

EXHIBIT T – Service Manual

FCC ID# NMEAVTS1010



Draft

AlarmView™
Service and Installation Manual

Precautionary Information



Caution

Instructions - For continued safe use of this equipment, it is necessary that the listed instructions be followed. However, instructions listed in this manual in no way supersede established medical procedures concerning patient care.

Intended Use - The system is intended to monitor various patient-monitoring devices for alarm conditions, and responds by transmitting messages that include text information from the patient.

Confirmation - When the system sends out a page, there is NO confirmation back that the intended pager has successfully received the page.

Maintenance - Failure on the part of the hospital or institution to maintain the equipment as outlined in this manual may cause pre-mature equipment failure.

Installation - The AlarmView System has been installed by qualified technicians. Modification of this installation may cause undue equipment failure.

Electromagnetic Interference - The AlarmView System may cause electromagnetic interference with devices operated in close proximity to the transmitter (refer to Appendix C).

System Components - Do not spill liquids on any of the AlarmView™ System components.



Warnings

Patient Monitoring - The most reliable method of patient monitoring combines close personal surveillance with correct operation of monitoring equipment. Patient alarm conditions and notifications are primary functions of the patient monitoring system. It is imperative that the caregiver and/or monitoring floor technicians monitor patient alarm conditions. **The AlarmView System is not intended for use as the primary source for the patient alarm notification.**

Accidental Spills - If the event fluids are accidentally spilled in the equipment, take the equipment out of service and check for damage. Check operation accordingly 24 hours later.

Antenna Placement - The transmitter unit with a transmitter antenna may interfere with computer equipment with electronic switchboards located close to the antenna. If the transmitter unit must be located close to these types of equipment, a remote antenna should be used.

Change of Performance - If the system fails to page users reliably, contact the hospital staff responsible for electromagnetic environment and Data Critical Corp. immediately. (Data Critical Corp. 24 hour support at 1-877-322-7828)

Electrical Shock - To reduce the risk of electrical shock, DO NOT remove cover (or back). Refer servicing to qualified personnel.

Environment - Data Critical Corporation does not assume responsibility for damage to the equipment caused by improperly vented cabinets, improper or faulty power, or insufficient wall strength to support equipment mounted on such walls.

Explosion Hazard - Do not use this equipment in the presence of flammable anesthetics, skin cleaning agents, and disinfectants. Great care must be exercised when the device is used in an oxygen-enriched atmosphere. The atmosphere is considered to be oxygen enriched when the room air contains more than 25% of oxygen or nitrous oxide.

Home Use - AlarmView™ System is not intended for home use.

Power - Convenience outlets and all others that may be used for the patient must be on the hospital emergency circuit so that they are energized at all times.

Site Surveys - Each institution is responsible for surveying existing equipment and ensuring no conflict exists when considering the introduction of additional radiating devices.

Transmission Bands - Each institution is responsible for maintaining continued surveillance of transmission bands being used in the facility to prevent co-occupation of bands and cross-band interference.

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Service and Technical Support

Direct all inquires to:
Data Critical Corporation
19820 North Creek Parkway
Suite 100
Bothell, WA 98011

For technical advice or information concerning any equipment in your AlarmView™ System, contact Technical Support. Call, toll free at 1-877-DCC-STAT (1-877-322-7828).

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Conventions of this Manual

Two items that may help you as you work through the AlarmView User's Guide are the special notes and cautions that appear throughout this text. Individual icons identify these notes and cautions, and they alert you to special information.



The Caution icon alerts you to possible problems that you may encounter as you work through the AlarmView™ System programs. The possibility of losing data, for example, is information that could be mentioned in a caution.



The Note icon alerts you to tips or hints that may make it easier for you to work with AlarmView System programs. These might include data entry tips, additional information about a window or field, or recommended procedures.

NOTE: Due to continuing product innovation, specifications in this manual are subject to change without notice.

Trademarks:

Nellcor Puritan Bennett™ are registered trademarks of Nellcor Puritan Bennett, Inc.

Windows™ CE is a registered trademark of Microsoft Corporation.

AlarmView™ System is registered trademark of Data Critical Corporation.

Purpose

The technical publications staff of Data Critical Corporation prepared this service manual for the AlarmView system. This manual is geared for qualified service representatives and technical personnel involved in maintaining and repairing the AlarmView system.

This manual is geared toward trained biomedical engineers. Users are expected to have a strong background in electronics, including a strong background in analog circuitry, digital circuitry, and microprocessors and microcontroller architecture.

