Senstar 100®

Alarm display and control system

Installation Guide

J2DA0102-001, Rev A
First edition
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Senstar Stellar

Senstar-Stellar Corporation
Canada
119 John Cavanaugh Drive
Carp, Ontario
Canada K0A 1L0
Telephone: +1 (613) 839-5572
Fax: +1 (613) 839-5830

Website: www.senstarstellar.com
Email: info@senstarstellar.com
See back cover for regional offices.

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Approvals - standard Transponder Unit, repeaters and Network Controller.

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

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.

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The use of shielded cables is required for compliance.

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 the equipment 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

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Canada No.: 1332185, 2202117, 2204485

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How to use this guide

The Senstar 100 Installation Guide provides step-by-step instructions on installing the Senstar 100 alarm display and control system hardware and software. Read these procedures carefully to ensure that the system is set up correctly.

Who should read this guide

The Installation Guide is included when you purchase a Senstar 100 alarm display and control system. You should read this guide if you are responsible for:

- determining the number and kinds of adapter cards to purchase for the Senstar 100 system
- installing the adapter cards in the computer
- installing and/or upgrading Senstar 100 software
- setting up the Senstar 100 system

The installation procedures in this guide assume that the installer is familiar with configuring computers (hardware and software).

Abbreviations

The following abbreviations are used throughout this guide:

AC	alternating current	N.O.	normally open
BIOS	basic input output system	O/P	output
CU	control unit (Senstar 100 computer)	OS	operating system
DC	direct current	PALS	portable alarm locator system
ESD	electrostatic discharge	PCI	peripheral component interconnect
I-FLEX	Intelli-FLEX	PPA	personal portable alarm
I/O	input/output	RDCP	remote display and control panel
I/P	input	SM	sensor module - Perimitrax
LCD	liquid crystal display	TU	transponder unit - Sennet
LED	light emitting diode	UPS	uninterruptible power supply
LTU	large transponder unit - Sennet	VDU	video display unit
MFC	Multifunction card	VGA	video graphics adapter
NC	network controller - Sennet	VS	video switcher
N.C.	normally closed	VTICS	voice type inmate cell call system

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1 Introducing Senstar 100

Overview of Senstar 100

Senstar 100 is an alarm display and control security system that lets you monitor your site from a personal computer. With Senstar 100, you display your site information on color-coded site-maps and control the system through the use of menus and function keys. You are guided logically through system operation by a series of menus and prompts. Senstar 100 includes help screens at every level.

Senstar 100 system capacity

Each Senstar 100 system supports up to:

- 128 color graphic site-maps
- 36 primary devices (34 primary security devices, one video switcher, and one redundant CU)

Each Senstar 100 CU supports up to 8 secondary devices (computer peripherals). A networked Senstar 100 system can include up to 16 CUs. You can easily expand your Senstar 100 system to meet growing security requirements by adding hardware and database components. *Figure 1-1, page 1-2* is a block diagram of a Senstar 100 system. The standard equipment and optional equipment are further outlined in this section.

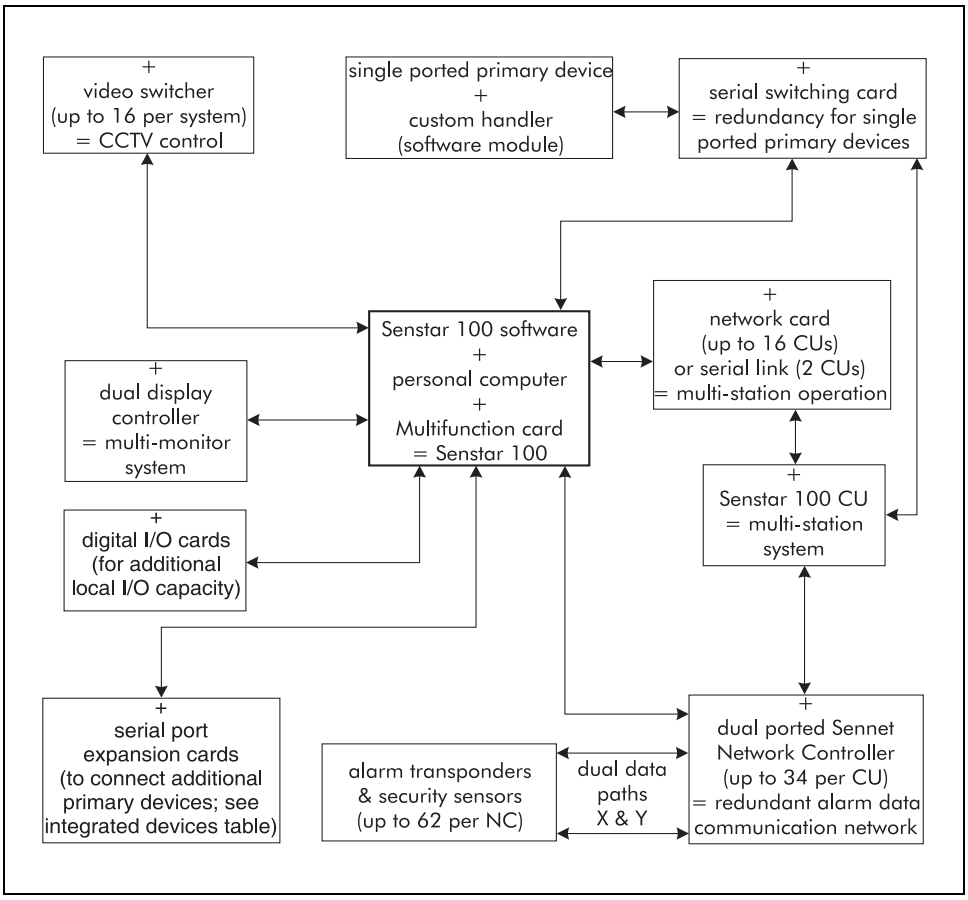


Figure 1-1 Senstar 100 block diagram

Senstar 100 components

A Senstar 100 system includes:

- A PC-type computer
- Senstar 100 Multifunction board with two serial ports, watchdog timer, audio tone, alarm, and ready signal O/Ps
- QNX4 operating system software
- Senstar 100 application software
- Senstar 100 site creation software (to create and edit site databases)
- Senstar 100 sample site data
- Senstar 100 sample site creation data
- *Senstar 100 Installation Guide* (DA-030202)
- *Senstar 100 Operator's Guide* (DA-030203)
- *Senstar 100 Supervisor's Guide* (DA-030204)
- *Senstar 100 Maintenance Guide* (DA-030205)
- *Senstar 100 Site Creation Installation Guide* (DA-030207)

Typical hardware

In order to run Senstar 100, you require a minimum Pentium 233 MHz computer.

A typical Senstar 100 system (at time of publishing) features a PC-type computer with:

- Pentium IV 2.0 GHz processor
- 256 Mb RAM
- 1.44 Mb floppy disk drive
- 40 Gb hard disk drive
- AT enhanced keyboard
- color monitor

Figure 1-2 Senstar 100 CU

Optional hardware

You can add the following hardware options to the computer:

- touchscreen monitor
- PS/2 mouse - to back up or replace touchscreen control (requires PS/2 port)
- dual-port video adapter card - for multiple monitor operation

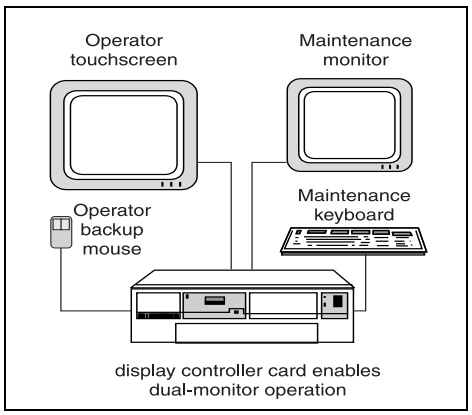


Figure 1-3 Dual-monitor CU

- serial port adapter cards - for additional serial ports

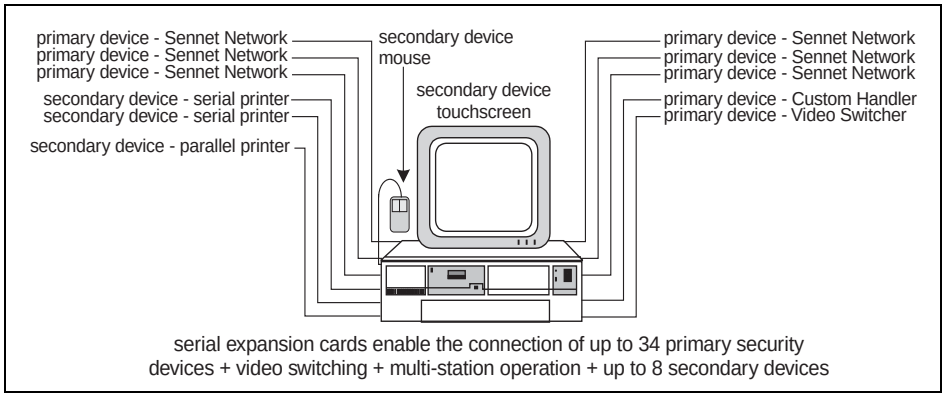


Figure 1-4 Additional serial ports

- serial switching cards - to provide redundant operation for single-ported primary devices (refer to Appendix B for additional information)

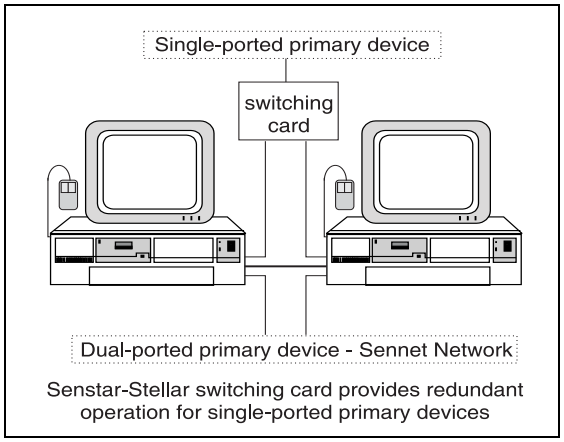


Figure 1-5 Switching card for redundant operation

- parallel or serial printer
- second parallel or serial printer - for dedicated report printing
- one or two auxiliary printers - for system activity event logging
- network interface card, such as 10/100 Base T Ethernet card or 100 Base FX fiber optic card - to provide high-speed communication between multiple CUs

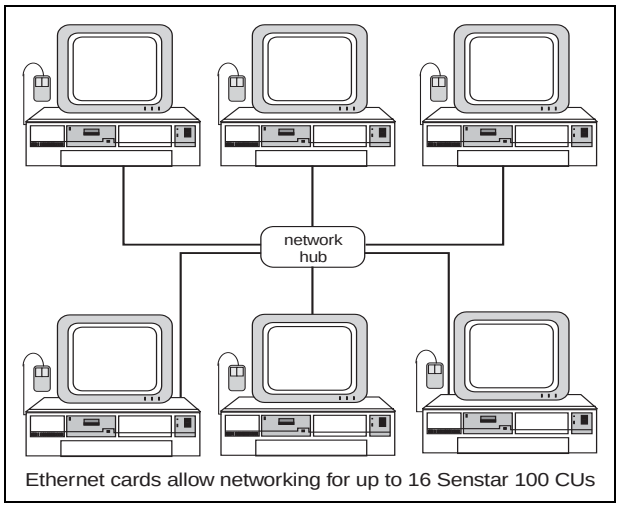


Figure 1-6 Senstar-100 network configuration

- **digital I/O cards - to control local devices**

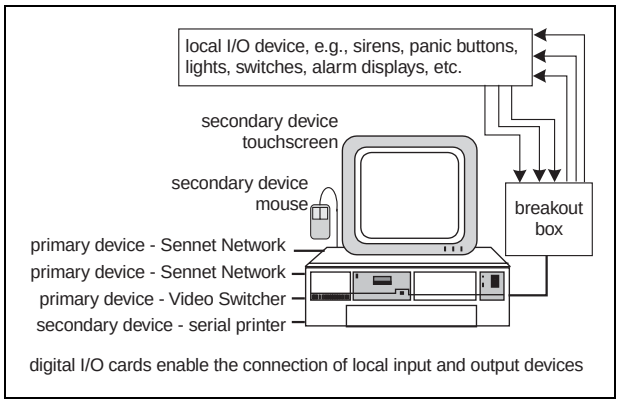


Figure 1-7 Digital I/O cards

Integrated devices

The following three tables list the hardware devices that are currently supported by standard protocols, or through custom handlers/drivers. Contact Senstar-Stellar for information about hardware that is not included in these tables.

Hardware Type	Manufacturer	Model #	Comments
CCTV Video Switcher	American Dynamics	MSS	Matrix Switching System includes: AD 1024 series AD 1650B AD 1906CPU AD 2052WIP AD 2150
	Broadcast Video		Obsolete product
	COHU	MPC 104	
	Panasonic	WJ 550	Also referred to as Panasonic 500
		WJ 410	Freeze-frame quad
	Pelco	9500	
		9750/9760	
	Philips (Bosch)	Allegiant 8300-8800	Also known as Burle Allegiant
	RCA	1600/1700	Obsolete product
Sennet® Devices	Senstar-Stellar	NC	Network Controller
		TU	Transponder Unit
		LTU	Large Transponder Unit
		RDCP	Remote Display & Control Panel
		SM	Perimitrax Sensor Module
		I-FLEX	Intelli-FLEX processor
Sentrax® Devices	Senstar-Stellar	TM	Transceiver Module (obsolete product)
		CM	Control Module (obsolete product)
		IU	Interface Unit (obsolete product)
Video Motion Detector	Senstar-Stellar	DAVID® 300	Obsolete product
OEM Sensors	ECSI	FOIDS	Fence Sensor (via serial data link)
	Fiber Sensys	FCA-185 FCA-184 FCA-182	Fence Sensor (via serial data link)
Personal Portable Alarm (PPA)	Digilarm		Via Starcom protocol
	Perimeter Products	Senstar-Stellar Flare (ID+location)	Via Starcom protocol
		Senstar-Stellar Flash (ID only)	Via Starcom protocol
Cell Call System	Inter-City Video		Via Starcom protocol
	Marcomm		Via Starcom protocol
Weather Logger	Contact Senstar-Stellar for details		Real time weather-logging and weather/alarm correlation

Table 1-1 Senstar 100 supported hardware

Hardware Type	Manufacturer	Model #	Comments
Cell Call	MicroComm	DXI- Intercom System	String Parser to CH Inputs for Cell Call Alarms Interface
	Senstar-Stellar	Output Activation Filter Driver	Two-Wire Cell Call
		VTICS	Voice Type Inmate Cell Call System (Sennet-based)
Cell Call/Door Control	Simplex		Printer String Parser Type Interface for Data Logging
Door Control/ Fire Alarm	Edwards		Text String Lookup Table Parser for Alarms Interface
Fire Alarm	Secutron		Parallel Printer String Parser Alarm Interface
	Senetor		Printer String Parser Alarm Interface
	Ziton	ZCP2	Master and Distributed Field Panels Alarm Interface
Fire/Riot Alarm	Siemens-Cerberus	MXL	Printer String Parser Type Interface for Data Logging
Alarm Data Panels	Aritech System		Printer String Parser Alarm Interface
	Scope	Cabaret	Printer String Parser Alarm Interface
	SUR-CARD	Single Line Receiver	Distributed Alarm Panel Interface
	York Building Management System		Printer String Parser Alarm Interface
Video Switching/ Control	NSSC	Digital Video Capture System	Alarm and Current Zone Output Messages
	Siemens	MATRIX	Specific Serial Output Messages
		Video Cross Bar	Specific Serial Output Messages
	ULTRAK	MAX-1000	User Definable Serial Output Messages
Personal Portable Alarms	DigiLARM	D400/D402	Obsolete product
			StarCom without Audit Interface (obsolete product)
Personal Alarm Locator System	Perimeter Products	Senstar-Stellar PALS	Combined PPA Number and Locator System
Fence Sensors	Perimeter Products	Comgard MX-1000	FPS2-2 Sensor Integration
Mimic Panel	WSA		Output Messages Drive Mimic Panel

Table 1-2 Senstar 100 supported custom equipment

Hardware Type	Manufacturer	Model #	Comments
Local Printer	Epson	9/24 pin	Or equivalent
Color Printer	Epson	Inkjet	Or equivalent
Mouse	Any Vendor Logitech	PS/2 comp.	Not USB
		PS/2 & serial	C7 standard (obsolete)
	Microsoft	PS/2 & serial	Not USB
Keyboard	Any vendor		Not USB
Monitor	Any vendor	640 x 480	Primary
			Secondary
			Tertiary
Touchscreen	ELO TouchSystems	Smartset	
		Accutouch	Obsolete product
		Intellitouch	Obsolete product
Display Controller	Colorgraphic	Predator LT2 & PRO	Dual VGA (PCI)
		Warp	Obsolete product
	STB Systems	MVP-2	Obsolete product
		MVP-2x	Obsolete product
Multifunction Card	Senstar-Stellar	PCI Version	
Multifunction Card	Senstar-Stellar	ISA version	Obsolete product
Direct I/O (Isolated Input/ Relay Output)	ICS Advent	IO1-16P	16 in, 16 out (PCI) and (ISA)
		IB1-16P	16 in (PCI) and (ISA)
		RB1-16P	16 relay out (PCI) and (ISA)
		RB1-32P	32 relay out (PCI) and (ISA)
Serial Expansion	Comtrol	Smart Hostess 8	ISA (obsolete product)
		Hostess 4	ISA (obsolete product)
		Hostess i8	ISA (obsolete product)
		Hostess i16	ISA (obsolete product)
		RocketPort 8	PCI
		RocketPort 16	PCI
	Connect Tech	Dflex 4	ISA
		Dflex 8	ISA
		Blue Heat 4 & 8	PCI
Network Interface Cards	Corman	ARCNET™	Obsolete product
		100 Base FX Fiber ARCNET™	Fiber optic
	Any Vendor supported by QNX	10/100 Base T	Ethernet

Table 1-3 Senstar 100 supported computer hardware and peripherals

Serial and parallel port capacity

The Senstar 100 system is expandable to a maximum of 36 serial ports, to allow you to connect devices to the system. Most primary devices are connected to the Senstar CU via serial cable. The exception is a multi-station system which uses standard off-the-shelf Ethernet networking components.

There is a maximum of 36 primary devices, and they are designated as follows:

- 34 ports are allocated to primary security devices.
- One port is reserved for video switching (up to 16 VS per database, one serial port, and one primary device designation in the site database are required for each VS).
- One port is reserved for multi-station operation (two CUs can be connected via serial cable; two to 16 CUs can be connected via Ethernet network). After connecting the first CU, each additional CU requires one primary device designation in the site database. (For example, in a system with four Senstar 100 CUs that are connected via Ethernet and one VS, there is room for 32 security devices.)

Also, each CU allows the connection of up to eight secondary devices (serial touchscreen, serial or PS/2 mouse, modem, serial and parallel printers, and event input).

Ports provided

The Multifunction card (MFC) provides two serial ports. The computer motherboard usually provides two serial ports (COM1 and COM2) for the connection of secondary devices, and one parallel port for a printer interface.

The PCI version MFC serial ports cannot be used to communicate with secondary devices.

Additional serial ports

If your total serial port requirement exceeds the standard number of ports available, you can add one or more serial expansion cards to the system, for an additional 4, 8, or 16 serial ports per card. Refer to *Table 1-3, page 1-9* for a list of supported expansion cards.

2 Installing the cards

Warning

Service should be performed only by qualified personnel. Turn OFF the power to the computer and any peripheral components, and disconnect the power cords from the outlets BEFORE removing the cover and working on the inside of the computer.

Caution

The following procedures require handling static sensitive components. To prevent damage from static electricity, always follow proper ESD procedures when handling adapter cards and when working inside the computer.

Refer to the manufacturers' documentation for detailed instructions on installing and configuring adapter cards.

Overview of the cards

Adapter cards installation location

Adapter cards are installed in the computer. Each card fits into either a PCI or an ISA expansion slot on the motherboard. The PCI slot is a 32-bit slot that provides the wide bandwidth and high speed required by most modern computer accessories. The ISA slot is a 16-bit expansion slot. Few modern computers include ISA expansion slots; however, Senstar 100 still supports ISA slot adapters for use in older computer models.

Figure 2-1 Motherboard expansion slots illustrates a typical arrangement of expansion slots on a PC motherboard. Consult the computer motherboard manual for detailed information.

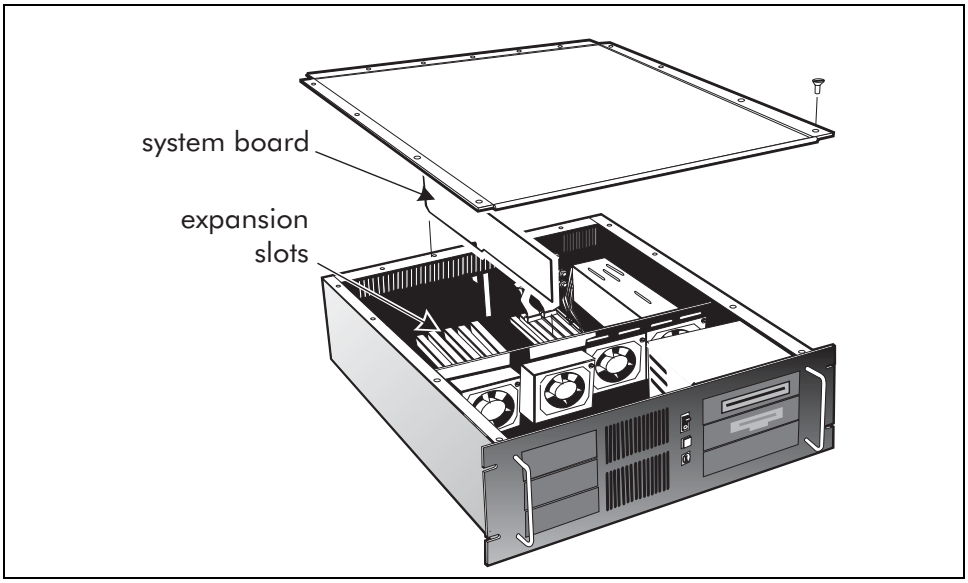


Figure 2-1 Motherboard expansion slots

PCI expansion slots

The PCI slot provides a 32-bit connection to a 33 MHz data bus. The PCI slot connectors are slightly shorter than the ISA slot connectors. Generally, you can use any available PCI slot for a PCI adapter card. Make note of the slot in which you place each card, for external identification.

ISA expansion slots

There may be several dual-connector 16-bit ISA expansion slots on the motherboard. The 16-bit ISA slot is a combination of a 62-pin edge connector and a 36-pin edge connector.

The dual-connector ISA slots are intended for dual-connector adapter cards that were designed for IBM AT-compatibles. You can also install ISA adapters that have a single 62-pin connector (8-bit cards) in the dual-connector ISA slot.

You can use any available ISA slot for an ISA adapter card. Make note of the slot in which you place each card, for external identification.

Installing adapter cards

Before installing any adapter cards, read the appropriate section in this manual and in the manufacturers' documentation.

1. If you are installing a combination of PCI slot adapter cards and ISA slot adapter cards in a Senstar 100 CU, install the PCI adapters first, and then power up the computer.
2. Review the PCI device listing that is presented by the BIOS during boot-up, or use the QNX **`show_pci`** command to determine the IRQs that were automatically assigned to each PCI adapter by the system BIOS.
3. Make a note of the PCI adapters' IRQs that are used.
4. Follow the manufacturers' directions to set the IRQs on the ISA slot adapters to unused IRQs. You may need to designate in the computer's BIOS that the ISA card IRQs are used by ISA.
5. Install the ISA adapters, then power up the system and verify the IRQ settings (no conflicts).

Caution

Follow proper ESD procedures when working inside the computer or handling adapter cards.

How to install an adapter card

1. Turn OFF the computer and disconnect the power cord.
2. Locate an unoccupied expansion slot and remove the slot cover. Retain the slot cover screw.
3. Hold the card by the top corners and slide it firmly into the expansion slot. Do not force the card, and ensure that it is properly seated in the slot.
4. Use the slot cover screw to secure the card's retaining bracket to the computer chassis.
5. Replace the cover.

Required and optional cards

The following table outlines the required and optional adapter cards for a Senstar 100 system. The table includes the purpose of the cards and where they are installed in the computer.

