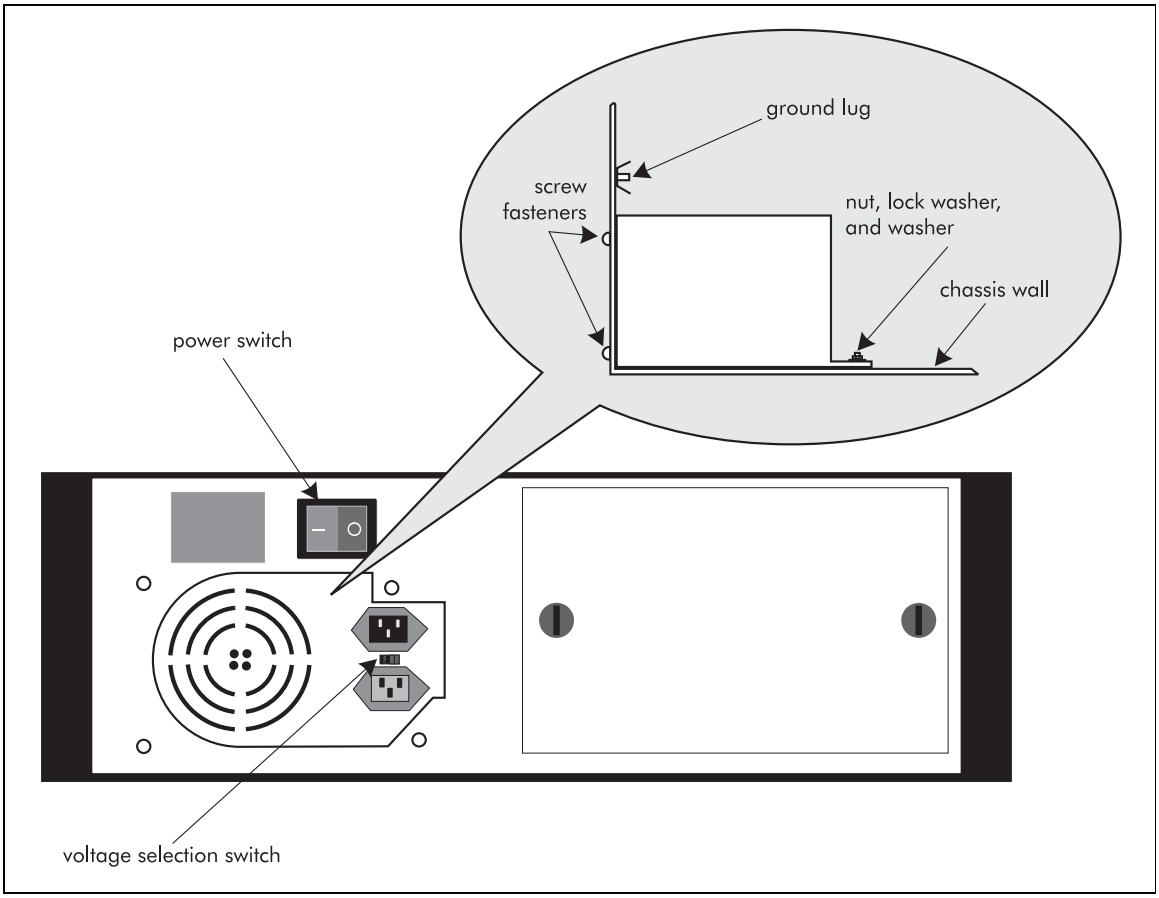
Outdoor enclosure



Large transponder unit

Power supply replacement

CAUTION	*Make sure that the main power supply has been disconnected before removing or installing the power supply.*



Removal

To remove the power supply from the LTU proceed as follows:

- ❑ Disconnect the power from the main power source to the power supply.
- ❑ Remove the LTU chassis from the 19 inch rack.
- ❑ Remove the top cover of the LTU.
- ❑ Remove the nut and washer that secure the power switch ground lug to the ground post and remove the power switch ground lug.
- ❑ Disconnect the power supply connections from all of the circuit cards.