Card	Required/ Optional	Purpose	Installed
Multifunction (MFC)	Required	Provides watchdog sanity timer to automatically reboot the Senstar 100 system if a software or hardware failure is detected Two open collector active low outputs along with power and ground connections via an RJ11 jack for external alarm reporting or to drive an automatic serial switching chassis Four dry contact relay outputs for the activation and control of local devices A 3.5 mm mono speaker plug for external alarm and touch input audio Two EIA-232 serial ports (DB9 male)	Can be installed in any PCI slot in the computer Older version MFCs were ISA.
Video	Required	Supports a color monitor	Typically, the video card is integrated with the motherboard Can be installed in any PCI slot in the computer
Serial port expansion card(s)	Optional	Provides four, eight, or 16 serial ports per card	Can be installed in any PCI slot in the computer ISA slot expansion cards are available for older computer models
Dual-port video adapter	Optional	Supports multiple color monitors	Can be installed in any PCI slot in the computer
Ethernet card	Optional	Supports network communications for redundant or multi-station operation	Can be installed in any PCI slot in the computer May be integrated with the motherboard
Digital I/O cards	Optional	Provide local relay outputs and optically isolated inputs	Can be installed in any PCI slot in the computer ISA slot I/O cards are available for older computer models

Table 2-1: Senstar 100 required and optional cards

The Senstar 100 system supports ISA slot adapter cards in older computer models.

The Multifunction card

The Senstar 100 Multifunction card (MFC) can be installed in any PCI slot on the motherboard. It includes an interface card that provides access to the second serial port, and to four dry contact relay outputs (O/Ps). *Figure 2-2 Multifunction Card* illustrates the MFC, and *Figure 2-3 Interface card* illustrates the interface card. The interface card connects to the MFC via two 20 cm (8 in.) ribbon cables and requires a vacant rear panel slot (but no motherboard slot) for installation. The MFC provides the Senstar 100 system with four distinct functions:

- watchdog (sanity) timer
- serial interfaces (two EIA-232 ports)
- two external control O/Ps
- four dry contact relay O/Ps

Features

The MFC includes the following:

- watchdog (sanity) timer circuitry, to automatically reboot the Senstar 100 system via the power reset harness if a failure occurs
- two fully populated EIA-232 serial communication ports with DB-9 male connectors, for the connection of primary devices
- two open collector active low alarm O/Ps via an RJ11 4-pin modular telephone plug (J9), which includes power (pin 1) and ground (pin 4) connections for external alarm reporting, or to drive an automatic serial switching chassis
    - pin 2 provides Senstar 100 display alarm annunciation (100 ms pulsed O/P for remote or alternate audio alert)
    - pin 3 provides the Senstar 100 ready signal (O/P is low when the Senstar 100 operates normally; otherwise, the O/P goes high)
- a 3.5 mm mono speaker plug (J8), to connect an amplified PC-type speaker for external alarm and touch input reporting (450 Hz and 1850 Hz audio tones)
- four dry contact relay outputs (normally open [N.O.] and normally closed [N.C.]), to enable control of other devices locally (no surge protection) (N.O./N.C. form C relay O/Ps 30 V, 1 A max.)
- no interrupt jumpers or address switch settings required - the PCI version Multifunction card address and interrupts are assigned automatically by the computer BIOS

- simple connections for power reset harness and interconnecting ribbon cables

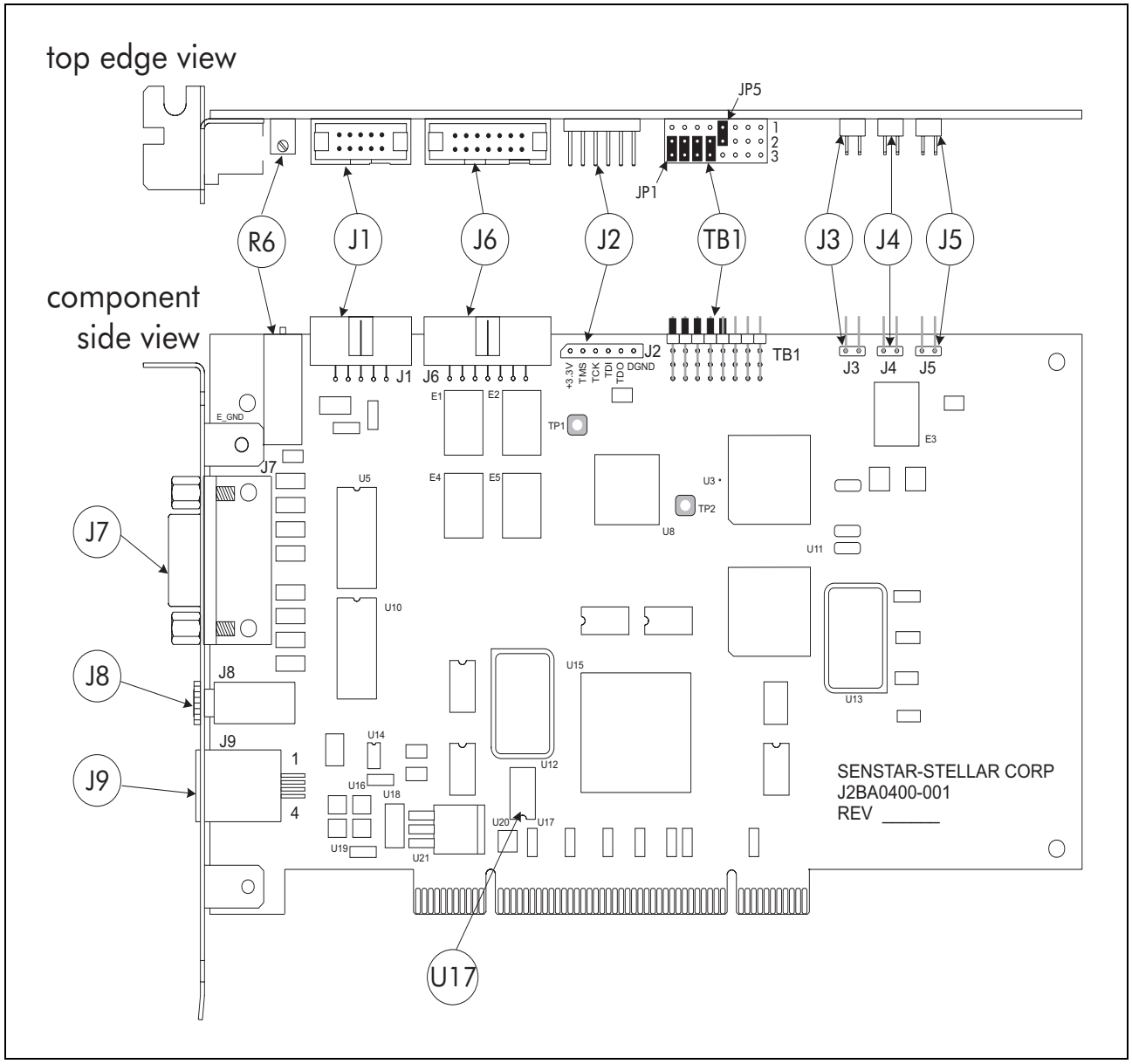


Figure 2-2 Multifunction Card

The following table provides descriptions of the Multifunction card features.

Item	Description	Item	Description
J1	10-pin serial port 2 header - connection to J3 on the interface board	J7	EIA-232 serial port 1 - DB9 male, fully populated
J2, J3	Not used	J8	8Ω 3.5 mm mono speaker plug - audio alarm O/P
J4	N.O. relay output connects to the reset input on the motherboard	J9	RJ11 4-pin modular plug: Pin 1 - +12 VDC, 250 mA (max.) O/P Pin 2 - 100 ms pulsed Senstar 100 alarm O/P to external equipment Pin 3 - Senstar 100 ready signal (sanity timer) active low, goes high to indicate software failure (O/P to external equipment or serial switching chassis) Pin 4 - ground connection
J5	PC reset switch input connects to the PC reset switch on the PC front panel		
J6	14-pin relay output header - connection to J2 on the interface board		
TB1	controls the active state (N.O. and N.C) of the O/P relays Default settings: relay O/P 1 control - JP1 on pins 2 & 3 relay O/P 2 control - JP2 on pins 2 & 3 relay O/P 3 control - JP3 on pins 2 & 3 relay O/P 4 control - JP4 on pins 2 & 3 fail alarm enable - JP5 on pins 1 & 2 (fail alarm disable - JP5 on pins 2 & 3) JP6, JP7, JP8 - not used	TB1	Relay configuration setup Fail-safe setting (database change): Output setting in Site creation - Normally ON Shunts installed - pins 2 & 3 Relays in alarm state during power OFF and reboot Contact Non-alarm state Alarm state N.C. Open Closed N.O. Closed Open
TB1	Relay configuration setup Default setting: Output setting in Site creation - Normally OFF Shunts installed - pins 2 & 3 Relays in non-alarm state during power OFF and reboot Contact Non-alarm state Alarm state N.C. Closed Open N.O. Open Closed	TB1	Relay configuration setup Fail-safe setting (hardware change): Output setting in Site creation - Normally OFF Shunts installed - pins 1 & 2 Relays in alarm state during power OFF Contact Non-alarm state Alarm state N.C. Open Closed N.O. Closed Open
		U17	Configuration EEPROM
		R6	Onboard volume adjustment for audio alarm O/P (clockwise increases volume)

Table 2-2: Multifunction card features

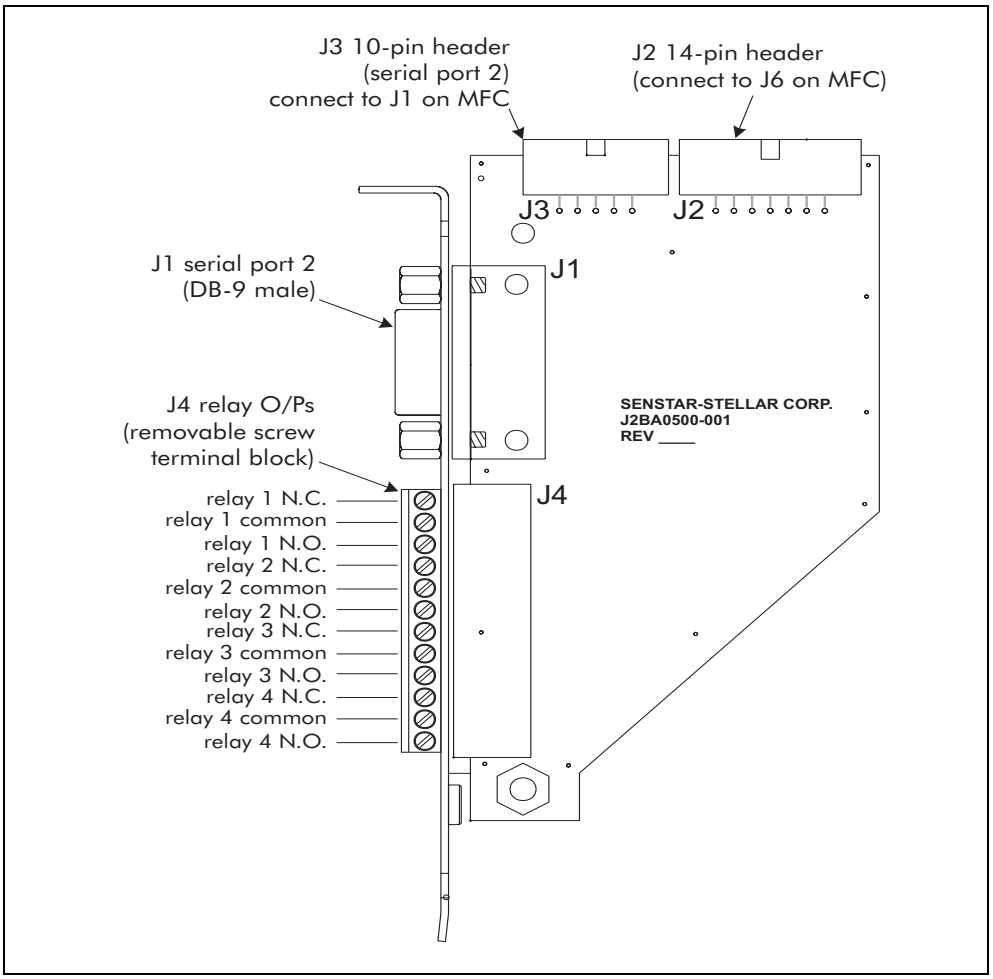


Figure 2-3 Interface card

Installing the MFC

Installation requirements

- a vacant PCI slot for the MFC and a second unoccupied rear panel slot for the interface card (no motherboard slot required for the interface card)
- Senstar 100 software package

Caution

The Multifunction card includes static sensitive components. Follow proper ESD procedures when handling the card.

Connecting the ribbon cables

Before installing the MFC in the PC, connect the 10-pin and 14-pin ribbon cables between the MFC and the interface card.

1. Connect the 10-conductor ribbon cable to J1 on the MFC and J3 on the interface card.
2. Connect the 14-conductor ribbon cable to J6 on the MFC and J2 on the interface card.

Installing the MFC and the interface card

1. Remove the cover from the PC.
2. Locate a vacant PCI slot, and remove the rear panel cover.

   Retain the rear panel cover screw.
3. Carefully align the MFC in the slot, and press it firmly into place.
4. Use the slot panel cover screw to secure the card's retaining bracket to the PC chassis.
5. Locate and remove an unoccupied rear panel slot cover.

   Retain the rear panel cover screw.
6. Use the slot panel cover screw to secure the interface card to the PC chassis.

> *The interface card does not require a motherboard slot, but you must select a rear panel slot that is within 20 cm (8 in.) of the MFC card, to allow the connection of the two cards.*

Installing the reset harness

The power reset harness connects the MFC to the computer's reset circuitry. It enables the sanity timer to automatically reboot the Senstar 100 computer when the system detects a failure, in the same manner as pressing the reset button.

After you install the MFC on the motherboard, install the reset harness:

1. Connect the 2-wire reset harness to J4 on the MFC and to the reset input on the computer motherboard (refer to the computer motherboard manual for additional information).
2. Connect the reset switch on the PC cover to connector J5 on the MFC.
3. Replace the cover on the PC.

Additional information

The two MFC serial port connections are 9-pin male DB9 connectors. Port 1 is on the MFC (J7) and port 2 is on the interface card (J1). You cannot use the PCI version MFC serial ports to communicate with secondary devices.

The relay O/Ps connect to a removable screw terminal block (J4) on the interface card. To view the connections, refer to *Figure 2-3*.

External alarm reporting

The MFC has two external alarm reporting connection options (*see Figure 2-4*). Alarms are reported when:

- the sanity timer fails (active low; goes high to indicate failure)
- the Senstar 100 software fails (active low)
- Senstar 100 detects an alarm condition (100 ms pulsed O/P)

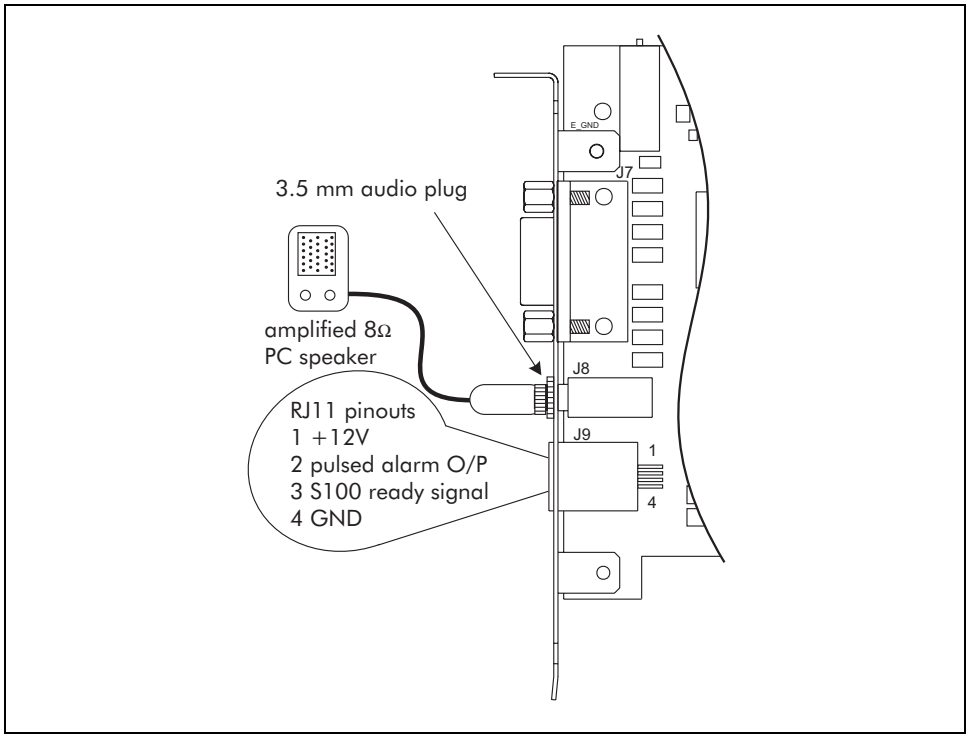


Figure 2-4 Multifunction card external alarm O/P

The MFC is designed to drive an external 8 Ω speaker or PC-type amplified speaker. The speaker connects to J8, a standard 3.5 mm mono plug. Using a PC-type amplified speaker allows you to easily adjust the speaker's volume.

You can also make an external alarm reporting connection via J9, a modular 4-pin RJ11 connector. J9 is generally used to drive a Klaxon-type alarm, or a light panel. There are two external alarm outputs on J9. Both are open collector, active low signals. Pin 3 is the Senstar 100 ready signal. When the sanity timer is running, the pin is low. Pin 3 goes high when the sanity timer times out. Pin 2 provides a 100 ms pulsed O/P to annunciate an alarm detected by Senstar 100. Pin 1 provides +12 V @ 250 mA (maximum) and pin 4 is a ground connection.

For redundant CU operation, the Senstar 100 Ready signal (pin 3, J9 on the MFC) can drive a serial switching control card in a Senstar-Stellar serial switching chassis. For more information, refer to *Appendix b* .

The video card

Computers often include an integrated VGA card as part of the motherboard. For single monitor operation, if your computer does not contain a video card, you can install a VGA card. Contact Senstar-Stellar Customer Service for additional information.

Installing a dual-port VGA card

For multiple monitor operation, you can install one or two dual-port video adapter cards in the computer. The dual-port VGA card requires a single slot per card. If the computer already has a VGA card, and you are installing a dual-port adapter, remove the VGA card before installing the adapter card. For complete information on installing the adapter, consult the manufacturer's documentation. *Figure 2-5* illustrates a dual-port video adapter card.

The dual-port VGA adapter card expands your Senstar 100 to a dual or triple monitor CU. If your motherboard includes onboard VGA, you may have to disable the onboard VGA or select the multi-port adapter card as the prime video card in the computer's BIOS.

For three monitor operation, you require two dual-port VGA cards. The computer's BIOS allocates resources for the dual-port video adapters. If two dual-port adapters are installed in your PC, the BIOS determines the primary and secondary card configuration. Therefore, the VGA ports are arbitrarily assigned. Trial connections may be required to determine the monitor/VGA port configuration.

Installation options

You can install the dual-port video adapter cards using one of the two following options:

- one dual-port video adapter, designated to the primary, secondary and maintenance monitors

OR

- two dual-port video adapters; the first card is designated to the primary and secondary monitors, and the second card is designated to the maintenance monitor

Caution

Dual-port video adapter cards include static sensitive components. Follow proper ESD procedures when handling the cards.

Installing the dual-port VGA card

1. Locate a vacant PCI slot and remove the rear panel cover. Retain the rear panel cover screw.
2. Carefully align the dual-port adapter card in the slot, and press it firmly into place.
3. Use the slot panel cover screw to secure the card's retaining bracket to the PC chassis.

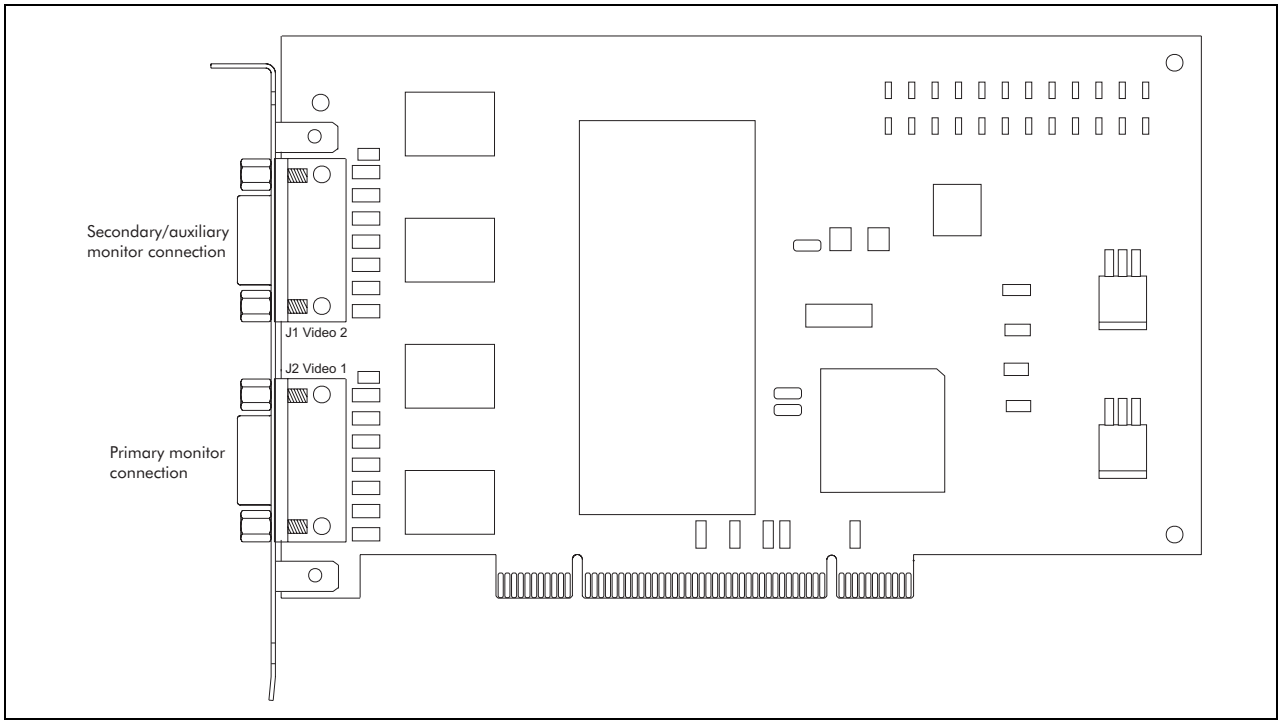


Figure 2-5 Dual-port video adapter card

Serial port expansion adapters

For complete information on installing the adapters, consult the manufacturer's documentation for your computer and the adapter.

There are three sizes of serial expansion adapter cards available for adding serial ports to your Senstar 100:

- 4-port - Blue Heat 4-port expansion adapter
- 8-port - Blue Heat 8-port, and RocketPort 8-port expansion adapters
- 16-port - RocketPort 16-port expansion adapter

The Senstar 100 system supports ISA slot serial expansion adapters for use in older computers. For a list of supported adapters, refer to *Table 1-3, page 1-9*.

The Blue Heat 4 or 8-port serial adapter

For complete information on installing the adapter, consult the manufacturer's documentation for your computer and the adapter.

You can install the Connect Tech Inc. Blue Heat 4 or 8-port serial adapter in any vacant PCI slot in the computer. The cards contain one or two XR16C654 quad UARTs. *Figure 2-6* illustrates the Blue Heat 8-port serial adapter.

Features

The Blue Heat serial adapters have:

- four or eight asynchronous serial ports
- EIA-232 interface
- PCI 2.1 compliant plug and play adapter - no jumpers or DIP switches to set
- independent baud rate selection for each port
- independent data bit, stop bit, and parity selection for each port
- up to 32-ports per system using any combination of Blue Heat cards
- XR16C654 UARTs control each port - 64 bytes of Tx and Rx FIFO buffers and automatic flow control
- DB9 male connectors (each labeled with port number)
- rack-mountable 8-connector DB25 female I/O box (optional for 8-port card)
- shielded cables
- multi-strike surge protection - all signals, all ports
- full modem control signals on all ports
- each port individually software controllable

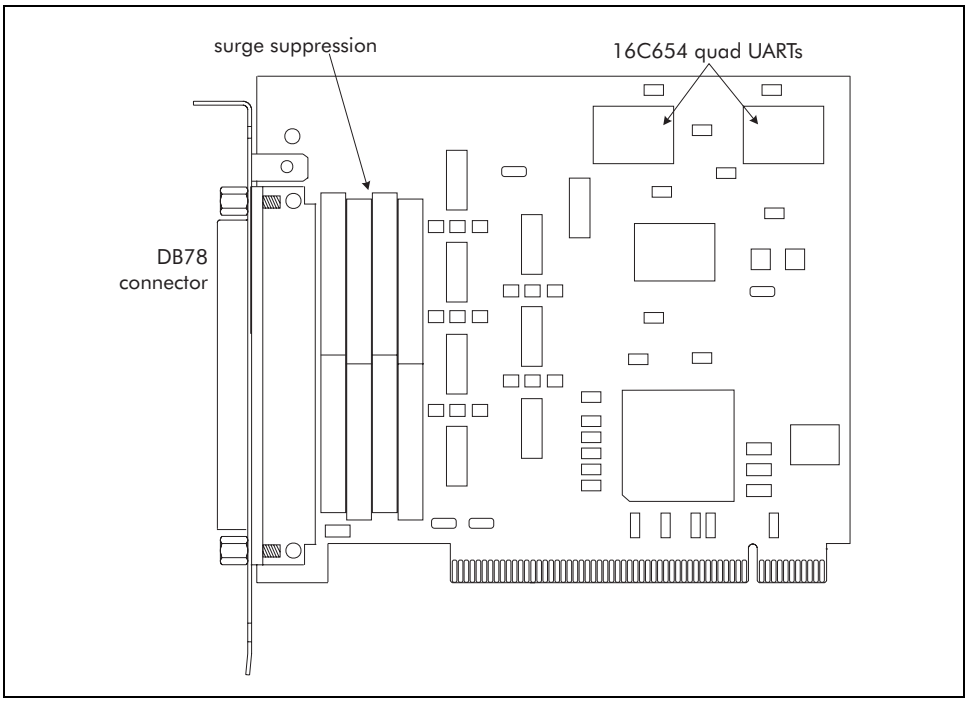


Figure 2-6 Blue Heat 8-port serial adapter

Caution

The Blue Heat serial port expansion cards include static sensitive components. Follow proper ESD procedures when handling the cards.

Installing the Blue Heat serial adapter

1. Remove the cover from the PC.
2. Locate a vacant PCI slot and remove the rear panel cover. Retain the rear panel cover screw.
3. Carefully align the card in the slot, and press it firmly into place.
4. Use the slot panel cover screw to secure the card's retaining bracket to the PC chassis.

The RocketPort 8 or 16-port serial adapters

For complete information on installing the adapter, consult the manufacturer's documentation for your computer and the adapter.

The Comtrol RocketPort series serial adapters are intelligent serial communications controllers that you can install in any vacant PCI slot in the computer. You can install any combination of two RocketPort series adapter cards in a Senstar 100, to provide up to 32 serial communication ports. *Figure 2-7* illustrates the RocketPort 16-port serial adapter.

Features

The RocketPort serial adapters have:

- EIA-232 interface (eight or 16 ports)
- 36 MHz ASIC processor (one per eight ports) minimizes the load on the computer's CPU
- PCI 2.1 compliant plug and play adapter - no jumpers or DIP switches to set
- independent baud rate selection for each port
- independent data bit, stop bit, and parity selection for each port
- up to 32 ports per system using two RocketPort 16-port cards
- high capacity Tx and Rx FIFO buffers and automatic flow control
- 8-port or 16-port interface boxes with DB25 female connectors
- shielded cables
- each port individually software controllable

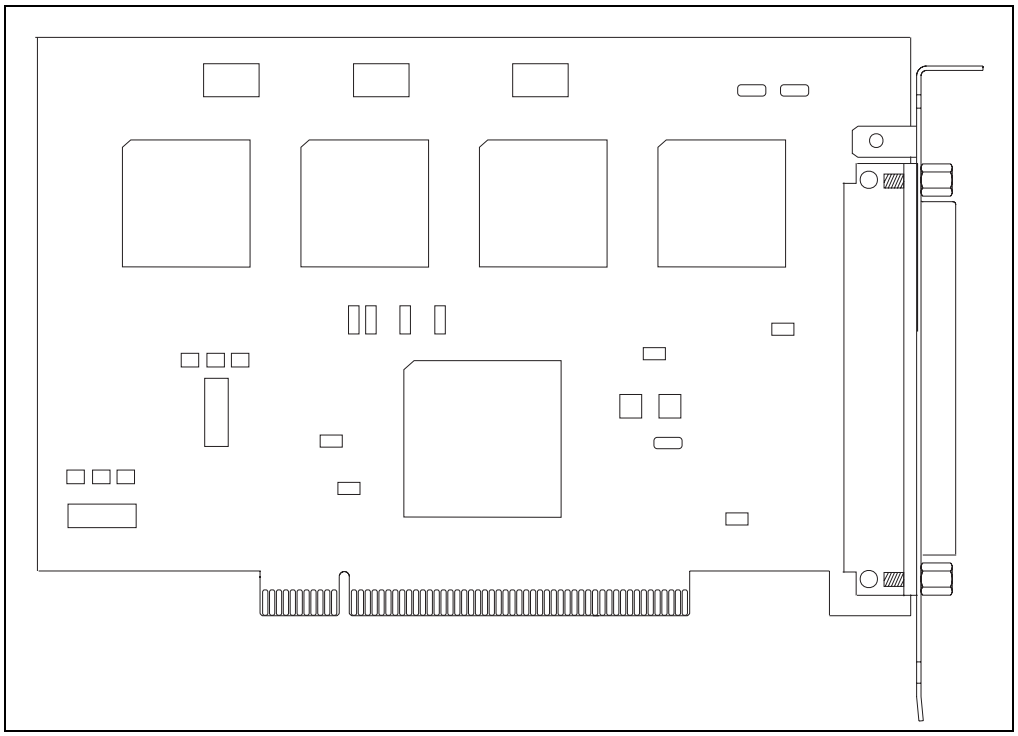


Figure 2-7 RocketPort 16-multiport serial card

Caution

The RocketPort serial port expansion cards include static sensitive components. Follow proper ESD procedures when handling the cards.

Installing the RocketPort serial adapter

Installing the adapter

1. Remove the cover from the PC.
2. Locate a vacant PCI slot, and remove the rear panel cover. Retain the rear panel cover screw.
3. Carefully align the card in the slot, and press it firmly into place.
4. Use the slot panel cover screw to secure the card's retaining bracket to the PC chassis.

Connecting the card to the interface box

1. Connect the male connector of the RocketPort cable to the card.
2. Connect the female connector of the RocketPort cable to the connector labeled **HOST** on the interface box.

The DFlex-4 or DFlex-8 port serial adapter

For complete information on installing the adapter, consult the manufacturers' documentation for your computer and the adapter.

You can install the Connect Tech Inc. DFlex-4 or DFlex-8 serial adapter in any ISA slot in the computer. The DFlex-4 adapter adds four serial ports to Senstar 100 and the DFlex-8 adapter adds eight. You can install up to two DFlex cards in a Senstar 100 CU. *Figure 2-8* illustrates the DFlex-4 serial adapter. *Figure 2-9* illustrates the DFlex-8 serial adapter.

> *If your Senstar 100 has an older version ISA MFC, make sure that the two serial ports on the MFC are set only to IRQ 7. This makes IRQ 5 available.*

Features

The DFlex-4, four port serial adapter has:

- four serial ports
- EIA-232 interface DB9 male connectors
- individually software-controlled ports, including baud rate, number of data bits, number of stop bits, and parity

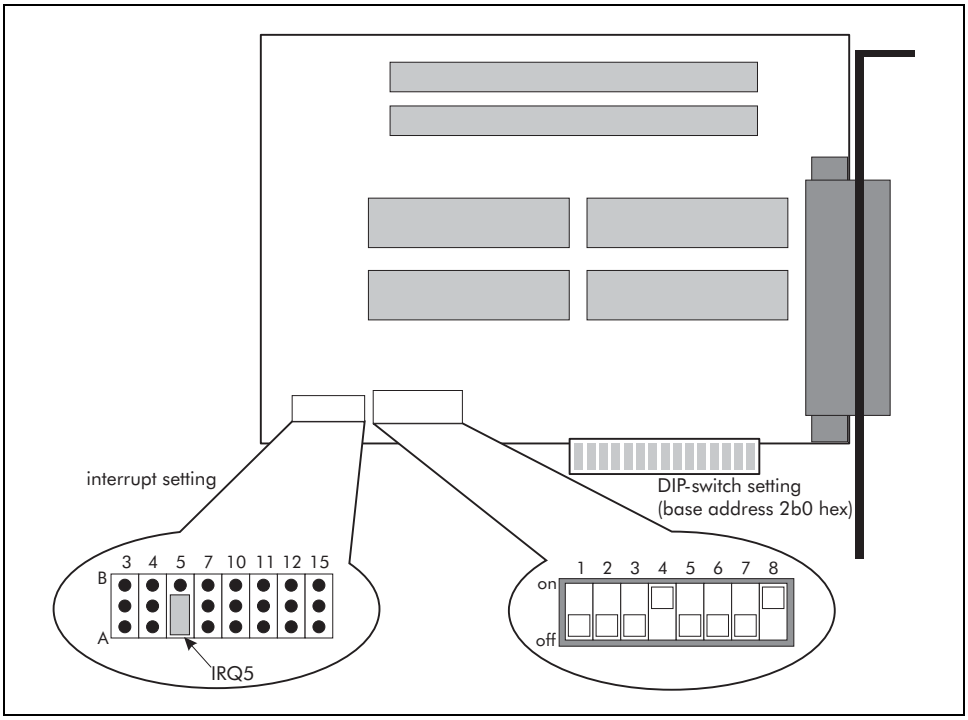


Figure 2-8 DFlex-4 Serial expansion card

The DFlex-8, eight port serial adapter has:

- eight serial ports
- EIA-232 interface DB25 female connectors
- individually software-controlled ports, including baud rate, number of data bits, number of stop bits, and parity

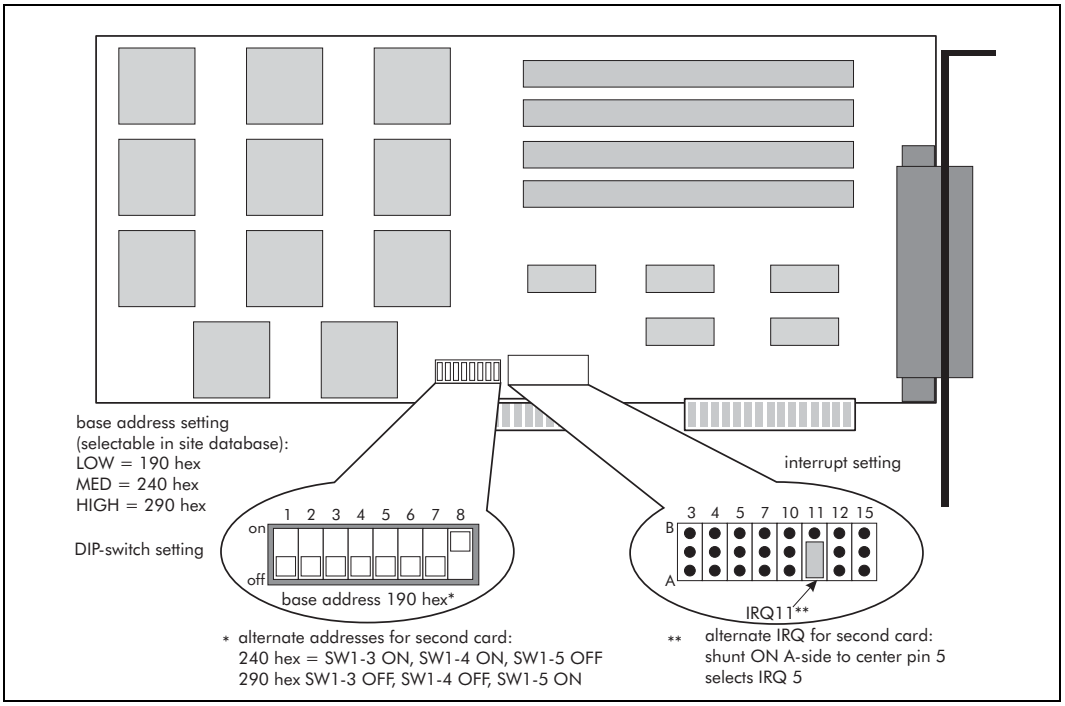


Figure 2-9 DFlex-8 Serial expansion card

Caution

The DFlex serial port expansion cards include static sensitive components. Follow proper ESD procedures when handling the cards.

Installing the DFlex serial adapters

1. Remove the cover from the PC.
2. Set the jumpers and DIP switches as indicated in ***Figure 2-8*** and ***Figure 2-9***.
3. Locate a vacant ISA slot, and remove the rear panel cover.

   Retain the rear panel cover screw.
4. Carefully align the card in the slot, and press it firmly into place.
5. Use the slot panel cover screw to secure the card's retaining bracket to the PC chassis.

Digital I/O adapters

For complete information on installing the digital input/output (I/O) adapters, consult the manufacturer's documentation and the *Installation & setup for PCI digital I/O cards* application note (A3DA1009-001).

You can install the digital I/O adapters in any vacant PCI slot in the computer. The I/O adapters provide output (O/P) relays and optically isolated inputs (I/P) for the Senstar 100 CU. You can install up to two digital I/O adapters per computer, and the system supports the following four I/O adapters:

- PCI-16REL card - 16 output relays (J2KT0101)
- PCI-32REL-B card - 32 output relays (J2KT0201)
- PCI-16ISO card - 16 optically isolated inputs (J2KT0301)
- PCI-DIO32 card - 16 input and 16 output relays (J2KT0401)

The digital I/O cards are PCI 2.1 bus compliant Plug and Play adapters. The I/O port addresses and IRQs are assigned automatically by the computer's BIOS. However, the Senstar 100 software does not require an interrupt to access the I/O cards. There are no DIP switches or jumper settings required, with the exception of the PCI-32REL-B card. The PCI-32REL-B card includes relay access jumpers, which allow the user to access one or both sides of each relay, and to tie the relay commons to ground, +5 or +12 VDC. *Figure 2-10 Digital input output cards* illustrates the four digital I/O cards.

The Senstar 100 system supports ISA slot digital I/O adapters for use in older model computers. ISA version digital I/O adapter cards are available from Senstar-Stellar (at the time of this publication).

Output relay card kits

The O/P relay cards provide either 16 or 32 discrete relays for the Senstar 100 to drive or control auxiliary security devices such as sirens, lights, door locks, LED panels, etc.

The default setting for the relays is normally open (OFF), and OFF is the default drive state for the output points in the site database. This setting can be changed, on a point per point basis, in the site database using the Site Creation utility.

Optically isolated input card kits

The digital input cards provide 16 optically isolated I/Ps per card, for connecting auxiliary devices to the Senstar 100 CU. The I/Ps are grouped into two 8-bit parallel I/P ports. Each port bit corresponds to an optically isolated input on the card. The default input logic is OFF for a non-alarm state (the Opto-LED is OFF). This setting can be changed, on a point per point basis, in the site database using the Site Creation utility.

Features

PCI-16REL Features

- provides discrete access to 16 output point relays
- highly-reliable 10 VA reed relays
- normally open (N.O.) form 1B relays
- PCI 2.1 bus compliant Plug and Play adapter
- breakout box for interconnect wiring
- FCC, UL, CE certified

PCI-32REL-B Features

- provides discrete access to 32 output point relays
- highly-reliable 10 VA reed relays
- normally open (N.O.) form 1B relays
- PCI 2.1 bus compliant Plug and Play adapter
- breakout box for interconnect wiring
- FCC, CE certified

PCI-16ISO Features

- 16 optically isolated inputs
- PCI 2.1 bus compliant Plug and Play adapter
- breakout box for interconnect wiring
- FCC, CE certified

PCI-DIO32 Features

- 16 optically isolated inputs
- discrete access to 16 output point relays
- highly-reliable 10 VA reed relays
- normally open (N.O.) form1B relays
- PCI 2.1 bus compliant Plug and Play adapter
- 2 breakout boxes, for connecting auxiliary devices
- FCC, UL, CE certified

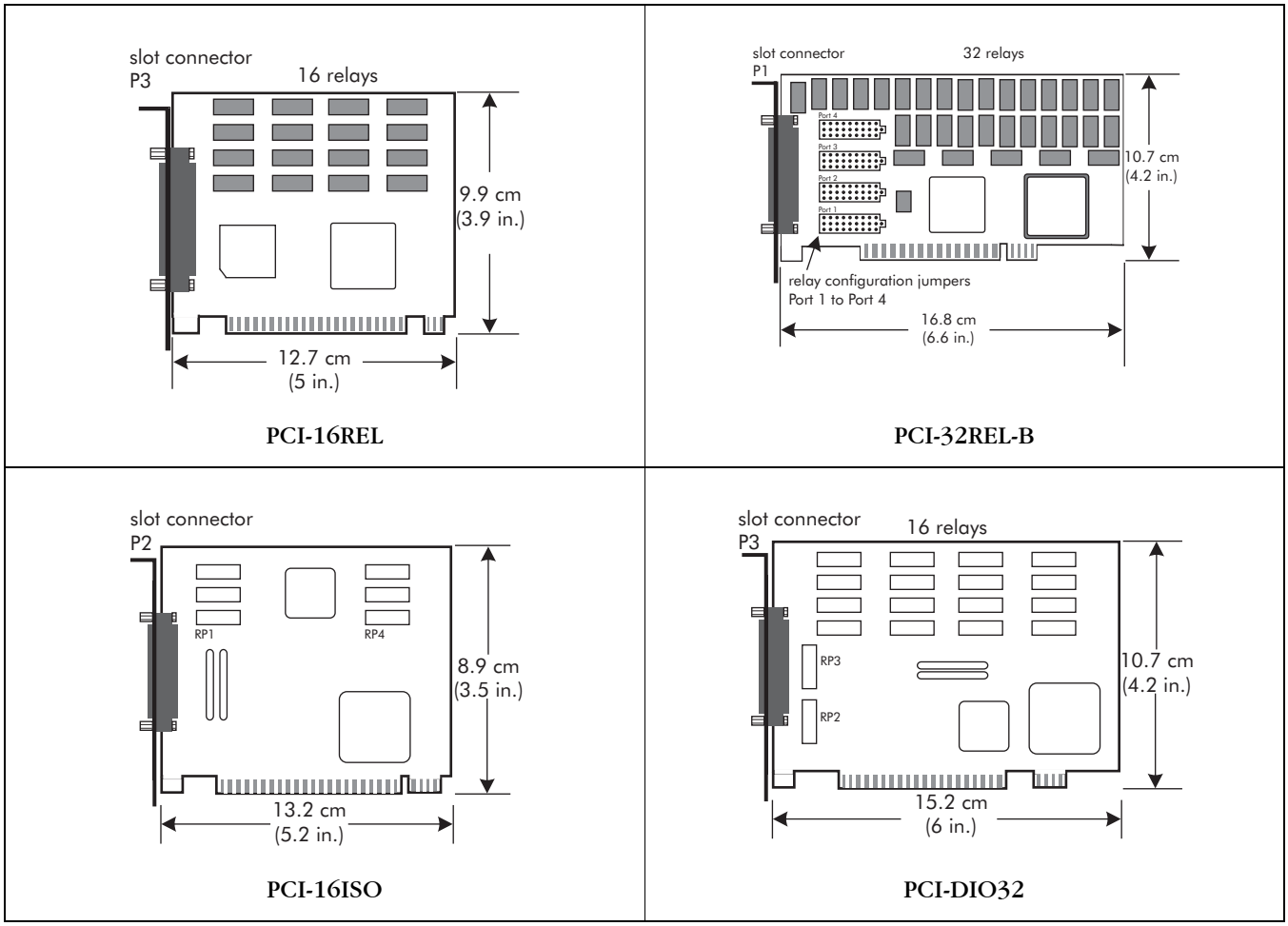


Figure 2-10 Digital input output cards

Installing digital I/O adapters

Refer to the *Installation and setup for PCI digital I/O cards* application note (A3DA1009) for detailed instructions on installing the digital I/O cards in a Senstar 100 CU.

Senstar 100 network options

You can use the QNX network to enable communications between from two to 16 Senstar 100 CUs. You can use a serial link when you are connecting two CUs. For information about setting up a Senstar 100 network system, refer to *Chapter 4 Installing a QNX network*, page 4-16.

A network card provides network communications for Senstar 100 CUs. A network card is also required to integrate the David 300 chassis with the Senstar 100 system. For more than two network CUs, you must use a network hub. *Figure 1-6* illustrates a Senstar 100 network setup. *Figure 2-11* illustrates an Ethernet card.

Serial cable mate link

The simplest method of setting up a Senstar 100 network system is to connect two CUs with a serial cable. The serial cable is available in three lengths:

Serial cable part number	Length
J2CA0101	3 m (10 ft.)
J2CA0102	7.5 m (25 ft.)
J2CA0103	15 m (50 ft.)

Contact Senstar-Stellar Customer Service for additional information about a two-CU serial interface.

Ethernet network adapter cards

For complete information on installing an Ethernet card, consult the manufacturer's documentation. You can install an Ethernet card in any PCI slot in the computer. On some computers, an Ethernet card is integrated into the motherboard. Senstar 100 supports many types of 10/100 Base T Ethernet cards. Although different brands and models of Ethernet cards can be used in one network, Senstar-Stellar recommends that one type of card be used for all of the CUs in a network. This will facilitate sparing and card replacement.

For two network CUs, use an Ethernet crossover cable to connect the CUs.

Senstar 100 supports 100 Base FX fiber optic Ethernet adapter cards. For information about supported adapters, refer to *Table 1-3*.

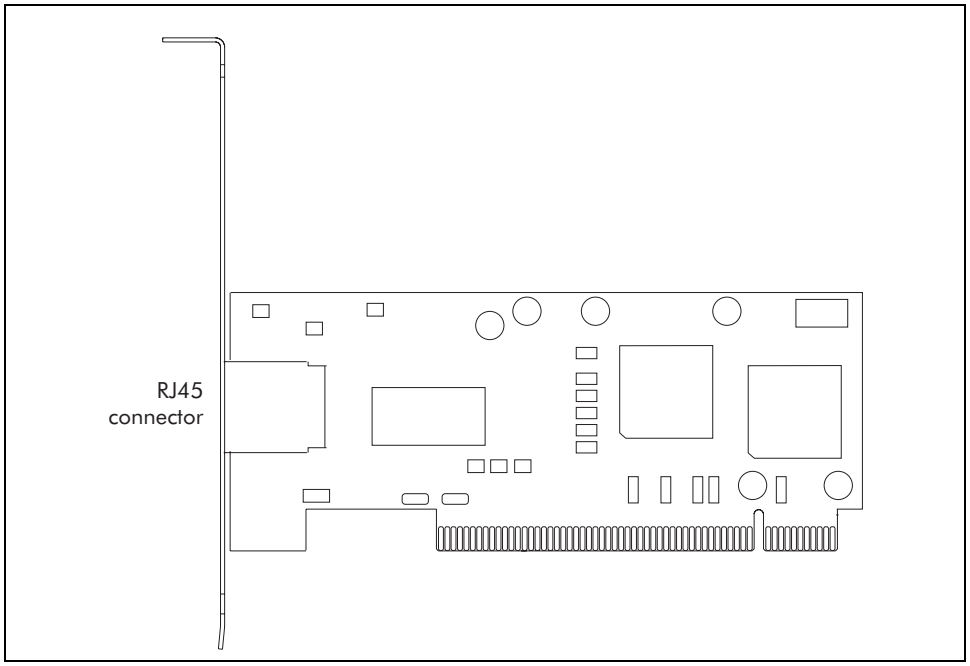


Figure 2-11 Ethernet card

Caution

The Ethernet card includes static sensitive components. Follow proper ESD procedures when handling the card.

Installing an Ethernet card

1. Remove the cover from the PC.
2. Locate a vacant PCI slot, and remove the rear panel cover. Retain the screw.
3. Carefully align the card in the slot, and press it firmly into place.
4. Use the slot panel cover screw to secure the card's retaining bracket to the PC chassis.
5. Configure the card (in the software). To do so, refer to *Chapter 4 Installing a QNX network*, page 4-16.

Installing the network hub

1. Obtain an Ethernet network hub (Senstar-Stellar P/N B0240) with enough ports for the number of CUs in your Senstar 100 network.
2. Set up each CU for network communications.
3. Connect each CU to the network hub, and power up the hub and the CUs.

   It may be possible to verify the connections to each CU based on LED activity. *Figure 1-6* illustrates a QNX network hub setup.

Fiber optic Ethernet network

Senstar 100 supports a fiber optic version of Ethernet network. Contact Senstar-Stellar for details.

ARCNET network adapter cards

For complete information on installing the ARCNET card, consult the manufacturer's documentation. You can install the ARCNET card in any ISA slot in the computer.

The ARCNET card provides network communications for two to 16 Senstar 100 CUs. For more than two CUs, a hub is required. *Figure 2-12* illustrates the ARCNET card.