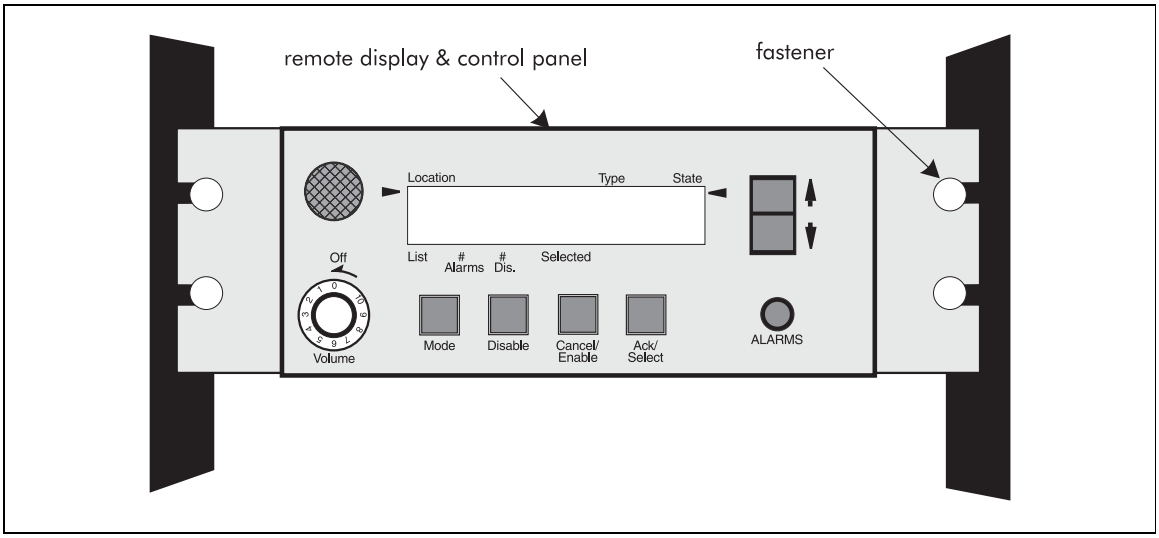
- ❑ Label and remove the power supply spade connectors from the power switch.
- ❑ Remove the screws and washers that secure the power switch to the LTU chassis and remove the power supply switch.
- ❑ Remove the nuts, washers and screws that secure the power supply to the chassis and remove the power supply.

Installation

To install a power supply in the LTU chassis proceed as follows:

- ❑ Secure the power supply to the LTU chassis using six screws, six washers and two nuts.
- ❑ Secure the power switch to the LTU chassis using two screws, four washers, and two nuts.
- ❑ Connect the power supply spade connectors to the power switch.
- ❑ Secure the power switch ground lug to the ground post using one washer and one nut.
- ❑ Secure the power supply connectors to each circuit card.
- ❑ Connect the main power supply to the LTU.
- ❑ Power up the LTU to check that all connections have been made.
- ❑ Disconnect the main power supply from the LTU.
- ❑ Replace the top cover of LTU.
- ❑ Secure the LTU chassis to the 19 inch rack.
- ❑ Connect the AC power to the LTU.

Remote display and control panel



The remote display and control panel must be removed as a complete unit. There are no user-serviceable components on this unit. Please return the unit to Senstar-Stellar for repair or replacement.

Removal

To remove the remote display and control panel proceed as follows:

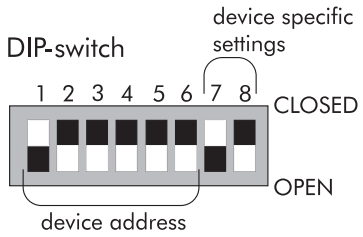
- ❑ Disconnect the main power supply from the wall outlet.
- ❑ Remove the screws that secure the RDCP to the 19-inch rack and lower the RDCP faceplate from the 19-inch rack.
- ❑ On the RDCP printed circuit board disconnect the main power supply wires from TB1 and label the cable.
- ❑ On the RDCP printed circuit board disconnect the Y network connection wires from TB2 and label the cable.
- ❑ On the RDCP printed circuit board disconnect the X network connection wires from TB3 and label the cable.
- ❑ Remove the RDCP from the 19-inch rack.

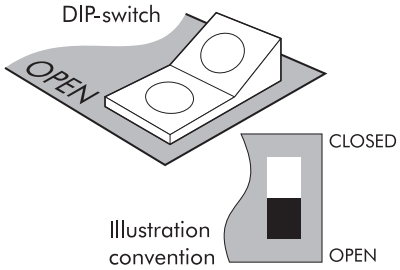
Installation

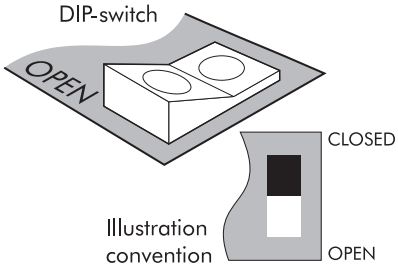
Refer to the installation and setup guidelines in the main part of this product guide.

e Device address settings

The following chart depicts the DIP-switch address settings for addressable Sennet devices.







address	DIP-switch setting	address	DIP-switch setting	address	DIP-switch setting	address	DIP-switch setting
inv		16		32		48	
1		17		33		49	
2		18		34		50	
3		19		35		51	
4		20		36		52	
5		21		37		53	
6		22		38		54	
7		23		39		55	
8		24		40		56	
9		25		41		57	
10		26		42		58	
11		27		43		59	
12		28		44		60	
13		29		45		61	
14		30		46		62	
15		31		47		inv	

f Spare parts list

Component name	Model Number	Part Number	Description	
Network controller	SN-CN1	M0KT0310	Network controller circuit card assembly	
Standard transponder unit options	SN-TX0	M0KT0212	16 programmable inputs/0 outputs, for copper twisted pair data bus.	
	SN-TX8	M0KT0211	16 programmable inputs/8 outputs, for copper twisted pair data bus.	
Large transponder unit (LTU) base unit assembly	SN-T128	M1KT0600	Base unit assembly including a chassis for 19-inch rack or wall surface mount, a 115/230 VAC power supply and a processor card. 128 inputs/128 outputs maximum.	
	SN-T256	M1KT0100	Base unit assembly including a chassis for 19-inch rack or wall surface mount, a 115/230 VAC power supply and a processor card. 256 inputs/256 outputs maximum.	
LTU I/O cards	SN-LD	M1BA0200	Lamp driver I/O card, 64 inputs/64 open collector outputs.	
	SN-R64	M1BA0501	Relay output card, 64 inputs/64 programmable dry contact closure outputs.	
	SN-R32	M1BA0502	Relay output card, 64 inputs/32 programmable dry contact closure outputs.	
Repeater	SN-RPT1	M0KT1201	2-port copper	Repeater extends the network beyond its normal range and implements star or tree network configurations. Available in 3 formats.
	SN-RPT2	M0KT1202	3-port copper	
	SN-RPT3	M0KT1203	2-port fiber optic/copper	
Mounting options for Network Controller, Transponder Unit and Repeater	SN-EN1	M0KT1000	Mounting plate, for use in OEM enclosures. (not for use with LTU or remote display and control panel)	
	SN-EN2	M0KT0800	Indoor enclosure with tamper switch and mounting plate. Lockable (padlock not included). For general indoor use.(not for use with LTU or remote display and control panel)	
	SN-EN3	M0KT0900	NEMA 4/IP 66 rated enclosure with tamper switch and mounting plate. Lockable (padlock not included)(not for use with LTU or remote display and control panel)	