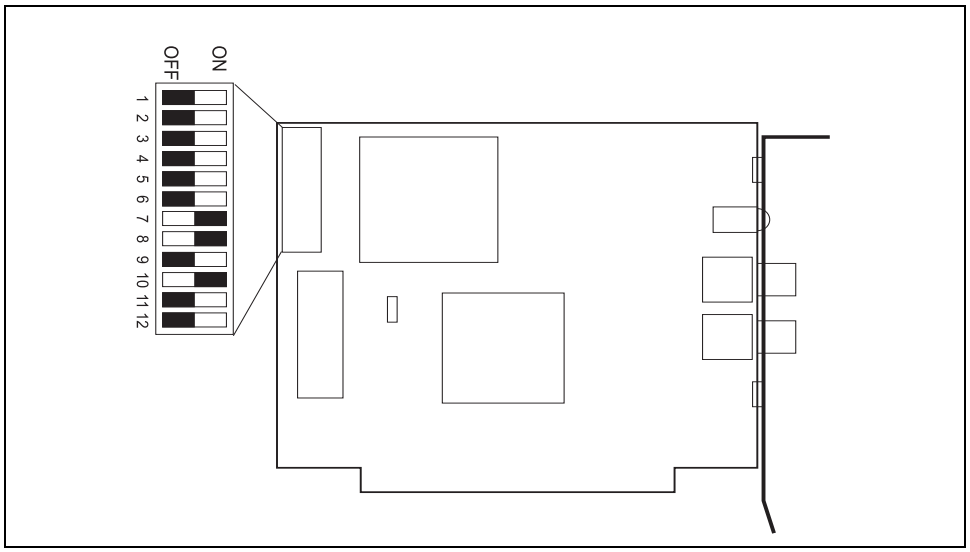


Figure 2-12 ISA ARCNET card

In the upper left corner of the ARCNET adapter, there is a twelve position DIP switch labelled SW1. The DIP switch allows you to set the base memory, I/O address and mode of operation for the ARCNET adapter. For QNX, the only switches requiring modification are 4, 5, and 6, which are for the base memory address. DO NOT alter the other switches.

Caution

The ARCNET card includes static sensitive components. Follow proper ESD procedures when handling the card.

Installing the ARCNET network adapter card

1. Set the DIP switch address as illustrated in *Figure 2-12*.
2. Remove the cover from the PC.
3. Locate a vacant ISA slot, and remove the rear panel cover. Retain the screw.

4. Carefully align the card in the slot, and press it firmly into place.
5. Use the slot panel cover screw to secure the card's retaining bracket to the PC chassis.
6. Configure the card. To do so, refer to the manufacturers' documentation and use the following parameters:

Boot from network	If hard drive installed, NO If no hard drive, YES
Local Node ID	Computer node number
Primary Boot Node ID	1
Alternate Boot Node ID	2
Retries from Boot Node	1
Boot filename	Leave blank
Hardware interrupt level	5
Extended Timeout level (normal = 0) - FIBER OPTIC VERSION ONLY	0

Table 2-3: ARCNET parameters

7. When the "Node n" message displays, enter the configuration information by pressing **ESC** twice.

Table 2-3 shows the base address switch setting for an ARCNET card.

Switch setting			**Memory base address**
4	**5**	**6**	**Segment: Offset**
OFF	ON	ON	CA00:0000
OFF	OFF	OFF	CC00:0000*
ON	OFF	OFF	CE00:0000
ON	ON	ON	D600:0000
OFF	ON	OFF	DC00:0000**
ON	ON	OFF	DE00:0000
OFF	OFF	ON	EC00:0000***
ON	OFF	ON	EE00:0000***

Table 2-4: ARCNET card address setting

*	Senstar-Stellar default setting
**	Manufacturer's default setting
***	Address available for PC/XT only

DO NOT alter the remaining switches.

Modem

You can install either an external or internal modem to provide remote dial-up maintenance capability for the Senstar 100 system. Contact Senstar-Stellar Customer Service for additional information.

3 Installing the software

This chapter provides details on:

- installing the Senstar 100 software
- upgrading your Senstar 100 software
- installing the QNX4 operating system
- upgrading the operating system to QNX4

Senstar 100 software

The Senstar 100 system includes the following software:

- QNX4 operating system software and boot disk (four disks)
- QNX license (one disk)
- Senstar 100 application software (two disks)
- Senstar 100 site creation software (one disk)
- Senstar 100 sample site data (one disk)
- Senstar 100 sample site creation data (one disk)

The Senstar 100 Startup program

The QNX4 boot disk contains the Senstar 100 Startup program.

The Startup program is used to:

- initialize the hard disk and load the QNX4 OS
- load the Senstar 100 application software onto the hard disk
- update the OS
- load the Senstar 100 sample site data onto the hard disk
- load additional QNX licences (network applications)
- make backup files of the software and data floppy disks
- format floppy disks for use with the Senstar 100 system
- select and align the touch screen
- select the keyboard character set
- select the graphics card and the number of monitors defined in the site data
- test the MFC
- copy user-data from the hard disk to a floppy disk
- change the site data or computer node ID

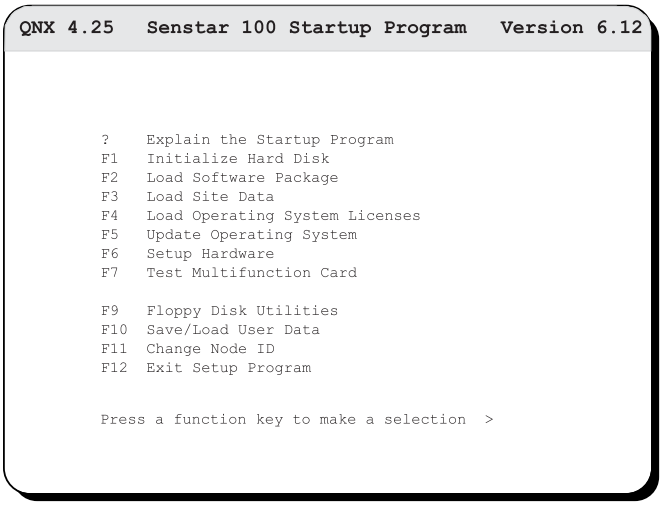
Running the Startup program

1. Ensure that the computer is turned OFF.
2. Insert the QNX boot disk into the floppy drive.

   Leave the boot disk in the floppy drive until you are prompted to remove it.

3. Turn ON the computer.

   After the BIOS and memory checks, the computer should attempt to boot from floppy disk. The QNX OS boots, and the **Senstar 100 Startup Program** menu displays.



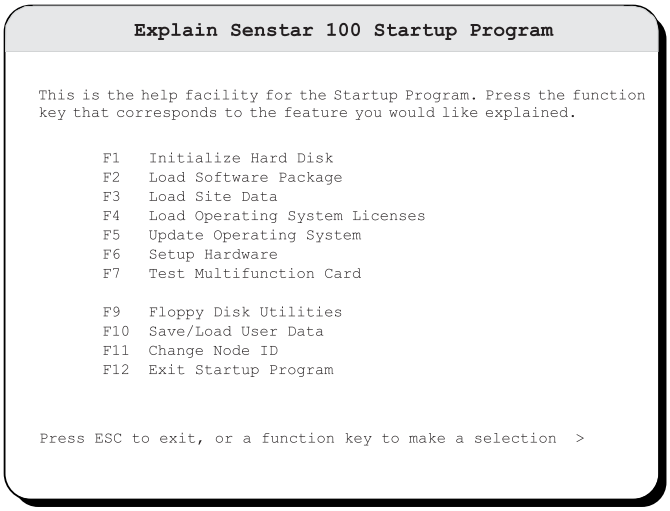
4. Press a function key to select the corresponding function.
5. To exit the Senstar 100 Startup program menu, press **F12**.

Using the help function (?)

You can view the Startup program's Help facility.

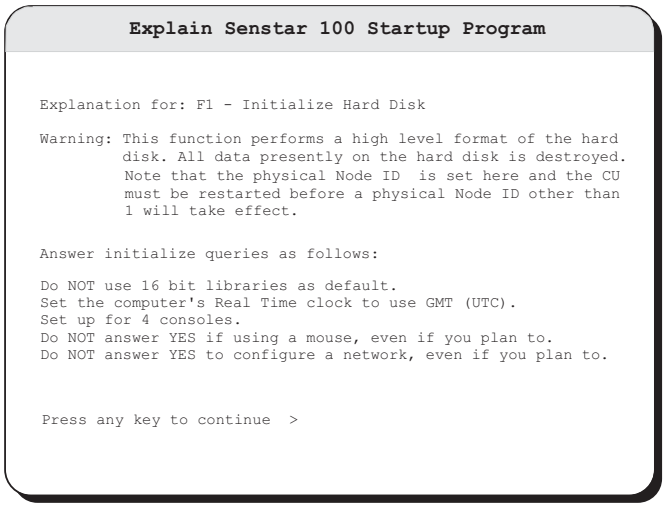
1. Press (?) Explain the Startup Program.

   The **Explain Senstar 100 Startup Program** menu displays.



2. Press the function key that corresponds to the feature you would like explained. For example, press F1 initialize the hard disk.

   The ***Explanation for: F1 - Initialize Hard Disk*** screen displays.



3. Press any key to return to the Explain Senstar 100 Startup Program menu.
4. You can use the **F12** Exit Startup Program to exit the Senstar 100 Startup Program and begin Senstar 100 alarm processing.

Beginning Senstar 100 alarm processing

You MUST complete the Startup Program Functions F1, F2 and F3 before you can begin Senstar 100 alarm processing.

1. Remove the boot floppy disk.
2. Turn the computer OFF.
3. Turn the computer ON.
4. The computer boots from the hard disk.
5. Follow the onscreen instructions to begin the alarm processing operations.

Initializing the hard disk

Caution

When you initialize the hard disk, all data presently on the hard disk will be lost.

The Initialize Hard Disk function performs a high-level format of the hard disk.

The Initialize Hard Disk function MUST be completed once for any hard disk. You can reuse the Initialize Hard Disk function to make changes to the original settings.

Make backup copies of all site creation, languages, user, and site data BEFORE using the Initialize Hard Disk function on your computer.

All backup floppy disks should be updated whenever changes are made.

The QNX installation program performs the Initialize Hard Disk function. When onscreen instructions differ from this procedure, ensure you follow the steps in ***Beginning hard disk initialization****.*

You can use the **F1** Initialize Hard Disk function to format the hard disk for Senstar 100 applications, and to load the QNX4 operating system.

The Initialize Hard Disk function involves six steps:

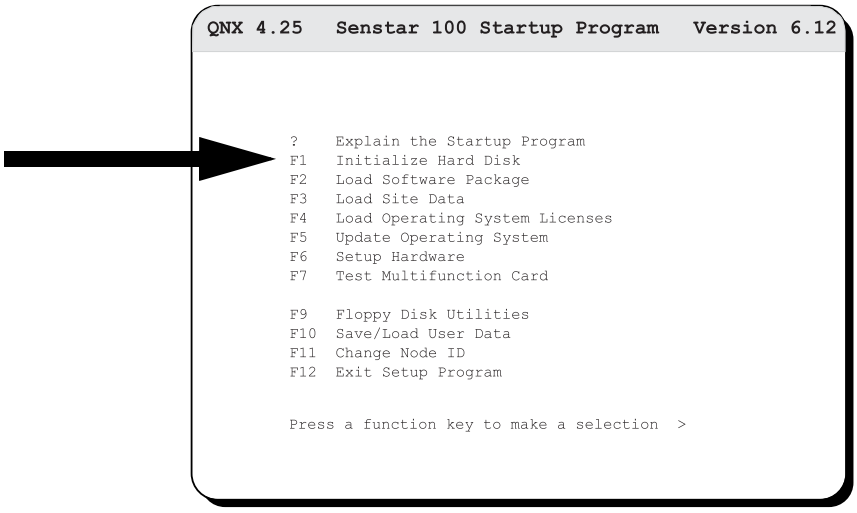
1. Create a QNX hard disk partition.
2. Initialize the QNX file structure.
3. Copy files from floppy disks to the hard disk.
4. Make the QNX operating system boot from the hard disk.
5. Create a system initialization file.
6. Configure a network computer.

Hard disk requirements

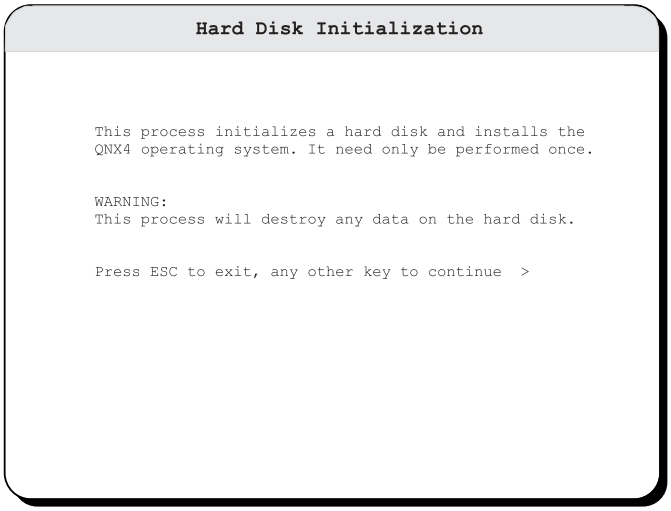
Senstar 100 applications require a minimum 1.0 Gb of hard disk storage.

Beginning hard disk initialization

1. Press **F1**.



The **Hard Disk Initialization** screen displays.



2. Press any key to begin the initialization procedure.

   The QNX4 Installation Program starts.

3. Follow the onscreen prompts and instructions to initialize the hard disk and load the operating system.

   During the installation, the program partitions and formats the hard disk.

Set up one partition of at least one 1 Gb for exclusive use by Senstar 100 applications. For small hard disks (< 10 Gb) dedicate the entire hard disk for use by the Senstar 100 system. For larger hard disks, edit the partition table so that the highest cylinder of the QNX partition does not exceed1023.

*Use the ↑ and ↓ arrow keys to select **Y** (yes) or **N** (no) in response to the onscreen prompts. Press ◄┘ **Enter** to make the highlighted selection.*

4. Press **Enter** to continue the initialization procedure.
5. Press **Enter** to select the default keyboard (English).
6. If the system will use a different type of keyboard during alarm processing operations, you can specify keyboard type using the Setup hardware function. For more information about the Setup hardware function, refer to *Selecting the keyboard type, page 4-7*.
7. Press **Enter** to begin hard disk initialization.

*When performing the Initialize Hard Disk function you will occasionally be prompted to press **Enter**, then press **Enter** again.*

Caution

*You can stop the initialization procedure at any prompt by pressing **ESC**. However, initialization must be completed once before any other Startup program function can be used. If you stop the initialization procedure before it is complete, you must reboot the computer and begin the procedure again.*

Creating a QNX hard disk partition

1. Verify the type of hard disk and its driver by pressing **Enter**.
2. Verify the size of the hard disk by pressing **Enter**.

   The **QNX Partition Screen** displays.

```
      OS        Start      End          Number        Size Boot
   -----  -----                      ------     -----
   name   type   Cylinder  Cylinder  Cylinders  Blocks

1. ------  (---)    -----     -----      -----     -------  -----
2. ------  (---)    -----     -----      -----     -------  -----
3. ------  (---)    -----     -----      -----     -------  -----
4. ------  (---)    -----     -----      -----     -------  -----

There are 4714 megabytes free in the largest unused area on your
drive. Either select one of the sizes in the following table,
or 'e' to edit the partition table with the FDISK command:

          a : ALL  : 4714 M
          h : HALF : 2357 M
          3 : 1/3  : 1571 M
          4 : 1/4  : 1178 M
          t : 1/10 :  471 M
          e : Edit using FDISK

Choose the partition size from the above list:a
```

3. Specify how much of the hard disk you want QNX to use by typing the letter/ number that corresponds to the desired partition size.

*If you do not know how much of the hard disk you want to use, you can edit the partition table by pressing "**e**".*

Initializing the QNX file structure

1. Press **Enter** to begin initializing the QNX file structure.

   The QNX installation program initializes the file structure.

2. When prompted, press **Enter** to continue.
3. Specify a method to test for bad blocks on the hard disk, by typing one of the following:

r -	(read only)	tests that each block can be read
w -	(read/write)	tests that each block can be written to and read
v -	(read/write/verify)	tests that each block can be written to and read, and verifies both procedures

4. Press **Enter** to begin the selected test.
5. When the test is complete, press **Enter**.

Depending on the block test that you selected and the size of the hard disk, the testing may take a substantial amount of time to complete.

Copying files from floppies to hard disk

1. Press **Enter** to begin copying the files.
2. Remove the boot disk.
3. Insert the QNX license key in the floppy drive.
4. Press **Enter.**
5. When prompted, insert the QNX operating system disks.
6. Press **Enter** to copy a floppy disk to the hard disk.
7. When copying is complete, remove the operating system disk.
8. Insert the boot disk into the floppy drive as prompted.
9. Press **Enter**.

Making QNX boot from the hard disk

1. Press **Enter** to begin the procedure.

   The following table summarizes the information that the program prompts you to enter:

Parameter	Selection
default drivers	32
node #	___ (unique network ID required for each Senstar 100 CU on the QNX network, i.e., default node # = 1)
time zone	___ (from the list, select the time zone in which the system will operate)
real time clock	g (select Greenwich Mean Time for the real time clock)
consoles	4
mouse	no (this selection applies only to the QNX operating system and does not affect the use of a mouse under Senstar 100 operation)
network	no (network setup is handled separately, outside of the QNX installation program)

2. Because the system requires 32-bit drivers, cancel the prompt to make 16-bit drivers (the default) by pressing **Enter**.
3. Type the unique QNX network node number when prompted.

   The default node number is **1**.
4. Press **Enter**.
5. When prompted, press **Enter** to copy the files.
6. When prompted, press **Enter** to continue copying files.

Multiple CUs require a unique QNX network node number assigned to each CU. It is recommended that you assign node numbers that correspond to the CU numbers, i.e., node#1=CU#1, node#2=CU#2, etc. However, if you are operating a single CU system, simply assign the default node number to the CU.

Creating a system initialization file

1. Press **Enter** to begin creating the system initialization file.

Caution

*DO NOT press **Enter** to complete steps 2 through 5.*

2. Specify the time zone in which the system will operate by typing the character that corresponds in the list. For example, press **u** to specify the Eastern Standard time zone.
3. Type **g** to specify Greenwich Mean time as the setting for the real time clock.
4. Type **4** to specify the number of QNX consoles.

   Step 5, to use a mouse, applies only to the QNX operating system. It does not affect the use of a mouse with the Senstar 100 System.

5. Type **n** at the prompt to use a mouse with this machine.

Configuring a network computer

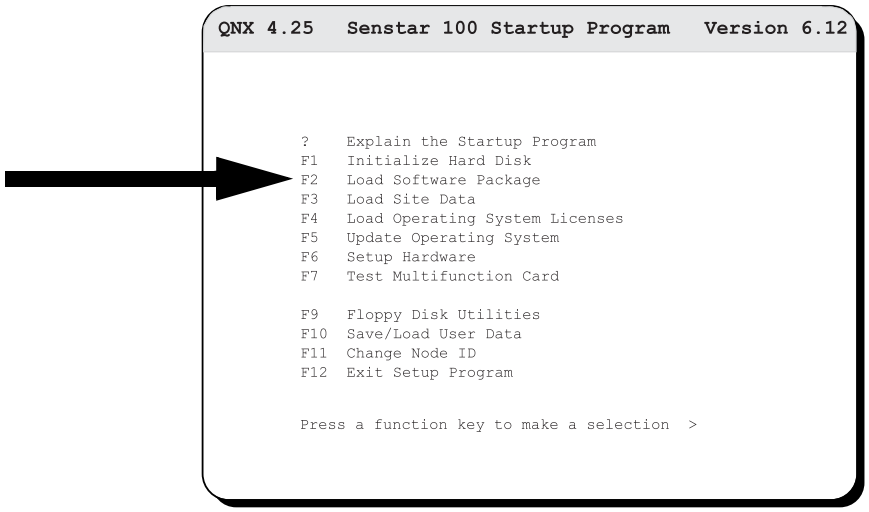
Senstar-Stellar recommends that the QNX network be configured OUTSIDE of the QNX installation program. If you require a QNX network, see Installing a QNX network, page 4-16.

1. When prompted as to whether the computer will be on a QNX network, type **n**.

   Initialization completes and the **Senstar 100 Startup Program** menu displays.

Loading the application software

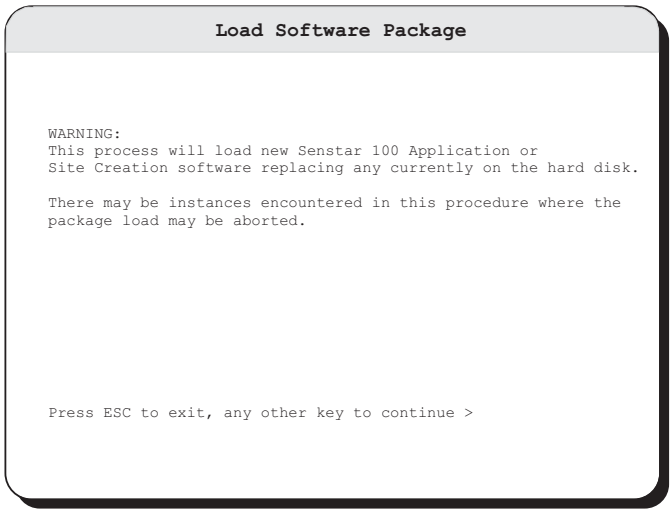
You can use the **F2** Load Software Package function to install the Senstar 100 application software. You can also use the **F2** Load Software Package function to install the Senstar 100 Site Creation software. The following procedure replaces any same package Senstar 100 software currently on the hard disk.



Loading the software package

1. Press **F2**.

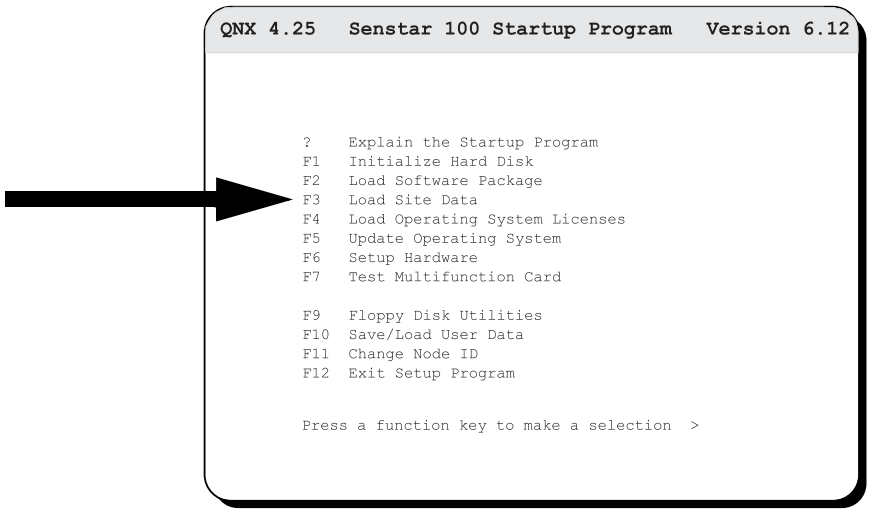
   The **Load Software Package** screen displays.



2. Press any key.
3. Insert disk 1 of the Senstar 100 application software into the floppy drive.
4. Press **Enter**.
5. When prompted, remove disk 1.
6. Insert the second application disk into the floppy drive.
7. Press **Enter**.
8. Press any key to install the application software from archive.
9. Once the installation is complete, follow the prompts and exit to the Startup program menu.
10. Remove the application disk from the floppy drive.

Loading the site data

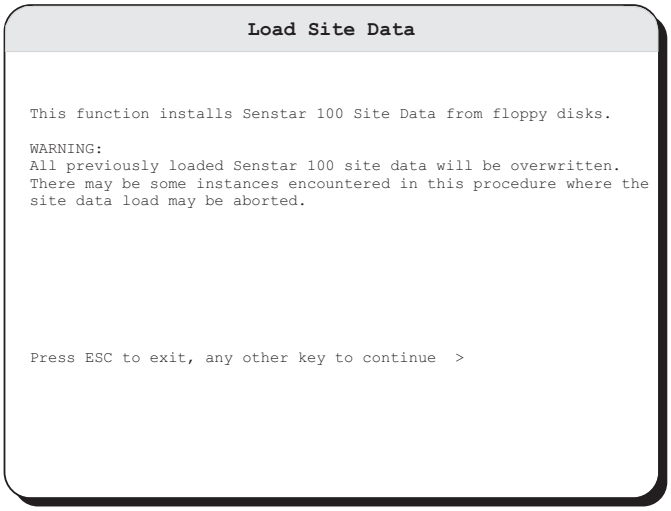
You can use the **F3** Load Site Data function to copy site data to the hard disk. This function is used to load sample site data or the most recent custom site data.



Loading site data

1. Press **F3**.

   The **Load Site Data** screen displays.



2. Press any key.

   The number of site data disks depends on the size of the site.

3. Insert site data disk 1 into the floppy drive.

4. Press any key.
5. When prompted, remove the site data disk from the floppy drive, and, if applicable, insert the next disk.
6. Repeat step 5 for each additional site data disk.
7. Once the installation is complete, follow the prompts and exit to the Startup Program menu.
8. Remove the last site data disk from the floppy drive.

Loading the operating system licenses

For current QNX Licenses:

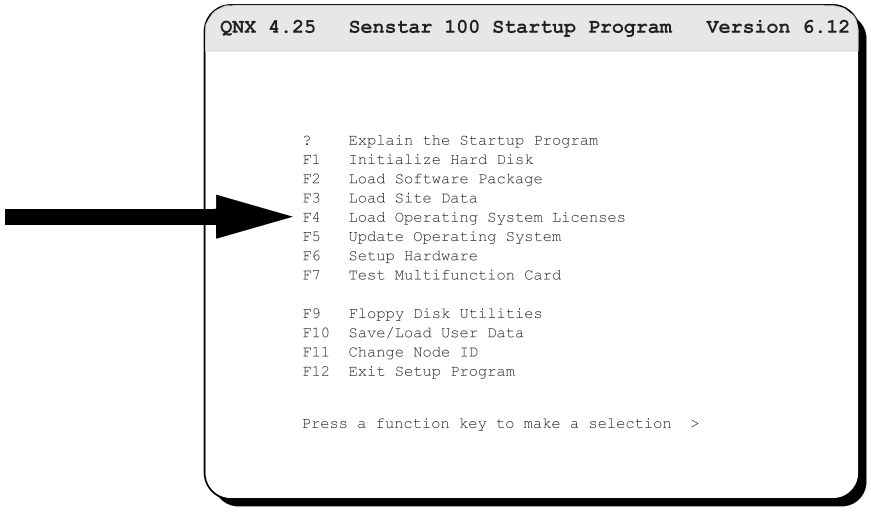
New license disks contain all 16 licenses. The procedure listed below is no longer necessary.

For old-style QNX Licenses:

The following procedure is not required for single CU systems. It is required only for loading old-style licenses on multi-CU systems. When loading old-style licenses, you MUST install all license disks on each CU.

For example, in a three-CU system, there are three license disks. You MUST install all three license disks on each CU. Install one license disk during the operating system installation. Install the other two license disks on each CU using the Load Operating System Licenses function.

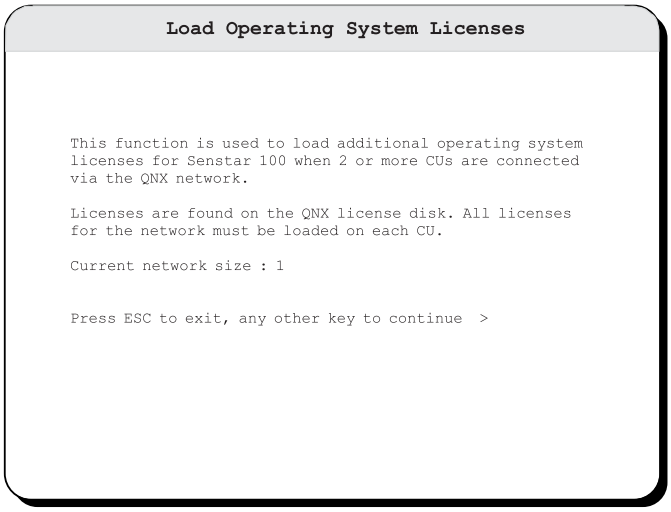
You can use the **F4** Load Operating System Licenses function to load old-style QNX4 licenses.



Loading operating system licenses

1. Press **F4**.

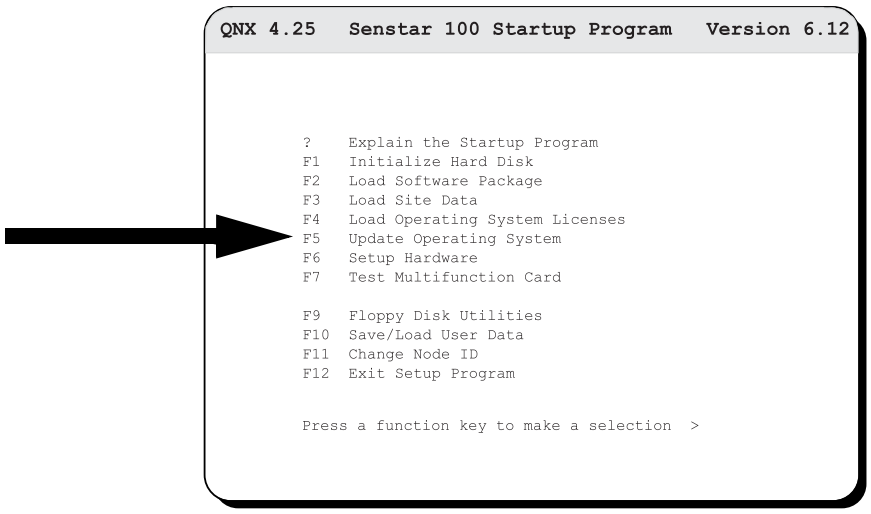
   The **Load Operating System Licences** screen displays.



2. Press any key.
3. Load the operating system licenses by following the onscreen instructions and inserting each QNX license key disk into the floppy drive when prompted.
4. Once the installation is complete, follow the prompts and exit to the Startup Program menu.
5. Remove the last QNX license key disk from the floppy drive.

Updating the operating system

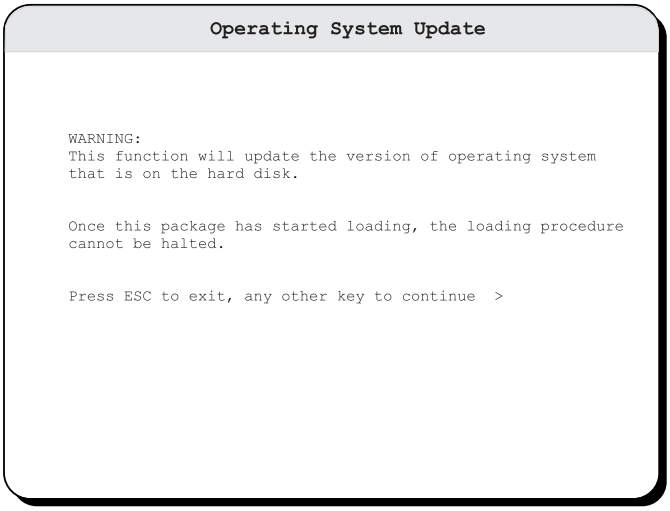
You can use the **F5** Update Operating System function to update the QNX OS on your Senstar 100 system.



Updating operating system

1. Press **F5**.

   The **Operating System Update** screen displays.



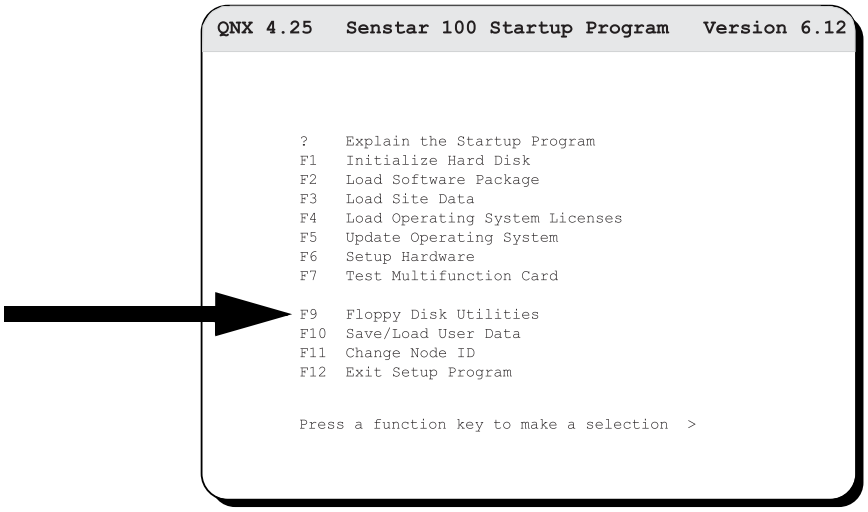
2. Insert operating system installation disk 1 into the floppy drive.
3. Press **Enter**.
4. Remove the disk when prompted. Insert the next operating system disk into the floppy drive.

5. Press **Enter**.
6. Repeat Steps 4 and 5 for each additional operating system disk.
7. Once the installation is complete, follow the prompts and exit to the Startup Program menu.
8. Remove the last Operating System disk from the floppy drive.

Functions F6 Setup Hardware, F7 Test Multifunction Card, F10 Save/Load User Data and F11 Change Node ID are explained in Chapter 4, Setting up the system.

Floppy disk utilities

You can use the **F9** Floppy Disk Utilities function to format floppy disks for use in the Senstar 100 system and to make backup copies of the Senstar 100 master disks.



Making backups of master disks/formatting disks

You can use the Format Disk function to format floppy disks for use with the Senstar 100 system.

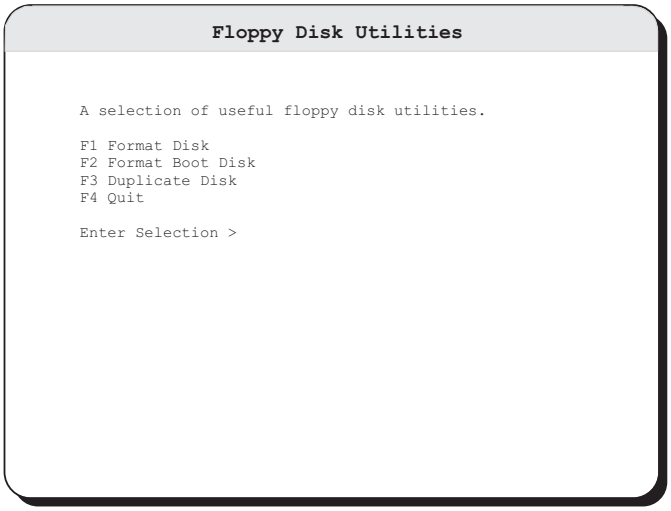
You can use the Format Boot Disk function to format floppy disks to use as boot disks in the Senstar 100 system.

You can use the Duplicate Disk function to make backup copies of the Senstar 100 master disks.

Displaying the Floppy Disk Utilities menu.

1. Press **F9**.

   The **Floppy Disk Utilities** menu displays.



Formatting floppy disks

Use **F1** Format Disk to format floppy disks for use in the Senstar 100 system.

1. Press **F1**.
2. When prompted, insert a 1.44 MB, 3.5" floppy disk into the floppy drive.
3. Press any key.
4. Once fomatting is complete, follow the prompts and exit to the **Floppy Disk Utilities** menu.

Formatting boot disks

> *This process formats a floppy disk, which you can then use to copy the QNX boot disk. It does not copy the information needed to boot the system. You must use the Duplicate Disk function to make a copy of the QNX boot disk.*

1. Press **F2**.
2. When prompted, insert a 1.44 MB, 3.5" floppy disk into the floppy drive.
3. Press any key.
4. Once formatting is complete, follow the prompts and exit to the **Floppy Disk Utilities** menu.

Duplicating disks

Ensure that the original Senstar 100 disks are write protected BEFORE making backup copies.

1. Press **F3**.
2. When prompted, insert a 1.44 MB, 3.5" floppy disk into the floppy drive.

   The source disk is the floppy disk that you want to duplicate.
3. Press any key.
4. When prompted, remove the source disk.
5. Insert a formatted destination disk.

   The destination disk is the floppy disk to which you want to copy.
6. Press any key.
7. Once copying is complete, follow the prompts and exit to the **Floppy Disk Utilities** menu.
8. Remove the duplicated disk from the floppy drive.
9. Label the disk.
10. Press **F4** or **ESC** to return to the **Senstar 100 Startup Program** menu.

4 Setting up the system

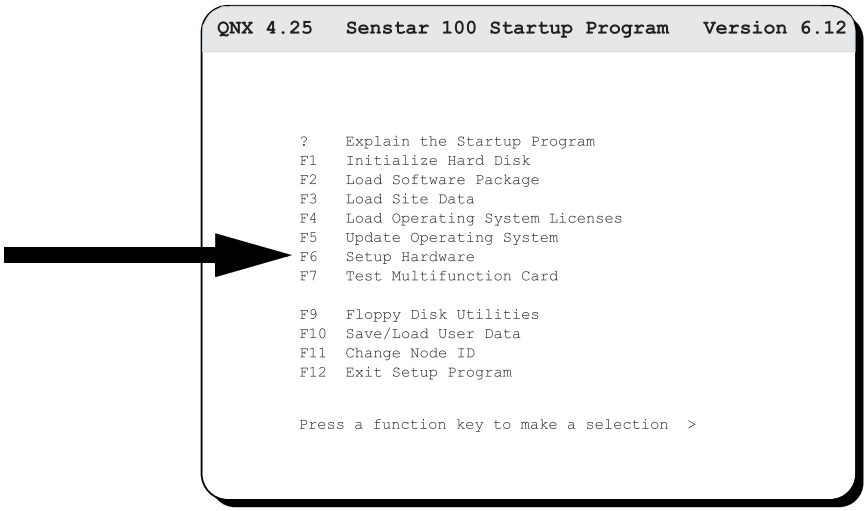
This section details the set up procedures for the Senstar 100 system. Setting up the system may include the following functions:

- selecting the graphics card and the number of monitors
- selecting and aligning the touchscreen
- selecting the keyboard character set
- setting the active boot partition
- changing the site data's node ID (This function is required only if installing the Sample Site Data on a network node other than node 1.)
- saving and loading user data
- testing the multifunction card
- setting up a QNX network

You can perform these functions via the **Senstar 100 Startup Program.** Refer to *Installing the software*, page 3-1 for additional information about the **Senstar 100 Startup Program**. This section explains each function in detail.

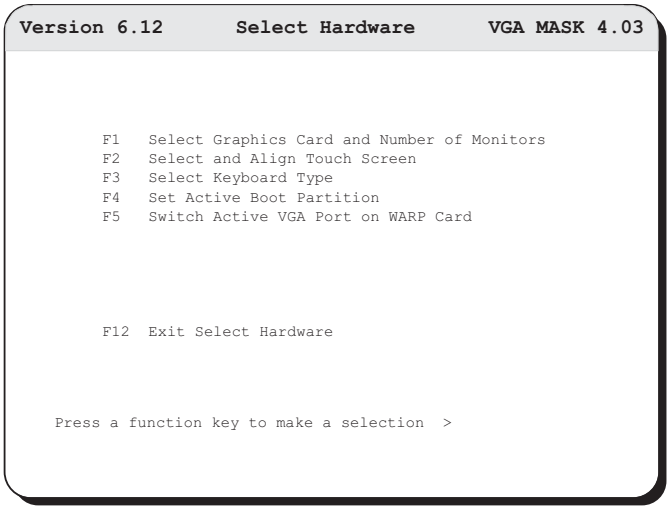
Hardware setup

You can use the **F6** Setup Hardware function to select and configure the secondary devices connected to the Senstar 100 CU.



Displaying the Select Hardware menu

1. Press **F6**.
   The **Select Hardware** menu displays.



You can use the **Select Hardware** menu to set up the peripheral devices for your Senstar 100 CU.

If you are setting up the hardware on a CU other than node 1, you MUST specify the CUs node number for the site database (ranging from 1 to 255). You MUST do this before you set up the peripheral devices for the CU.

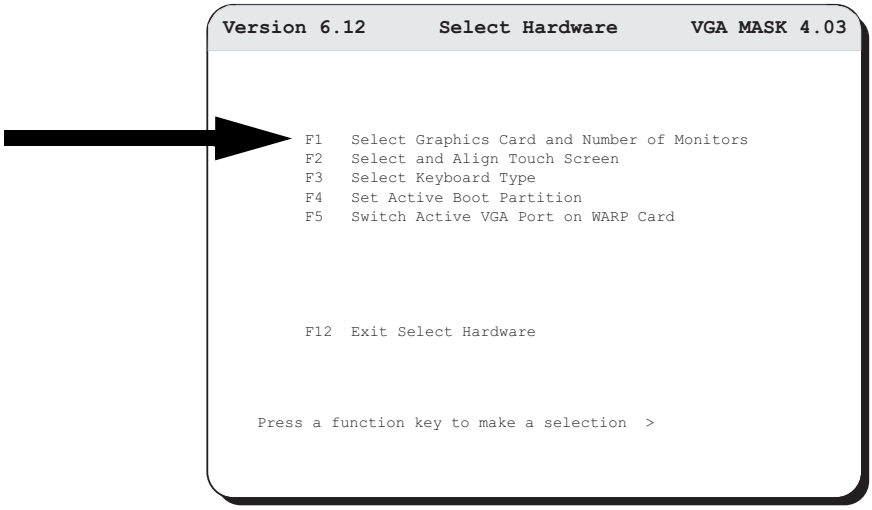
Exiting the Select Hardware menu

1. Press F12.

   The **Senstar 100 Startup Program** menu displays.

Selecting the graphics card and number of monitors

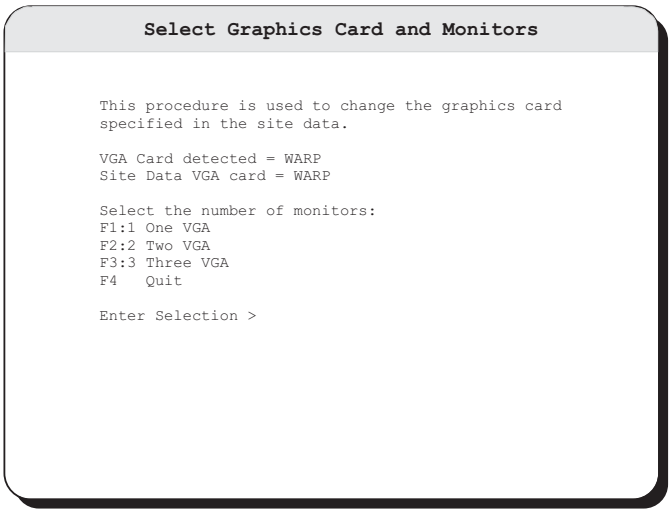
You can use the **F1** Select Graphics Card and number of monitors function to specify the type of graphics card and the number of monitors your Senstar 100 uses.



*You can not specify the graphics card or number of monitors until you have initialized the hard disk (**Initializing the hard disk**, page 3-5) and loaded the application software and site data (**Loading the site data**, page 3-13).*

1. Press **F1**.

   The **Select Graphics Card and Monitors** menu displays.



2. Specify the number of monitors used with your Senstar 100 CU by pressing one of following function keys:

   F1 - One VGA for a one-monitor configuration.

   OR

   F2 - Two VGA for a two-monitor configuration.

   OR

   F3 - Three VGA for a three-monitor configuration.

3. Specify the type of VGA graphics card that your Senstar 100 system uses by pressing one of the following function keys:

   - **F1** -Standard
   - **F2** -MVP-2
   - **F3** -MVP-2X
   - **F4** -MVP-4X
   - **F5** -Warp
   - **F6** -Predator

   The previous monitor configuration and the new monitor configuration displays.

4. When you are prompted to switch to (test) another VGA port, do one of the following:

   - Type **N** to set the new monitor configuration, and return to the Setup Hardware menu.

   OR

   - Type **Y** to set the new monitor configuration and switch the video output to the second/auxiliary VGA port.

Caution

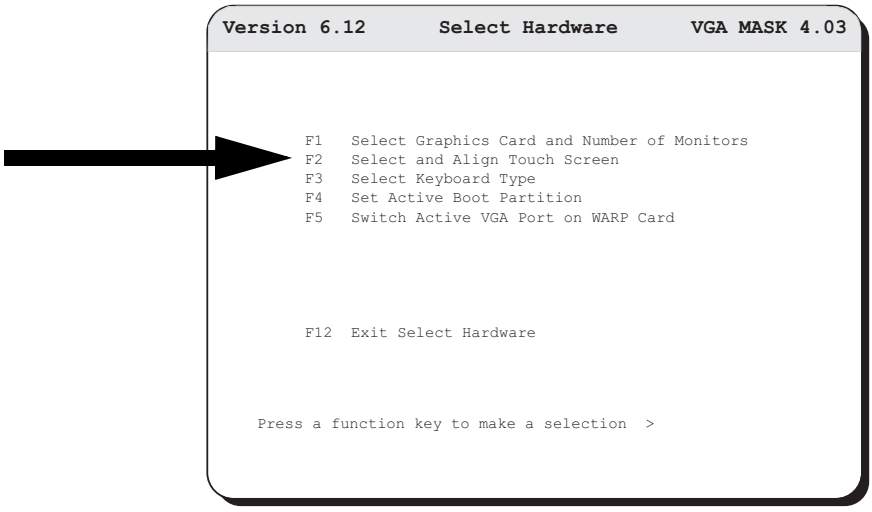
Specifying the correct display type for the primary, secondary and auxiliary displays is critical to the operation of the system.

If the displays are incorrectly configured, the subsequent menus and menu options will not display properly and you cannot use the system.

Selecting and aligning the touchscreen

You can use the **F2** Select and Align Touch Screen function to select the brand of touchscreen your system uses, and to perform an initial alignment of the touchscreen.

Select the graphics card and the number of monitors BEFORE aligning the touchscreen. For information about selecting the graphics card and the number of monitors, refer to ***Press F1.***, page 4-3.

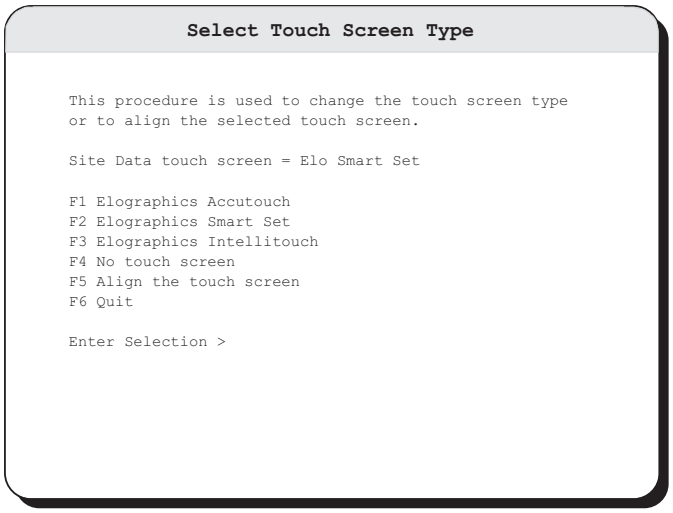


After your system is installed and operational, align the touchscreen more accurately via the Setup menu. For more information, refer to the ***Senstar 100 Maintenance Guide (DA-030205)***.

*You cannot align the touchscreen until you have initialized the hard disk (****Initializing the hard disk****,* page 3-5*) and loaded the application software (****Loading the application software****,* page 3-11*) and site data (****Loading the site data****,* page 3-13*).*

1. Press **F2**.

   The **Select Touch Screen Type** menu displays.



2. Press the function key that corresponds to the system's touchscreen.
3. You are prompted to proceed with either:

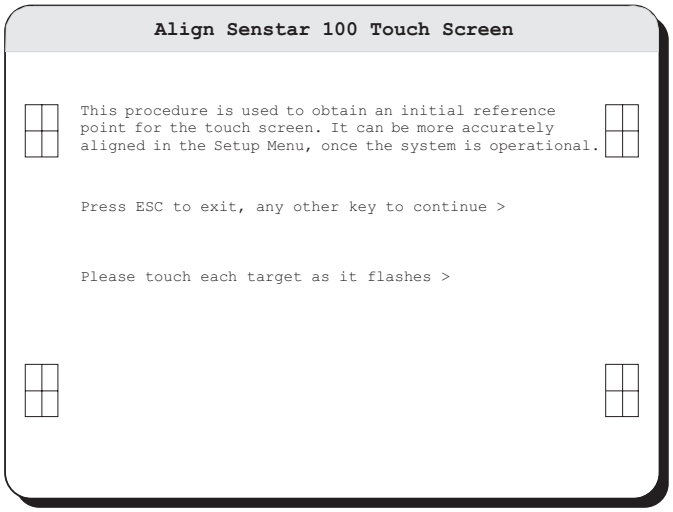
   a. the **Primary monitor alignment** (if it is a two-monitor system)

   OR

   b. the **Align Senstar 100 Touch Screen** menu (if it is a one-monitor system).