Component name	Model Number	Part Number	Description
Accessories	SN-RDP	J0FG0100	Network remote display and control panel. Includes a 4 line by 40 character backlit LCD panel, simple six button operation with separate alarm indicator and adjustable audio alarm annunciator. Suitable for 19-inch rack mount, wall mount or desk top use.
	SN-FOI	M0KT1100	Fiber optic interface module to be used with NC or TU. This circuit card assembly, when installed on the listed components, will disable the copper connectors so that a fiber optic network can be installed.
Power options	SN-PW1	M0KT0100	AC powering option. Selectable 115/230 VAC, 50/60 Hz input, provides 16 VAC for use with Network Controller, Standard Transponder Unit and Repeater.
	BA-1	00KT0100	Battery, 12 VDC, 6AH. Minimum 8 hours backup.
	BA-2	00KT0200	Battery, 12 VDC, 8AH. Provides extended low temperature range backup. Will fit only in outdoor enclosure M0KT0900.
PCB assemblies and other options	SN-NCA	M0KT0300	Network controller circuit card assembly
	SN-TC2	M0KT0202	Transponder circuit card assembly - 16 inputs/0 outputs
	SN-TC1	M0KT0201	Transponder circuit card assembly - 16 inputs/8 outputs
	SN-LPC	M1BA0100	LTU processor card
	SN-PSA	M1KT1000	LTU power supply assembly
	SN-RPC1	M0BA0801	2-port copper wire compatible, repeater circuit card assembly
	SN-RPC2	M0BA0802	3-port copper wire compatible, repeater circuit card assembly
	SN-RPC3	M0BA0803	2-port fiber optic/copper wire compatible, repeater circuit card assembly
	SN-LN1	E0302	Lightning protection device for data lines
System cabling	NW-30	W0222	Data grade cable for RS-485 network wiring, one pair 30 m (100 ft.) length
	NW-150	W0223	Data grade cable for RS-485 network wiring, one pair 150 m (500 ft.) length
	NW-300	W0224	Data grade cable for RS-485 network wiring, one pair 300 m (1000 ft.) length
Manuals		M0DA0302	Sennet product guide. Replaces M0DA0102, Sennet Installation guide and M0DA0202 Sennet Configuration guide.

Partial list of suppliers

Batteries

Manufacturer	Faston connections Type 187
Panasonic	LCR12V7.2PB
Power Sonic	PS-1270
Sonnenshein	07190432
Yuasa	NP7-12

Battery harnesses are supplied for both terminal types.

Surge protectors

Each device is suitable for protecting one or two data pairs. Units capable of protecting more than two lines are available; contact Senstar-Stellar for more information.

Manufacturer	Model
General Semiconductor Industries	422E
Telebyte Technology	22NX
Black Box Corporation	SP315A
Senstar-Stellar Corporation	SN-LN1

Data path wire

Single pair - no repeater control required

Manufacturer	Part #	Description
Belden	9841	120 ohm, foil/braid shield, 80ºC, UL2919, 30 V
Alpha	6412	
Manhatten/CDT	M3993	