   Touch each target as it flashes to perform an initial touchscreen alignment.

   After you touch the fourth flashing target, the program calculates an initial reference point for the touchscreen.



3. When the procedure is complete, follow the prompts to return to the Setup Hardware menu.

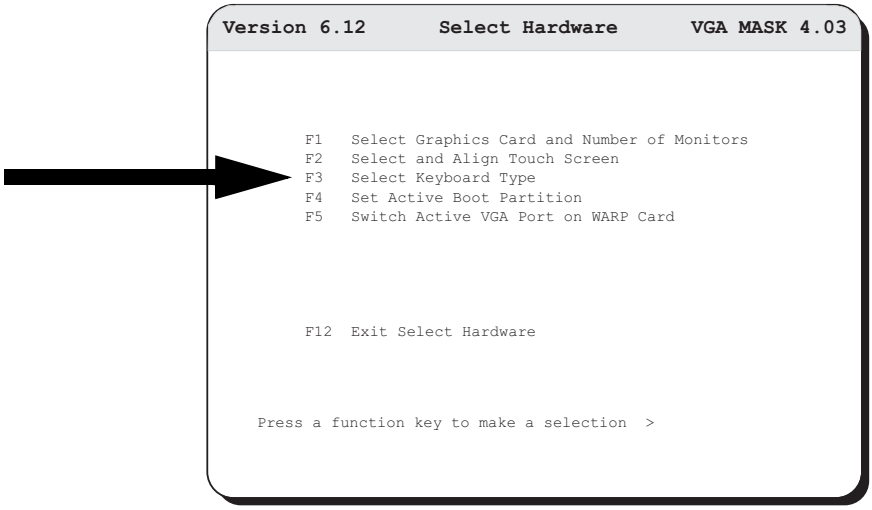
If a touchscreen was not configured in the Site Data, you will receive an error message and cannot proceed with the initial touchscreen alignment. Ensure that the touchscreen has been configured correctly. For more information, refer to ***Senstar 100 Site Creation Guide DA-030207****.*

If the touchscreen is not connected to the proper port, you will receive an error message. Refer to the printout of your hardware configurations to check the port connections. If you require further assistance, contact Senstar-Stellar Customer Service.

If you encounter problems during the initial touchscreen alignment, you may have selected an incorrect touchscreen type, or the touchscreen may be faulty.

Selecting the keyboard type

You can use the **F3** Select Keyboard Type function to specify the keyboard used with your Senstar 100 system.

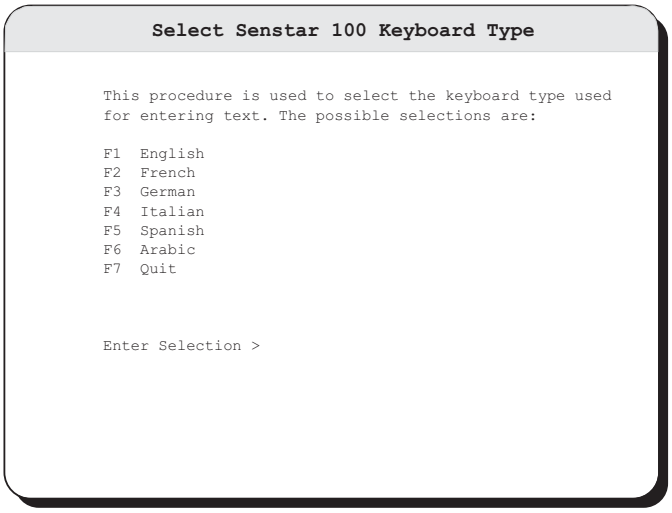


You do not have to select an English keyboard, as English is the default keyboard type.

You cannot select the keyboard type until you have initialized the hard disk and loaded the application software and site data. For information about initializing the hard disk, refer to ***Initializing the hard disk***, page 3-5. *For information about loading the application software, refer to* ***Loading the application software***, page 3-11. *For information about loading the site data, refer to* ***Loading the site data***, page 3-13.

1. Press **F3**.

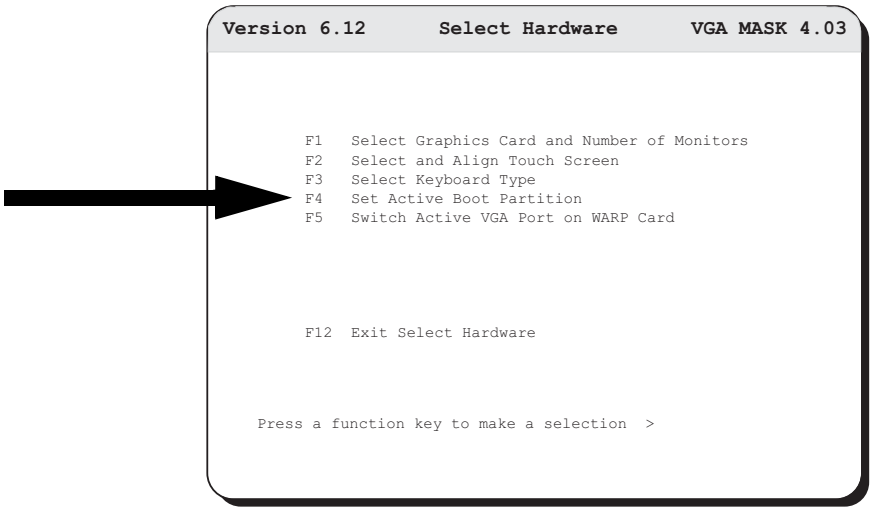
   The **Select Senstar 100 Keyboard Type** menu displays.



2. Press the function key that corresponds to the type of keyboard the system will use.
3. When the procedure is complete, follow the prompts to return to the **Setup Hardware** menu.

Set active boot partition

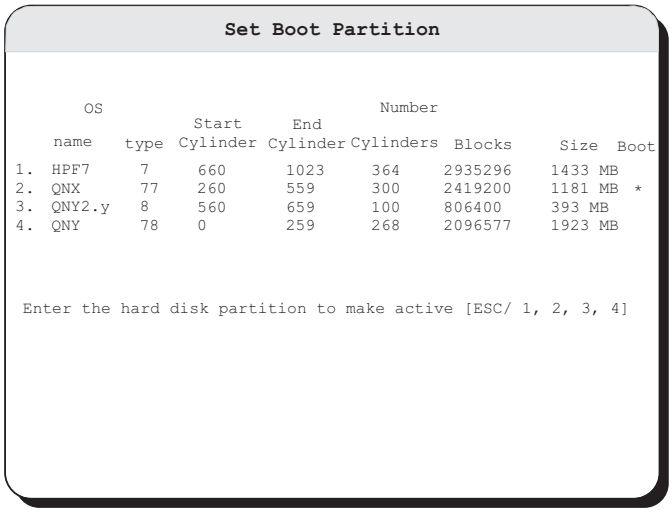
You can use the **F4** Set Active Boot Partition function to specify the hard disk partition from which the system will boot. You can use this function to change the boot partition of your hard disk, provided that more than one valid partition exists.



Setting the active boot partition

1. Press **F4**.

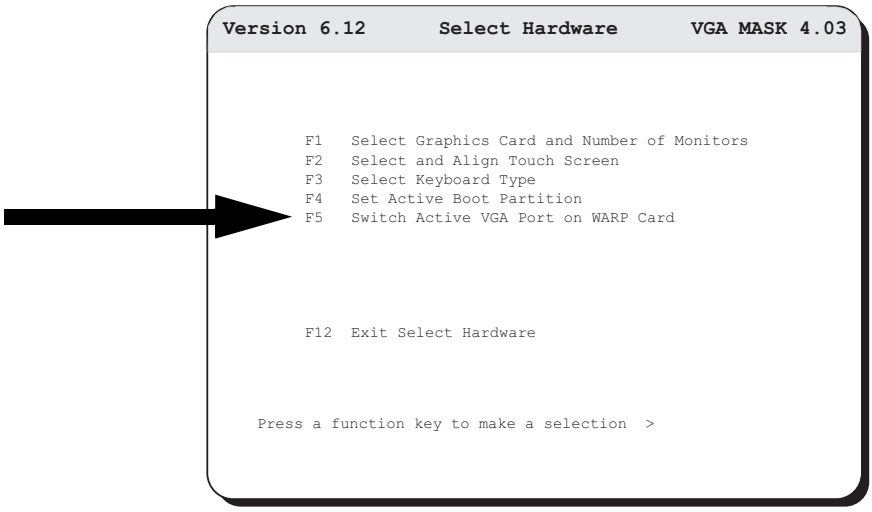
   The **Set Boot Partition** menu displays.



2. Type the number that corresponds to the hard disk partition from which you want the system to boot.
3. Follow the onscreen instructions to return to the **Setup Hardware** menu.

Switching the video output to another monitor

If you have more than one monitor, you can switch the video output to another monitor. You can also use this function to return the video output to the primary monitor.



Switching the active VGA port

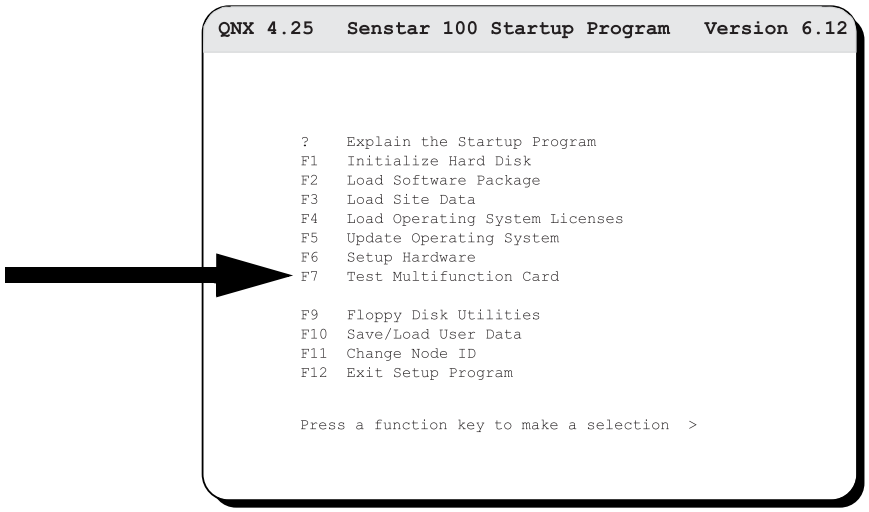
1. **Press F5.**

   The video output switches ports, and displays on the second monitor.

   You can use the Exit Select Hardware function to exit the Select Hardware menu and return to the Senstar 100 Startup Program menu (press F12).

Testing the Multifunction card

You can use the **F7 Test Multifunction Card** function within the Senstar 100 Startup Program to test the Multifunction card's serial ports, relays, audio tones, and watchdog timer.



1. Press **F7**.

   To test the card's serial ports, you must connect the two serial ports on the Multifunction card with a null modem cable.

2. Press one of the following:

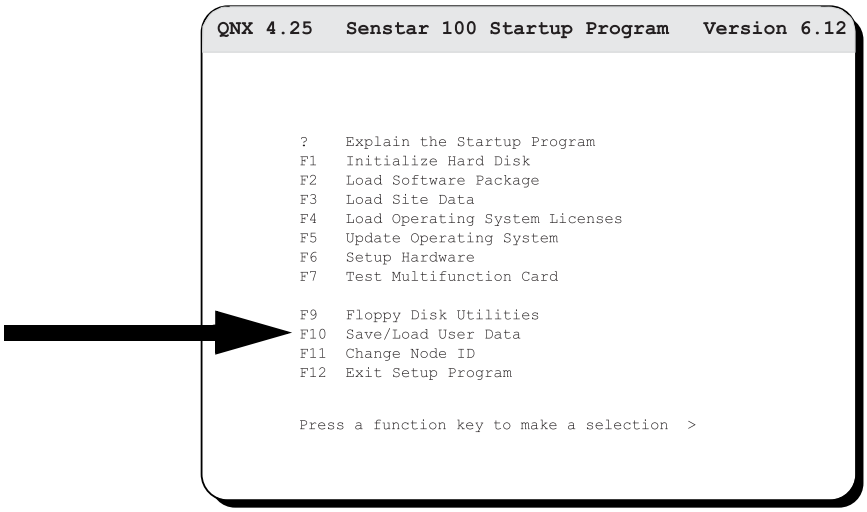
   - **F1** - tests the card's serial ports

   OR

   - **F2 -** tests the card's relays, audio tones and watchdog timer

Saving/loading user data

You can use the **F10** Save/Load User Data function to make backup files of data defined by the user in the **Supervisor** and **Setup** menus (alarm prompts, checklists, alarm causes, passwords, etc.). You can also load data that was saved to a floppy disk onto the hard disk using the F10 function.

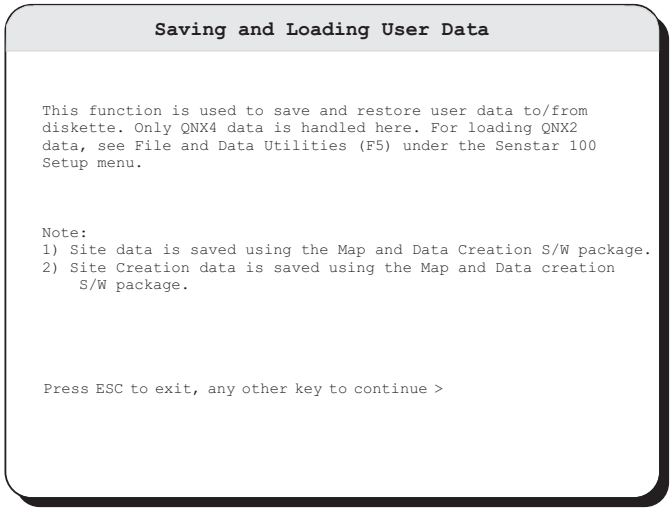


The Save/Load User Data function applies only to QNX4 user data. If you are loading QNX2 user data, use the Save/Load User Data function that is found in the **Senstar 100 Setup** *menu, under* ***File and Data Utilities****. This will perform data conversions, if required.*

Make backup disks whenever you create or change user data. Always maintain current backup files of all Senstar 100 data.

1. Press **F10**.

   The **Saving and Loading User Data** screen displays.



2. Do one of the following:

   - To copy data to a floppy disk, insert a formatted floppy disk into the floppy drive, and press **F1**.

   OR

   - To load data onto the hard disk, insert the floppy disk into the floppy drive, and press **F2**.

3. Press any key.

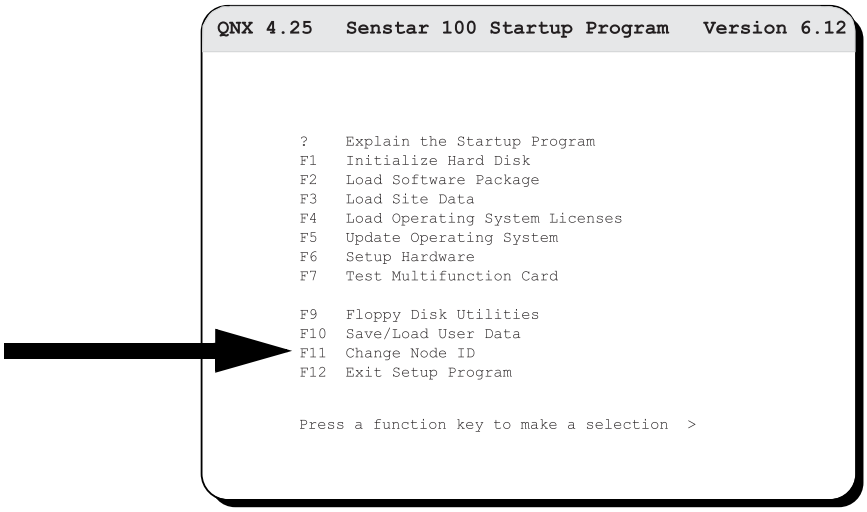
   A message displays onscreen after the user data has been saved or loaded.

4. Remove the floppy disk from the drive and label it.

5. Press any key to display the **Senstar 100 Startup Program** menu.

Changing the node ID

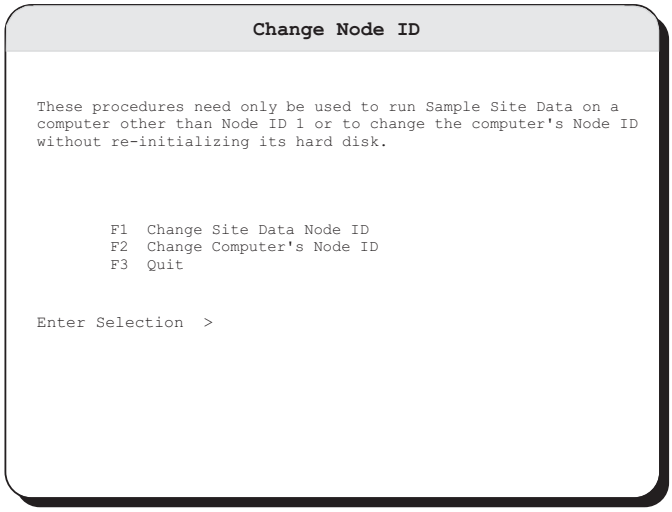
You can use the **F11** Change Node ID function to match the site data with the computer node ID. For example, if you installed sample site data or custom site data with only one computer as node 1, on a computer that is not actually node 1, you must use the Change Node ID function to match the site data with the computer's node ID.



*You cannot change the node ID until you have initialized the hard disk (**Initializing the hard disk**, page 3-5) and loaded the application software (**Loading the application software**, page 3-11) and site data (**Loading the site data**, page 3-13).*

1. Press **F11**.

   The **Change Node ID** menu displays.



2. Follow the onscreen instructions to change the Node ID.
3. After the procedure is complete, follow the prompts to return to the **Setup Hardware** menu.

It is possible to change custom site data with multiple CUs using this function. These changes to the site data allow it to be used with multiple CU Senstar 100 systems on QNX networks.

Use the Site Creation software to make a permanent change in your custom site creation data.

Exiting the Startup Program

You can use the **F12** Exit Startup Program function to exit the Startup program and begin Senstar 100 alarm processing.

1. Press **F12.**
2. Follow the onscreen instructions.

Installing a QNX network

In a Senstar 100 system that contains three or more CUs, you must use a QNX network to connect the CUs. In a configuration with two CUs, mate link communication can be via serial cable or network. On a network, you must assign each computer a unique network node ID ranging from 1 to 255. You can assign the unique network node ID when you install the QNX operating system. Senstar-Stellar recommends that the CU number assigned to each computer should match the node number.

You MUST install a network adapter card in each network computer. All computers on a network should have the same type of network card installed.

Knowledge of, and familiarity with, the QNX editor is essential in the following procedures. Only qualified personnel should perform the software configuration.

The network should be dedicated exclusively for use by the Senstar 100 security system.

For a two-CU Ethernet network, a crossover cable is used to connect the computers. For a network of three to 16 CUs, a hub is required.

Contact Senstar-Stellar Customer Service for more information about installing a QNX network.

Setting up an Ethernet QNX network

Perform the following five steps to set up your Ethernet network. Each step is explained in detail further in this section:

1. Load all of the QNX licenses on each CU.
2. Determine the driver for the network card, and add the Net and Net driver commands to the **sysinit** file.
3. Create or edit the **netmap** file on all computers in the network.
4. Verify the QNX network status.
5. Set up the Senstar 100 site data to use the network for CU communications.

Loading QNX licenses

All of the QNX network licenses are included on one disk, which is loaded during the operating system installation. For old style licenses, follow the procedure in *Setting up an ARCNET QNX network*. The following QNX command is useful for verifying QNX networks:

`# licinfo -a` :lists the licenses to verify that they are all loaded (i.e., **qnx 0/2** indicates that two QNX licenses have been loaded)

Determining the driver

1. When prompted, type `# nettrap query`.

   A response displays that starts the QNX network manager (Net) if it is not already running. A list of drivers for each card installed in the system displays, followed by the **netmap** command. For example:

   ```
   Net &
   Net.ether1000 -p300 -l1 &
   netmap -f
   ```

2. To automatically start the drivers when the system boots, edit the **sysinit** file on network node 1, with the QNX editor, by typing:

   ```
   # qed /etc/config/sysinit.1
   ```

3. Copy the lines output by the `nettrap query` after the line `emu87 &` and before the line `nameloc &.`

Troubleshooting PCI Ethernet card drivers

If the **nettrap** query does not indicate a driver, it may still be possible to locate one. For instance, it may be possible to use the `Net.via` driver with a PCI card. Sometimes, you may need to pass two additional arguments, vendor and device ID of the PCI card, to the driver. These arguments may be found in the output of the **show_pci** command. The `Net.via` driver's Help files show how to pass the arguments.

Previously, a problem existed with Dlink 530TX cards in that older versions were detected by the nettrap query, but newer ones were not.

The following driver contains the correct arguments for one of the newer cards:

```
Net.via  -x0x1106   -y0x3106  -I0 -l1 &
          ↑          ↑
        Vendor     Device
```

Creating or editing the netmap file

The format for the **netmap** is:

Logical Node ID	Logical Network ID	Physical Node ID
in other words:		
QNX Node ID	Network #	Ethernet card MAC address

Every computer on the QNX network must have an entry in the **netmap** file, and the **netmap** file must exist on every computer. The following is an example of the contents of a **netmap** file on a two-CU system:

```
1 1 0080c8 1d205a
2 1 0080c8 2b8dd9
```

The first line shows that node 1 is on network 1 and the MAC address of node 1's Ethernet card is **0080c8 1d205a**. Every Ethernet card has a unique MAC address, which is provided with the manufacturer's documentation or labeled on the card. Alternatively, you can determine the MAC address by entering the following command on the prompt line:

```
# netinfo -l
```

You can also obtain the MAC address by starting the driver with the **-v** option. For example, with the above noted card, enter the following command:

```
# Net.ether1000 -p300 -l1 -v &
```

This command will display various card settings, including the Ethernet card MAC address.

Other helpful commands include:

`# netinfo -l | more`	"| more" will page any command output
`# slay Net.ether1000`	will terminate the driver process so it can be restarted
`# slay Net`	will terminate all Net processes so they can be restarted
`# nettrap start`	start all Net processes automatically (starts the drivers for all installed cards - may be undesired)
`# netmap`	list the current in memory netmap
`# sin -P Ne`	list the current Net processes information

To create or edit the netmap file

1. Type `# qed /etc/config/netmap.`
2. Edit the **netmap** file.

Verifying network status

1. To determine the QNX network status, list all CUs seen via the network by typing `# sin net`.
2. Determine the local computer node ID by typing `# echo $NODE.`
3. Monitor the Network status by typing `# netinfo.`
4. View usage details on any QNX command by typing `# use cmd.`

If the Ethernet network cards are installed and the computers are connected to the network, the QNX LAN will be active when the CUs are restarted. The network must still be configured with Senstar 100's Site Creation.

Setting network communications in Site Creation

1. Set the CUs to communicate using the network in the Site Creation utility.
2. In the Site Creation hardware configuration menus, configure the hardware for each CU to include a network card, and set the node ID number for each CU.

   If possible, keep the node number and CU number the same for each CU.
3. Within the communication port assignments, assign **NETWORK** to the communication port used between the CUs.
4. Regenerate and activate the new site database.

Setting up an ARCNET QNX network

Perform the following five steps to set up your ARCNET network. Each step is either explained in detail further in this section, or a reference is made to the identical section in *Setting up an Ethernet QNX network*, page 4-16:

1. Load all of the QNX licenses on each CU.
2. Determine the driver for the network card, and add the Net and Net driver commands to the **sysinit** file.
3. Create or edit the **netmap** file on all computers in the network.
4. Verify the QNX network status.
5. Set up the Senstar 100 site data to use the network for CU communications.

Loading QNX licenses

1. Load all of the QNX licenses on each CU by typing **`# license.`**
2. When prompted, insert and remove each of the QNX license key disks from the floppy drive.
3. When all of the QNX licenses have been loaded, type the following:

   `# license -r` :refreshes the loaded license

   `# licinfo -a` :lists the licenses to verify that they are all loaded (i.e., **qnx 0/2** indicates that two QNX licenses have been loaded)

> *In a multi-CU system, you MUST install all license disks on each CU. For additional information, see* ***Loading the operating system licenses***, page 3-15.

Determining the driver

1. When prompted, type **`# nettrap query`**.

   A response displays that starts the QNX network manager (Net) if it is not already running. A list of drivers for each card installed in the system displays, followed by the **netmap** command. For example:

   ```
   Net &
   Net.arcnet -mCC00 -l1 &
   netmap -f
   ```

2. To automatically start the drivers when the system boots, edit the **sysinit** file on network node 1, with the QNX editor, by typing:

   ```
   # qed /etc/config/sysinit.1
   ```

3. Copy the lines output by the **`nettrap query`** after the line **`emu87 &`** and before the line **`nameloc &.`**

The -mCC00 of the netmap command indicates where the card ROM is mapped into memory, and is set by a DIP switch on the ARCNET card. The CC00 memory map is the desired DIP switch setting for use with Senstar 100.

Creating or editing the netmap file

You can bypass this procedure by leaving the default ARCNET **netmap** file as is. The file contains the text "one to one", which applies if QNX logical node IDs match ARCNET card Local Node IDs. You can set The ARCNET card ID using the card's ROM configuration utility. This is usually entered by pressing the **Esc** key twice when the "**Node N**" text displays on the monitor when the system boots. This setup utility defines the card Local ID, so you can easily match these to CU numbers.

The format for the **netmap** file is:

Logical Node ID	Logical Network ID	Physical Node ID
in other words:		
QNX Node ID	Network #	ARCNET card ID

Every computer on the QNX network must have an entry in the **netmap** file and the **netmap** file must exist on every computer. The following is an example of the entire contents of a **netmap** file on a two-CU ARCNET system where the QNX nodes match the Card IDs:

```
1 1 t1
2 1 t2
```

The following is an example of a network where the QNX nodes do not match the card IDs:

```
9 1 t1
10 1 t2
```

The first line shows that QNX node 9 is on network 1 and the card ID is decimal 1. The second line shows that QNX node 10 is on network 1 and the card ID is decimal 2.

You can determine network card information by entering the command:

```
# netinfo -l
```

You can also obtain information by starting the driver for the card with the -v option. For example, enter the following command:

```
# Net.arcnet -v &
```

Other helpful commands include:

`# netinfo -a | more`	"| more" pages any command output
`# slay Net`	terminates all Net processes so they can be restarted
`# sin -P Ne`	lists the current Net processes information

If the QNX node IDs do not match the ARCNET card IDs, you must edit the **netmap** file.

1. Type `# qed /etc/config/netmap.`

Verifying network status

Refer to Step 4 in *Verifying network status*, page 4-19.

Setting up network communications in Site Creation

Refer to Step 5 in *Setting network communications in Site Creation*, page 4-19.

Typical ARCNET card settings

For CU2:

Boot from Node	2
Local Node ID	2
Primary boot node ID	2
Alternate boot node ID	1
Retries from boot Node	1
Boot Filename	none
Hardware Interrupt	5
Extended timeout level	0

Senstar 100_netmon.exe for ARCNET

Previously, on certain systems the QNX Net.arcnet driver failed initialization with codes 18, and sometimes 4 (**netinfo -a |** further explains the error codes). As a result, a special process called **s100_netmon.exe** was developed to dynamically load the CPU and initialize the card, during the initialization process, in order to prevent these failures. This program is available in Senstar 100 software version 6.05 and higher. To use this process, add the following line to the **sysinit** file instead of the line that starts the Net.arcnet driver:

```
/exe/s100_netmon.exe 20 23 1 &
```

a Video switcher configurations

This appendix lists the Senstar 100 default port communication settings, and any special requirements for installing a video switcher in a Senstar 100 system. For complete setup information, refer to the video switcher's documentation.

For additional Senstar 100 configuration information refer to the *Senstar 100 Site creation planning guide DA-030213*.

The communication settings provided in this appendix are the Senstar 100 default settings for the particular device. The communication settings of the video switcher and the Senstar 100 port to which it is connected MUST match. The Senstar 100 settings can be changed in the setup menu, or in the Site Creation utility. For information on changing the video switcher's default communication parameters, refer to the video switcher manual. Any additional setup requirements are included in the listings for each device.

American Dynamics Matrix Switching Systems

Senstar 100 default communication parameters

Baud Rate	9600
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	Software
Comm Timeout	0 - 90 seconds *
Port use	Terminal **

* There is no default setting for the Comm Timeout parameter. The Comm Timeout parameter specifies how much time (in seconds) can pass without communication between the Senstar 100 and the video switcher, before a Comm Fail alarm is declared. A setting of 0 disables Comm Fail monitoring. The Senstar 100 polls the device four times during each timeout period (i.e., if the Comm Timeout is set to 20 seconds, the Senstar 100 will poll the video switcher every five seconds).

** To communicate with Senstar 100, the American Dynamics Matrix Switcher Port Use MUST be set to **Terminal** (not **Keyboard**) in the onscreen **Ports** menu.

Pelco 9500

Senstar 100 default communication parameters and setup information

Baud Rate	1200
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None
Comm Timeout	0 - 90 seconds *

Required Setup Information	
User Number	16
User ID	99999
Priority	1

* There is no default setting for the Comm Timeout parameter. The Comm Timeout parameter specifies how much time (in seconds) can pass without communication between the Senstar 100 and the video switcher, before a Comm Fail alarm is declared. A setting of 0 disables Comm Fail monitoring. The Senstar 100 polls the device four times during each timeout period (i.e., if the Comm Timeout is set to 20 seconds, the Senstar 100 will poll the video switcher every five seconds).

Pelco 9750/9760

Senstar 100 default communication parameters and setup information

Baud Rate	9600
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None
Comm Timeout	0 - 90 seconds *

Required Setup Information	
Port Definition Equipment Number	100
KBD Number	95/96
Monitor Definition Keyboard Access	to keyboards 95 & 96
Camera Definition Open Access To	95 & 96
Operators 95 & 96 Pin 5572	priority 1

* There is no default setting for the Comm Timeout parameter. The Comm Timeout parameter specifies how much time (in seconds) can pass without communication between the Senstar 100 and the video switcher, before a Comm Fail alarm is declared. A setting of 0 disables Comm Fail monitoring. The Senstar 100 polls the device four times during each timeout period (i.e., if the Comm Timeout is set to 20 seconds, the Senstar 100 will poll the video switcher every five seconds).

Panasonic System 500

Senstar 100 default communication parameters and setup information

Baud Rate	9600
Data Bits	8
Parity	Odd
Stop Bits	1
Flow Control	RTS/CTS
Comm Timeout	0 - 90 seconds *

Required Setup Information	
Operator	6
Level	1
Priority	1
Password	95572

* There is no default setting for the Comm Timeout parameter. The Comm Timeout parameter specifies how much time (in seconds) can pass without communication between the Senstar 100 and the video switcher, before a Comm Fail alarm is declared. A setting of 0 disables Comm Fail monitoring. The Senstar 100 polls the device four times during each timeout period (i.e., if the Comm Timeout is set to 20 seconds, the Senstar 100 will poll the video switcher every five seconds).

Burle Allegiant

Senstar 100 default communication parameters

Baud Rate	1200
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None
Comm Timeout	0 - 90 seconds *

* There is no default setting for the Comm Timeout parameter. The Comm Timeout parameter specifies how much time (in seconds) can pass without communication between the Senstar 100 and the video switcher, before a Comm Fail alarm is declared. A setting of 0 disables Comm Fail monitoring. The Senstar 100 polls the device four times during each timeout period (i.e., if the Comm Timeout is set to 20 seconds, the Senstar 100 will poll the video switcher every five seconds).

Cohu MPC-M-104

Senstar 100 default communication parameters

Baud Rate	9600
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None
Comm Timeout	0 - 90 seconds *

* There is no default setting for the Comm Timeout parameter. The Comm Timeout parameter specifies how much time (in seconds) can pass without communication between the Senstar 100 and the video switcher, before a Comm Fail alarm is declared. A setting of 0 disables Comm Fail monitoring. The Senstar 100 polls the device four times during each timeout period (i.e., if the Comm Timeout is set to 20 seconds, the Senstar 100 will poll the video switcher every five seconds).

b Senstar 100 applications

This appendix provides useful information on some common Senstar 100 applications.

> *For additional information on the software setup procedures outlined in this appendix, refer to the Site Creation Installation Guide (DA-030207).*

Multiple video switchers

The Senstar 100 supports up to 16 video switchers (VS). All VS that are included in a system must be the same brand and model. The Senstar 100 control unit requires one serial port for each VS that it controls.

Using multiple VS will not change the way operators process or view CCTV alarm responses. However, the video signal paths of the cascaded VS must be defined in the site database.

Figure b-1 : Multiple video switcher control, page b-2 depicts four VS with multiple camera inputs. Each VS has a single monitor output which is connected to a CCTV monitor in a central control and maintenance facility. This configuration enables the video signals from many cameras, to be carried from the outlying buildings to the central control facility monitors using a single video line per switcher.

In the following sample illustration, the Senstar 100 control unit receives an alarm input from building 3, zone 6. In response, the control unit automatically displays the camera view for zone 6 (VS3, camera 6) on central control facility monitor 1.

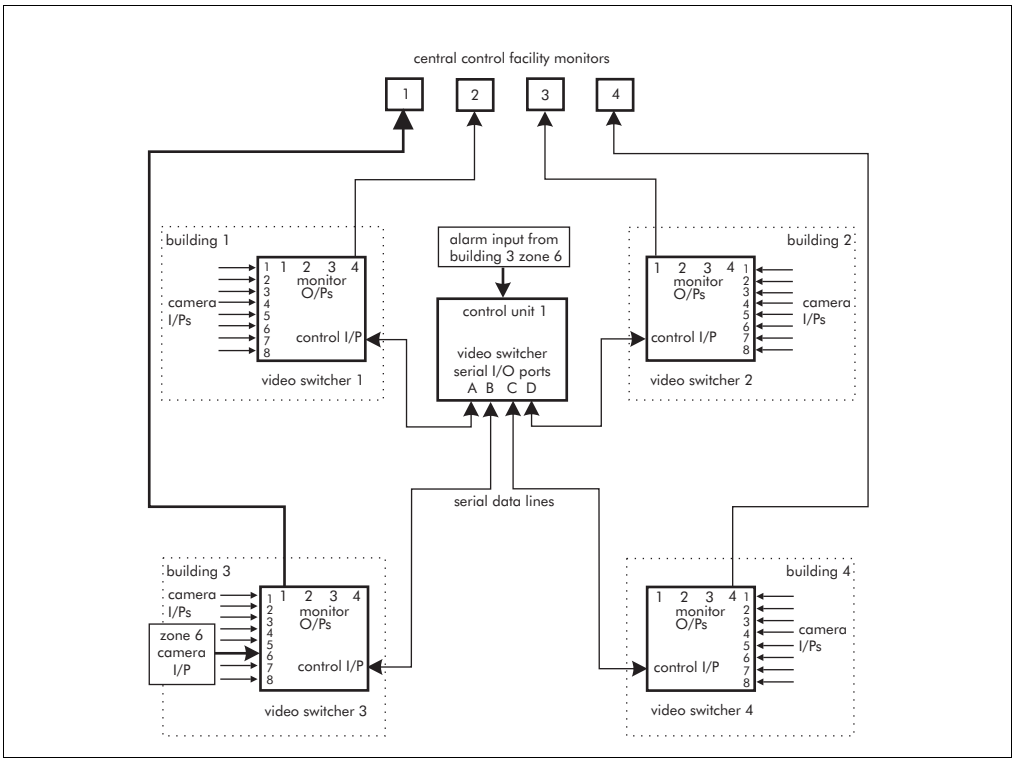


Figure b-1: Multiple video switcher control

Each Senstar 100 control unit can be configured to automatically display any camera input to multiple VS on up to eight CCTV monitors.

Cascaded video switchers

The monitor outputs from remote video switchers can be cascaded to the camera inputs of a VS in a centralized control and maintenance facility. Cascading the VS enables the video signals from remote locations to be carried to a central facility on a single video line. This significantly reduces the expense of video cabling between locations. *Figure b-2 : Cascaded video switchers, page b-3* depicts two cascaded VS. Monitor output 1 of VS 2 is cascaded to camera input 9 of VS 1.

In the following sample illustration, the Senstar 100 control unit receives an alarm input from zone 16. In response, the control unit automatically displays the camera view for zone 16 (VS2, camera 34) on central control facility monitor 2.

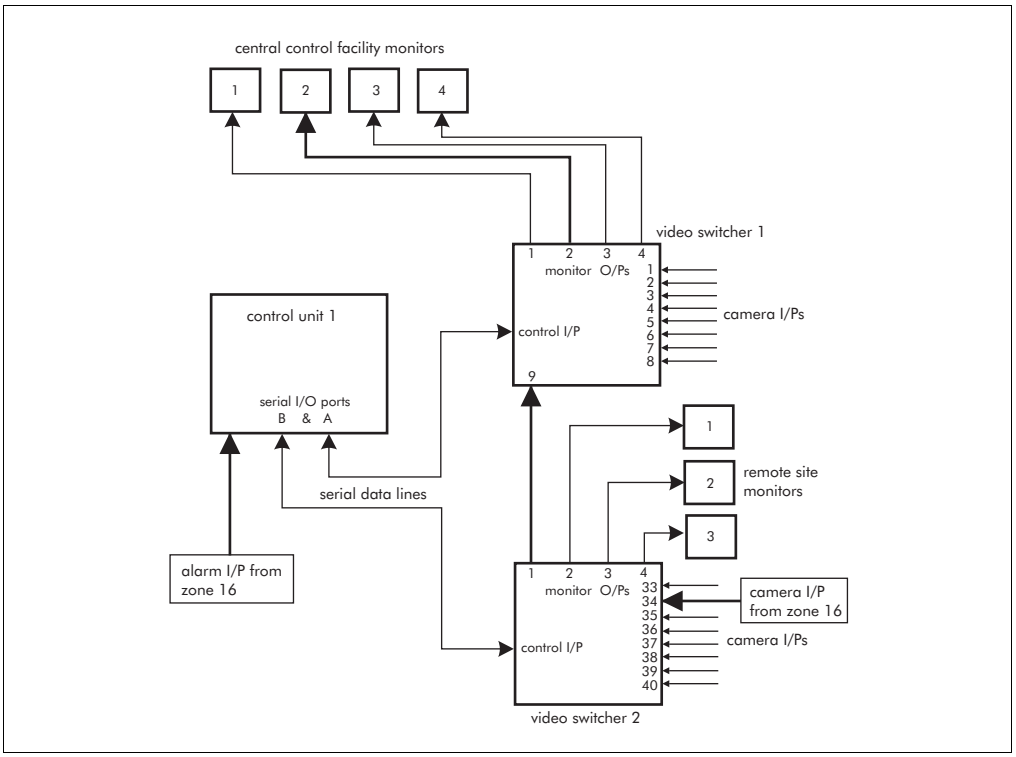


Figure b-2: Cascaded video switchers

The Senstar 100 control unit can be configured to display any camera input to VS 2 on the central control facility monitors using a single video line and a cascaded camera input to VS 1.

Configuring your system for multiple video switchers

This section describes the procedures used to configure your Senstar 100 system for multiple VS. Follow these procedures to define:

- the monitor outputs and video controllers that are used in response to alarm conditions and zone selection (automatic camera call-ups)
- the monitor outputs and video controllers used in manual (operator selected) cameras
- the video signal paths for cascaded VS

  These three procedures must be repeated for each control unit that will call-up cameras to CCTV monitors, even if the monitor configurations are identical, as in redundant control.

- the VS to which each camera is assigned
- the VS device number in zone camera point assignments

Define each VS in accordance with *Defining cascaded video switcher signal paths, page b-5*.

Entering monitor data

The **CONFIGURE MONITORS** menu allows you to define the following monitor configurations for each control unit:

- eight configurations for automatic (alarm) camera call-ups
- four configurations for manual (operator selected) cameras
- eight configurations for cascaded video signal paths

Unused designations are left blank.

1. In the appropriate control unit, select **F6** (**Config Montr**) from the **CONFIGURE PRIMARY DEVICES** menu.

   The first page of the **CONFIGURES MONITORS** menu displays (Figure b-3 : Assigning automatic video switcher monitor outputs, page b-4).

   *You can move through the five pages of the **CONFIGURE MONITORS** menu by pressing F5 (↓Page) or F6 (↑Page).*

Assigning video switcher monitor outputs (automatic)

MONITOR TYPE/ID for Alrm 1 through 8 allows you to define up to eight VS monitor O/Ps, used for automatically displayed camera views in response to alarm conditions and zone selection (zone camera call-ups).

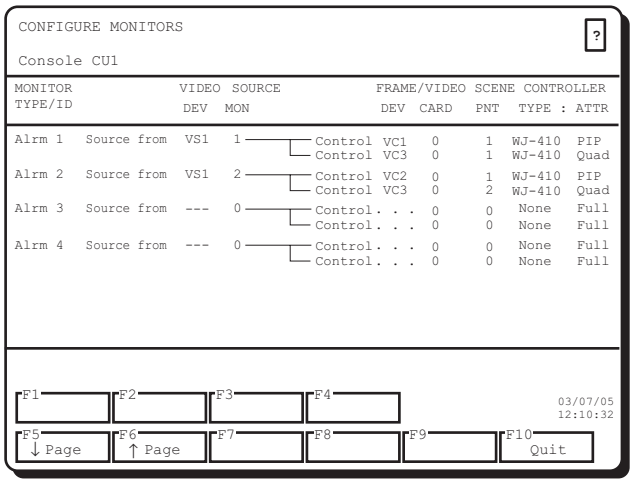


Figure b-3: Assigning automatic video switcher monitor outputs

1. In the **VIDEO SOURCE** section of the CONFIGURE MONITORS menu, enter the VS in the **DEV** field.
2. Enter the monitor O/P in the **MON** field.
3. Repeat steps 1 and 2 for up to eight monitors per control unit.

Assigning video switcher monitor outputs (manual)

MONITOR TYPE/ID for Manu (Manual) 1 through 4 allows you to define up to four VS monitor O/Ps used for manually displayed camera views, see *Figure b-4 : Assigning manual video switcher monitor outputs, page b-5*.

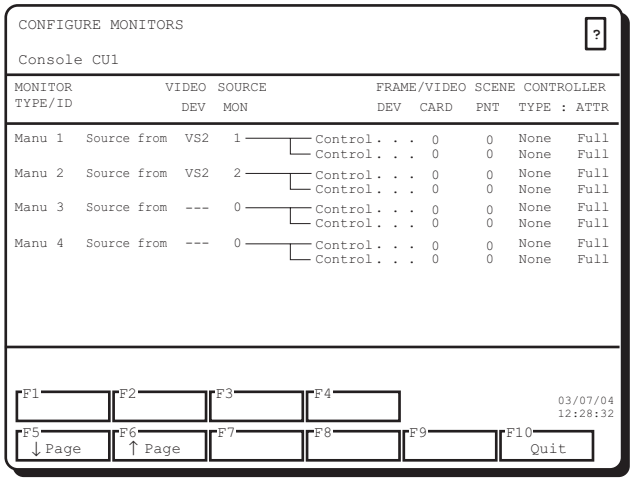


Figure b-4: Assigning manual video switcher monitor outputs

1. In the VIDEO SOURCE section of the **CONFIGURE MONITORS** menu, enter the VS in the **DEV** field.
2. Enter the monitor O/P in the **MON** field.
3. Repeat steps 1 and 2 for up to four monitors per control unit.

Defining cascaded video switcher signal paths

MONITOR TYPE/ID Casc (Cascade) 1 through 8 allows you to define up to eight cascaded video signal paths, see *Figure b-5 : Defining cascaded video switcher signal paths, page b-6.*

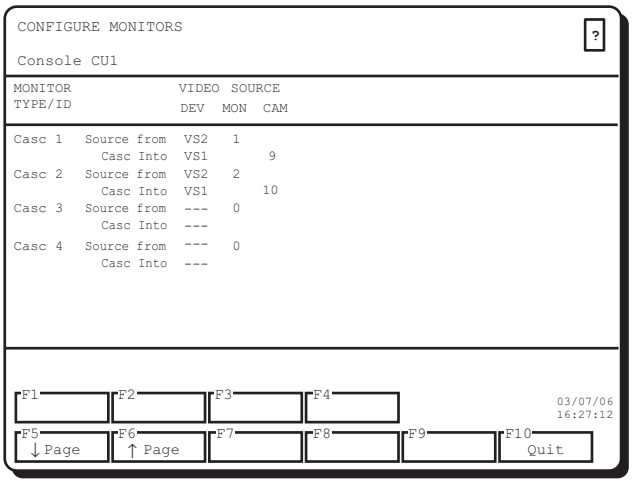


Figure b-5: Defining cascaded video switcher signal paths

1. In the **DEV** field of the **Source from** row, within the **CONFIGURE MONITORS** menu, enter the number for the VS that is sending the cascaded video signal from the remote location.
2. In the **DEV** field of the **Casc Into** row, enter the number for the VS that is receiving the cascaded video signal.
3. In the **CAM** field of the **Casc Into** row, enter the camera input channel.

Drawing the camera map symbols

The **DRAW MAP CAMERAS** menu allows you to draw and position the camera symbols on your custom site maps, see *Figure b-6 : Drawing map camera symbols, page b-6*.

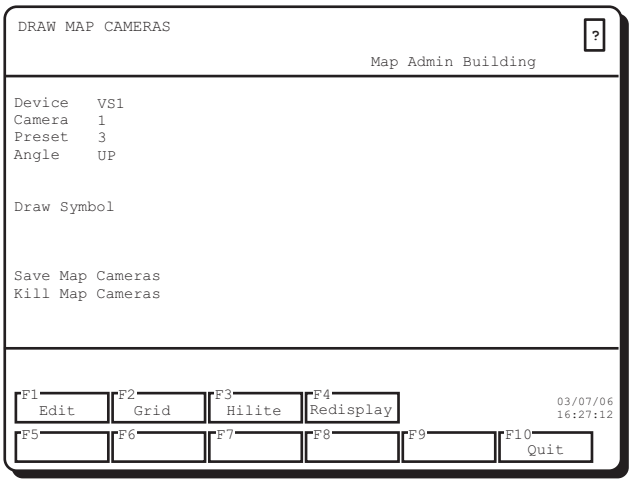


Figure b-6: Drawing map camera symbols

1. As it is now possible to have more than one VS, you must define the specific VS in the **Device** section of the **DRAW MAP CAMERAS** menu.
2. You must also enter the camera, define the preset (if applicable), and enter the angle for the camera symbol.
3. To do so, refer to *Displaying camera assignments, page b-7, Drawing the camera map symbols, page b-6,* and *Editing camera symbols, page b-7*.

Editing camera symbols

1. Press **F1** to edit the **DRAW MAP CAMERAS** menu.

   The **EDIT MAP CAMERAS** menu displays.
2. As it is now possible to have more than one VS, you must define the VS in the **Device** section of the **EDIT MAP CAMERAS** menu.
3. You must also enter the camera, define the preset (if applicable), and the angle for the camera symbol.

Displaying camera assignments

1. To display the **DISPLAY CAMERA POINTS: DETECTION** menu, refer to the procedure for *Assigning video switcher monitor outputs (automatic), page b-4* or *Assigning video switcher monitor outputs (manual), page b-5*.

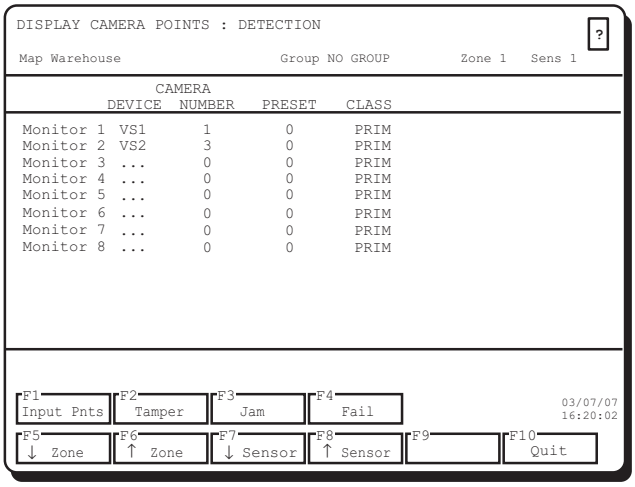


Figure b-7: Displaying camera point assignments

1. As it is now possible to have more than one video switcher, you must define the specific VS for each camera call-up in the **DISPLAY CAMERA POINTS** menu.
2. You must also define the preset and class (if applicable) and enter the camera number.
3. Follow the same procedure for the following camera assignments, as required, in their respective menus:

- camera tamper points
- camera jam points
- camera fail points
- camera device points
- camera card points

Multi-station operation and redundancy

With Senstar 100 systems that include multiple CUs, you have a choice of setups:

- alarm processing distributed between the CUs so that each CU is responsible for specific functions or areas (This configuration is frequently used at large facilities.)
- complete system alarm processing performed on all CUs so that every CU is capable of responding to any alarm situation
- alarm processing performed on one CU while a second CU serves as a “hot standby” backup (In this case, the primary CU has full control of the security system; the backup CU assumes full control of the system, if the primary CU goes off-line.)