Two pair, overall shield - for use with repeater control signals

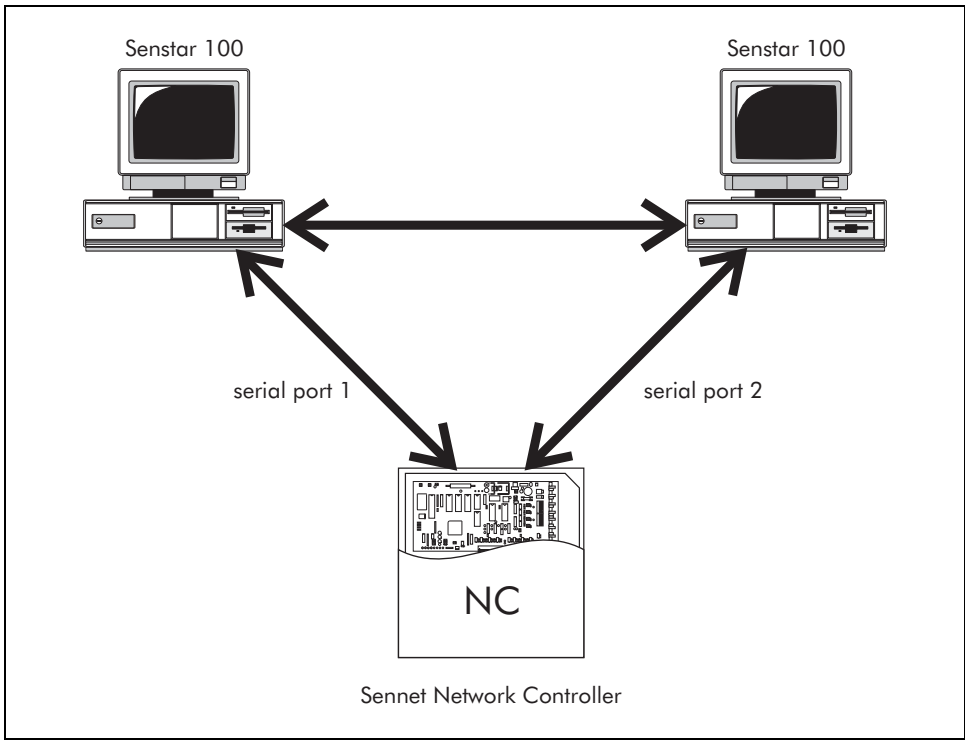
Manufacturer	Part #	Description
Belden	9842	120 ohm, foil/braid shield, 80ºC, UL2919
Alpha	6413	
Manhatten/CDT	M3990	

These cables are not approved for installation in air plenums without conduit. For information on this type of cable, contact Senstar-Stellar.

Data path wire is also available from Senstar-Stellar. See *Spare parts list*, page f-1.

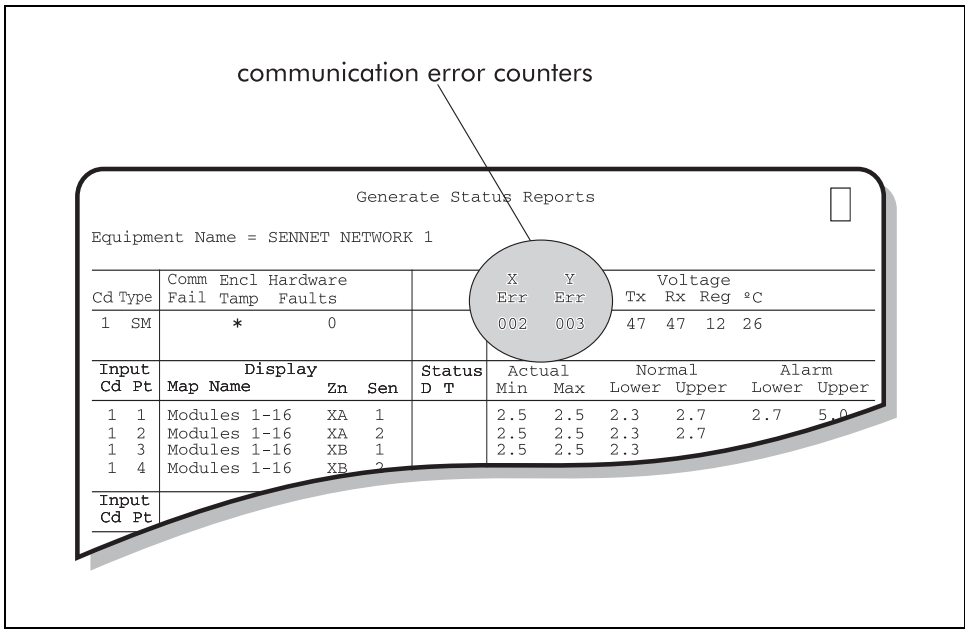
g Dual ported Network Controller

The dual ported Network Controller operates similarly to the standard, single ported Network Controller with the following additional features:



- activated second serial port provides host redundancy (requires Senstar 100 software version 5.4 or later)
- 9600 baud serial port speed

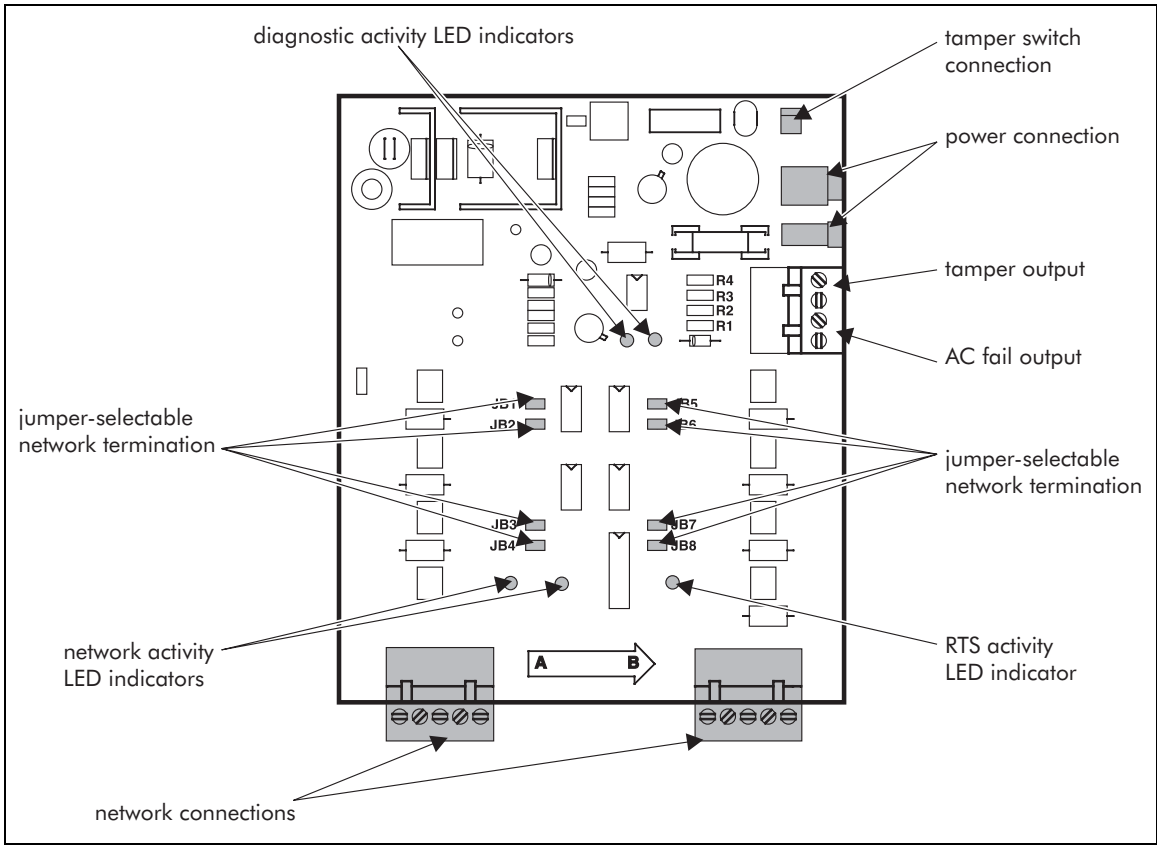
- alarm messages are sent to both hosts simultaneously
- either host may send messages to the network controller
- either host may fail without loss of alarm messages