All of the CUs are kept current on the status of the entire system, regardless of how the alarm processing functions are setup in a multi-station Senstar 100 system. The Control Map Display feature of Senstar 100 lets the system supervisor specify the maps that display on each CU. With four Map Display options available, you can do the following functions with the maps:

- **post** - can be viewed by the operator, and alarms are presented to the operator for processing
- **monitor** - can be viewed by the operator at this CU; alarms are presented for processing elsewhere (i.e., the CU where the map is posted) (If the alarm is not processed within a user-specified time limit, the alarm can be automatically transferred for processing at the monitored location.)
- **conceal** - cannot ordinarily be viewed by the operator, and alarms associated with the map are not presented to the operator (The map can be made temporarily available if the operator selects the **Post All** function, and becomes available automatically if the CU where the map is posted fails.)
- **restrict** - can never be viewed by the operator, and alarms associated with the map are not presented to the operator (This function is used to isolate higher security, or geographically separate areas from a CU station.)

If **Map Concealment** is enabled, in a typical two-CU system, the alarm processing responsibilities are divided between the two CUs, according to the supervisor’s Map Control definitions. If one of the CUs should go off-line, the other CU would assume full control of the security system.

If **Map Concealment** is disabled, all maps and alarm processing responsibilities are available on each CU.

There are numerous applications for multi-station Senstar 100 operation. Contact Senstar-Stellar Customer Service for additional information.

Operating a dual-redundant primary device

For dual-redundant operation, each primary device must have an available connection to both CUs. For dual-ported devices, such as the Sennet Network Controller, there are two serial ports, which you can connect to two CUs. However, many primary devices are single-ported and require a serial switching device to connect them to two CUs. The serial switching device provides the capability for single-ported devices to have switchable connections to two CUs. *Figure b-8 : Senstar 100 dual-redundant system, page b-10* illustrates a dual-redundant Senstar 100 system with both dual-ported and single-ported primary devices.

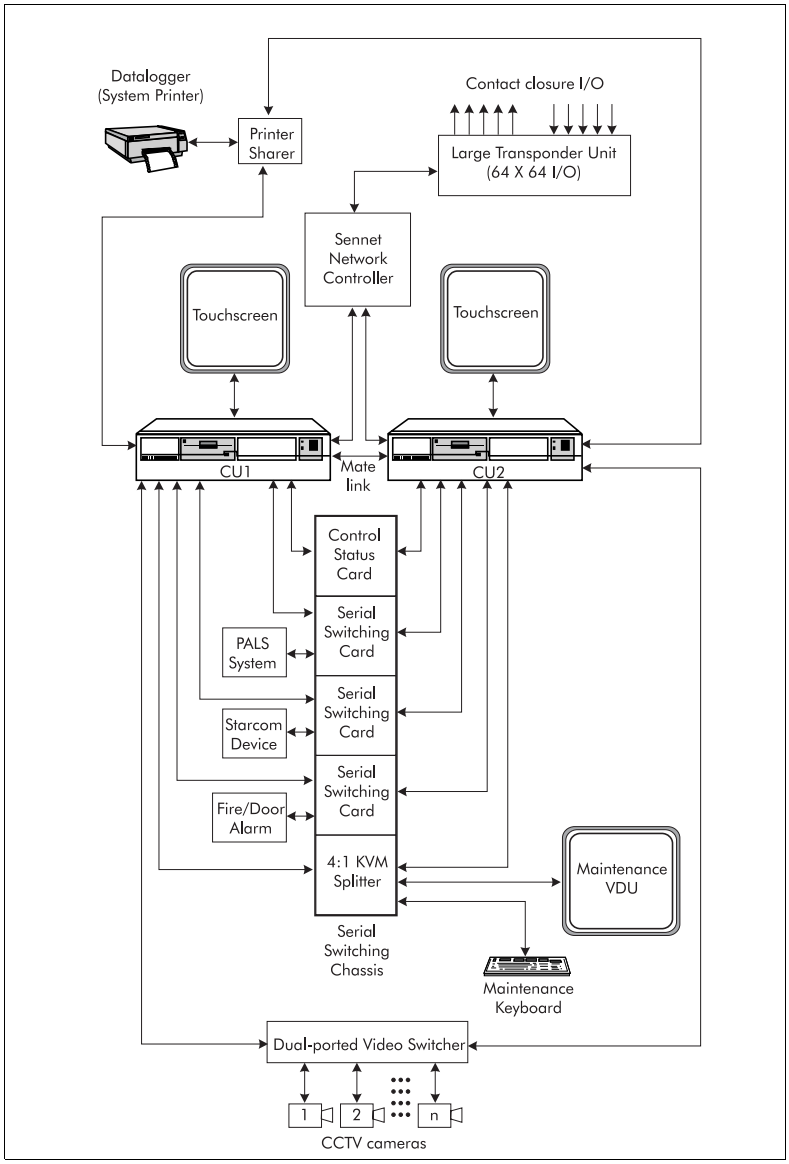


Figure b-8: Senstar 100 dual-redundant system

In normal operation, the serial switcher connects the single-ported primary devices to the primary CU. The primary CU passes the data it receives from the primary devices to the secondary CU through the mate link. In this way, both CUs are constantly updated on system status. If the primary CU should fail, the serial switcher automatically reroutes the primary devices' serial communication links to the secondary CU. It is also possible to manually switch the serial data paths to the secondary CU. This can be useful, for example, to maintain full control of the security system while performing maintenance on the primary CU. *Figure b-9 : Serial switching card data flow, page b-11* illustrates the data flow through the serial switching cards.

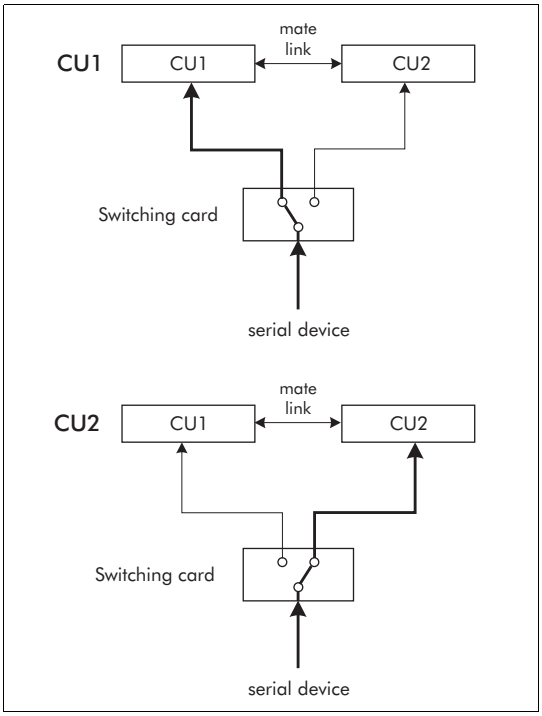


Figure b-9: Serial switching card data flow

Automatic serial switching unit

Senstar-Stellar manufactures a serial switching unit specifically for use with the Senstar 100 system. The serial switching unit is a rack-mounted chassis (EIA 19 in. rack) which can hold up to 16 serial switching cards. Slot 16 (card 16) is generally reserved for the switching control card. The remaining 15 slots can be filled, as required, with up to 15 serial switching cards. One serial switching card is required for each single-ported primary device connected to dual-redundant CUs. *Figure b-10 : Automatic serial switching unit, page b-12* illustrates the serial switching chassis.

The serial switching unit should be powered by an uninterruptible source of AC power (16 to 20 VAC), which is connected directly to the switching control card. The serial switching cards receive regulated power from the connectors on the switching chassis. There is a key lock, on the front panel of the switching unit,

which is used to enable or disable the manual gang switch. The manual gang switch is used to switch all of the serial switching cards between the primary CU (A side) and the secondary CU (B side). LED indicators at the gang switch marked A and B provide a visual indication of which CU is presently connected to the serial devices.

Each serial switching card includes a front panel switch, which toggles the individual card between CU A and CU B. LED indicators visually display to which CU the card is connected. There are three DB25 female connectors on each card, which are used to connect to CU A, CU B, and the single-ported primary device.

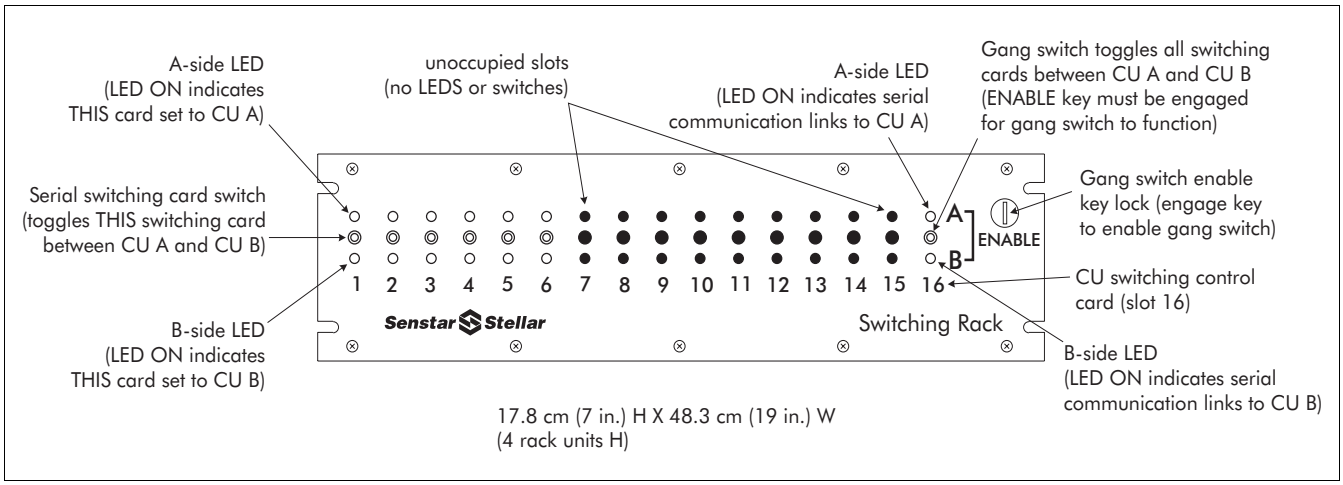


Figure b-10: Automatic serial switching unit

Installing the automatic serial switching unit

1. Install the switching chassis in an EIA-19 in. rack.

   The chassis requires four 1.75 in. rack units.

Serial data switching control cards

There are two models of Senstar 100 CU switching control cards. The older model (J2BA0301) is used with the Black Box switching chassis, which is no longer available. The newer model (J2BA302) is designed for use in the Senstar-Stellar switching chassis. *Figure b-11 : Switching control card, page b-13* illustrates the Senstar-Stellar switching control card (J2BA0302).

The Ready signal from the MFC (J9 pin 3) in the Senstar 100 CU is used to drive a relay in the switching control card. The relay contacts and the gang switch (manual priority select) are connected to an RC network which generates switching pulses to drive the serial switching cards. If the ready signal from the primary CU goes high (indicating a CU failure), or if the gang switch is activated, the switching cards reroute the serial data paths from the primary devices to the secondary CU (B side).

When the failed (or switched OFF) CU comes back online, the Ready signal goes low and the serial switching unit reroutes the serial data links from the secondary CU back to the primary CU.

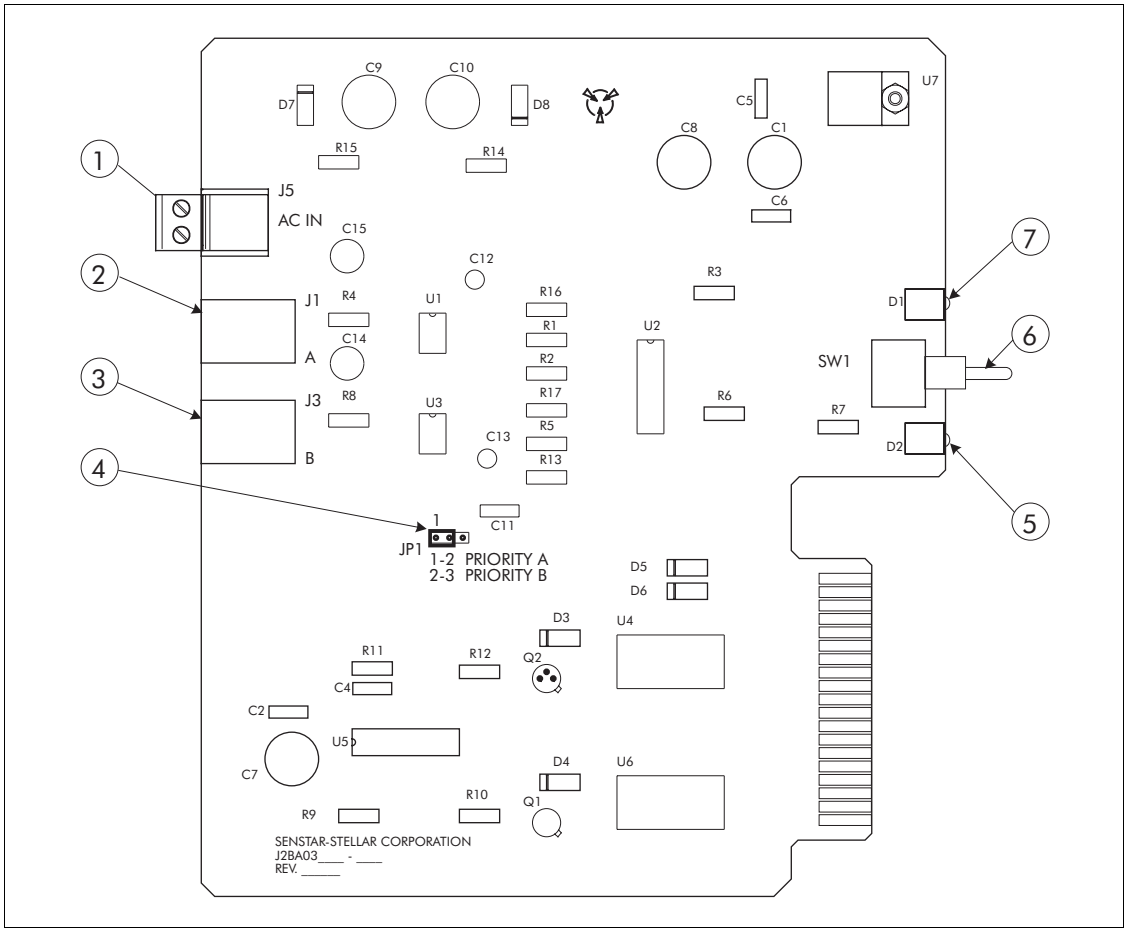


Figure b-11: Switching control card

Item	Description	Item	Description
1	Connector J5 - AC power connection (16 to 20 VAC; input power for all cards in the switching chassis is through J5)	5	D2 - LED ON indicates that serial communications are presently connected to CU B
2	Connector J1 - RJ11 modular plug (connect to J9 on the CU A multifunction card, pin-3 carries the CU Ready signal)	6	SW1 gang switch - ENABLE key must be engaged for the gang switch to function, gang switch toggles all serial cards between CU A and CU B
3	Connector J3 - RJ11 modular plug (connect to J9 on the CU B multifunction card, pin-3 carries the CU Ready signal)	7	D1 - LED ON indicates that serial communications are presently connected to CU A
4	Priority select jumper JP1 shunt on pins 1 & 2, CU A = primary shunt on pins 2 & 3, CU B = primary		

Installing the serial switching control card

Caution

The serial switching control card includes static sensitive components. Follow proper ESD procedures when handling the card.

1. Set the priority select jumper JP1.

   Senstar-Stellar recommends using the default setting with the shunt installed on pins 1 & 2 for Priority A.

2. Slide the card into Slot 16 in the switching chassis. Ensure that the card is properly seated.
3. Connect J1 on the switching control card to J9 on the CU A MFC. Use a four-wire telephone cable terminated at both ends with RJ11 modular phone jacks. See *Figure 2-4 Multifunction card external alarm O/P, page 2-11* for the MFC pinouts.
4. Connect J3 on the switching control card to J9 on the CU B MFC. Use a four-wire telephone cable terminated at both ends with RJ11 modular phone jacks. See *Figure 2-4 Multifunction card external alarm O/P, page 2-11* for the MFC pinouts.)
5. Connect AC power to J5.

Serial data switching cards

There are two types of serial data switching cards, supported by Senstar 100. The older model (SP-100224) is no longer available, but it can be used with the current system. The newer model (J2BA0200) routes transmitted data from the single-ported device to both CU A and CU B. Only the transmitted data line from the active (primary) CU is switched (to the single-ported device). This arrangement provides half-redundant communications with the single-ported device. *Figure b-12: Serial switching card, page b-15* illustrates the Senstar-Stellar serial data switching card (J2BA0200).

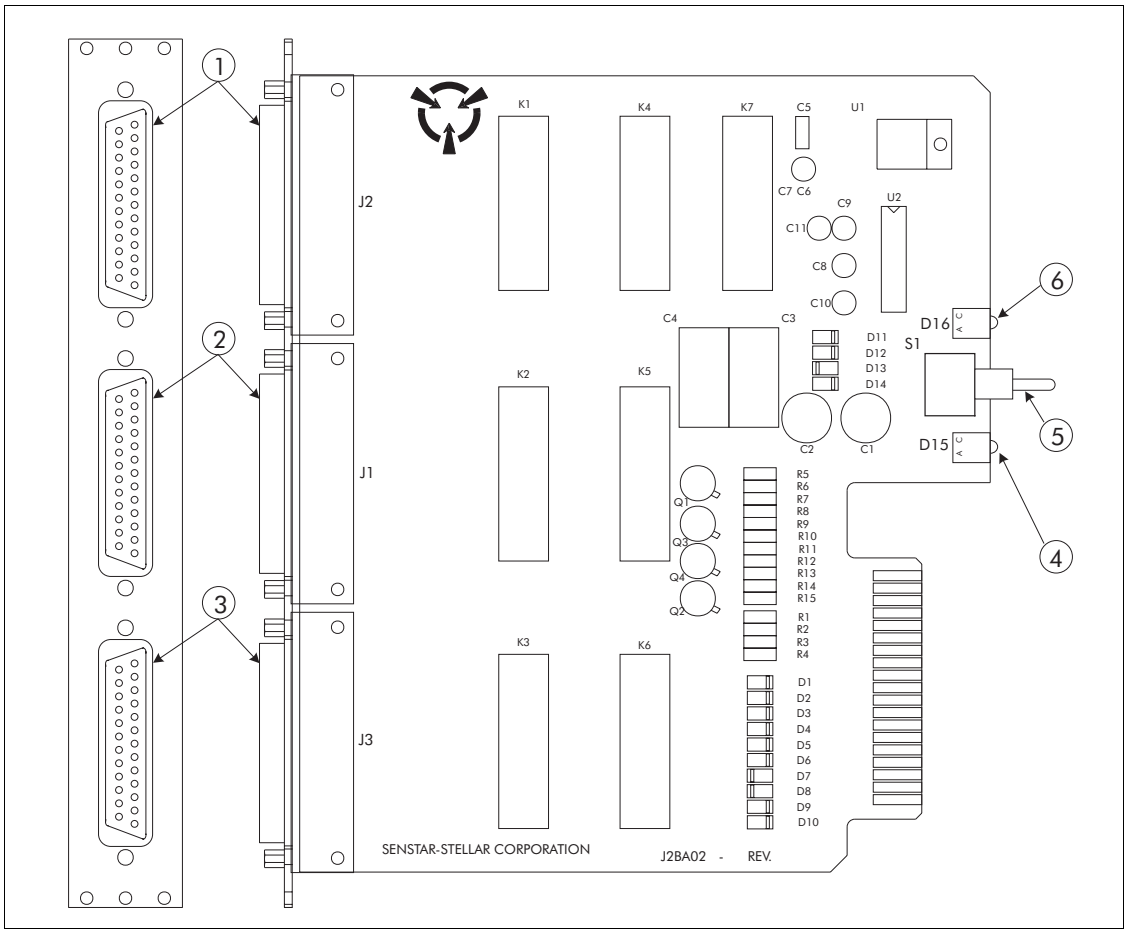


Figure b-12: Serial switching card

Item	Description	Item	Description
1	Connector J2 DB25 female - Serial connection to CU A	4	D15 - LED ON indicates that serial communications are presently connected to CU B
2	Connector J1 DB25 female - Serial connection to primary device	6	SW1 manual switch - manual switch toggles this serial card between CU A and CU B
3	Connector J3 DB25 female - Serial connection to CU B	7	D16 - LED ON indicates that serial communications are presently connected to CU A

Installing the serial switching card

Caution

The serial switching card includes static sensitive components. Follow proper ESD procedures when handling the card.

1. Slide the card into any vacant slot in the switching chassis. Ensure that the card is properly seated.
2. Label the card to identify its switching function.
3. Connect the primary device to J1.
4. Connect CU A to J2.
5. Connect CU B to J3.

Glossary

Activity archive-DOS storage	Function that stores reports of system activity to DOS formatted floppy disks.
Adapter card	Device that allows one system to connect to, or work with, another system.
Align touchscreen function	Function in the Startup program that performs an initial alignment of the touchscreen. The touchscreen is more accurately aligned in the Setup menu.
Boot disk	Floppy disk used to boot a PC. It includes the Senstar 100 startup program and is used to configure a new PC for use by Senstar 100, or to update an existing CU.
Cascaded video switchers	Method of connecting the monitor outputs from one video switcher into the camera inputs of another. Allows the video signals from remote locations to be carried to a central facility on a single video line.
CU	Senstar 100 control unit (computer).
Digital input output card	Adapter cards, installed in the computer, used to provide local I/O capacity for the Senstar 100 CU.
Duplicate disk function	Function in the Startup program that makes backup copies of master disks.
ESD procedures	Anti-static grounding procedures essential in protecting sensitive electronic components from static discharges.
Expansion slots	Slots on the system board where adapter cards are installed.
External alarm annunciation	Annunciates alarms when the sanity timer fails, the Senstar 100 software fails, or an alarm condition is detected by Senstar 100 (feature of the Multifunction card).
Initialize hard disk function	Function in the Startup program that formats the hard disk for Senstar 100 applications.
Interrupt	Generated on a system line whenever a serial port is ready to transmit or receive data.
Load site data function	Function in the Startup program that loads the initial/updated site data on the hard disk.
Load software package function	Function in the Startup program that loads Senstar 100 application software on the hard disk.

Multifunction card Single-board plus interface board, supplied by Senstar-Stellar, that provides: sanity timer to automatically reboot Senstar 100 when software or hardware failure is detected, open collector outputs for external alarm reporting and Senstar 100 ready signal, 2 serial ports, 4 dry contact output relays.

Node ID A unique identifier assigned to each Senstar 100 control unit (computer). The default value in the sample site data is Node 1.

Power reset harness Computer wiring assembly, which connects the Multifunction card to the computer's reset circuitry. It enables the sanity timer to automatically reboot the Senstar 100 system when a hardware or software failure is detected.

Primary device Device, which connects to a serial port on the CU, and is used to collect or respond to alarms. The list of primary devices includes: Redundant CU, Video Switcher, Control Module, Interface Module, Sennet Network, Starcom, Custom Handler, David 300, Video Controller, Fiber Sensys, FOIDS, Weather Logger.

QNX Stable, multi-tasking, highly reliable real time PC operating system with low memory requirements and extremely fast response time.

Redundant CU One of the 36 primary device designations in the database is reserved for the connection of a redundant CU. The Senstar 100 system supports up to 16 CUs connected via the QNX network.

Sanity timer Automatically reboots Senstar 100 when a software or hardware fail is detected - a feature of the Multifunction card.

Save user data function Function in the Startup program that makes backups of user-defined data - alarm prompts, checklists, alarm causes, passwords, etc.

Secondary device Device that assists in the running of the Senstar 100 system - includes touchscreen, mouse, modem, printers (event loggers).

Select keyboard type function Function in the Startup program that specifies the type of keyboard you wish to use.

Select monitor type function Function in the Startup program that specifies the type of monitor you are using.

Site Creation Software module that allows you to create and modify your own site database and draw maps.

Startup program Senstar 100 program that is used to initialize the hard disk, load the application software and sample site data, make backups of the master disks, align the touch screen, select the keyboard character set, select the monitor type, and save user-defined data (autostarts from the QNX boot disk).

Video switching function One of the 36 primary device designations in the database is reserved for the connection of a video switcher. Software function that controls video switchers using serial data communications.

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