- activated Sennet 'X' and 'Y side communication error counters (requires Senstar 100 software version 5.21 or later)

h M0KT0500 Repeater

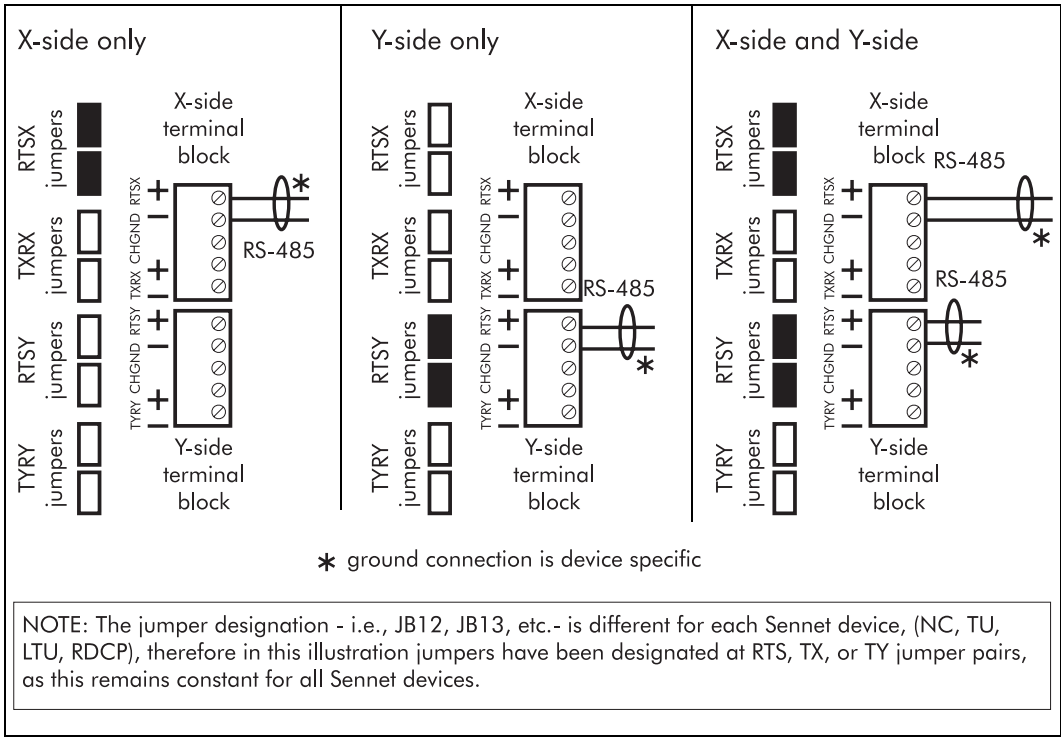
This earlier version of the Sennet repeater (M0KT0500) uses RTS lines to control the direction of the repeater. These lines are not required on the current repeaters.



This version can be used for copper wire networks only, to extend the operational distance between network devices beyond the 1.2 km (¾ mile) limit or the specified number of devices allowed, or to implement nonlinear configurations such as branches or stars.

This device is not compatible with the Perimitrax Sensor Module or the Intelli-FLEX multiplex version processor.

Jumper settings (Sennet devices)



NOTE: The jumper designation - i.e., JB12, JB13, etc.- is different for each Sennet device, (NC, TU, LTU, RDCP), therefore in this illustration jumpers have been designated at RTS, TX, or TY jumper pairs, as this remains constant for all Sennet devices.

If an old Sennet repeater is installed as part of the system:

- ❑ **and if the X-side of the network is on the physical end of the network or network segment, install shunts at the RTSX jumpers.**
- ❑ **and if the Y-side of the network is on the physical end of the network or network segment, install shunts at the RTSY jumpers.**

Always install network termination shunts in pairs.

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