Safety Information

Manufacturer's Responsibility

Data Critical Corp. is responsible for the effects on safety, reliability, and performance only if:

- ❖ assembly operations, extensions, readjustments, modifications, or repairs are carried out by persons authorized by Data Critical Corp.
- ❖ the electrical installation of the relevant room complies with the requirements of the appropriate regulations; and
- ❖ the AlarmView paging system is used in accordance with the instructions for use.

Service Information

Service Requirements

Follow the service requirements listed below.

- ❖ Refer equipment servicing to Data Critical Corporation authorized service personnel only.
- ❖ Any unauthorized attempt to repair equipment under warranty voids that warranty.
- ❖ It is the user's responsibility to report the need for service to Data Critical Corporation or to one of their authorized agents.
- ❖ Failure on the part of the responsible individual, hospital, or institution using this equipment to implement a satisfactory maintenance schedule may cause undue equipment failure and possible health hazards.
- ❖ Regular maintenance, irrespective of usage, is essential to ensure that the equipment is always functional when required.

Notice

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Draft manual version.

Introduction

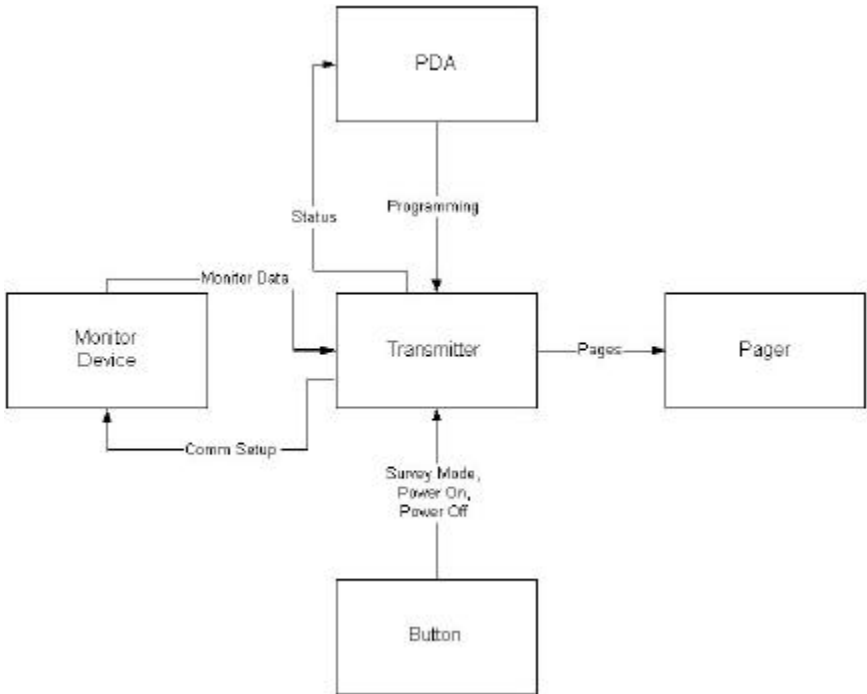
AlarmView System Product Description

The AlarmView System is a secondary alarm notification system that transmits alarm data from Primary Patient Monitoring Equipment (PME) to pagers that are worn by caregivers.

- The AlarmView Pager - The AlarmView Pager is an off the shelf pager that is worn by caregivers responsible for individual patients.
- The AlarmView Programmer - The AlarmView Programmer is an off the shelf Personal Digital Assistant (PDA) with Windows CE operating system and equipped with AlarmView programming software. The PDA needs to have an infrared (IR) port to communicate with the transmitter.
- The AlarmView Transmitter - The AlarmView Transmitter is connected to the Patient Monitoring Equipment (PME) (i.e., Nellcor Puritan Bennett Pulse Oximeter) with an AlarmView cable that is connected to the PME's serial port.

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AlarmView System Diagram



AlarmView System

Components

AlarmView Transmitter

The AlarmView transmitter is a device which interfaces to the PME and relays patient alarm information to clinician-worn receivers. The data relayed from the monitoring system includes patient bed number, alarm type, and parameter values (heart rate and SPO2 values).

<Insert AlarmView Transmitter Installation Diagram>

AlarmView Programmer

The AlarmView programmer is a palmtop computer running the Windows CE operating system (PDA). The PDA comes preloaded with proprietary software used to configure the AlarmView system.

<Insert AlarmView PDA Installation Diagram>

AlarmView Pager

The AlarmView pager is an off-the-shelf clinician-worn pager device intended for use in a hospital/facility environment. The pager is an additional means of annunciating patient alarm information, such as patient bed number, alarm type, and heart rate and SPO2 data.

<Insert AlarmView Pager Installation Diagram>

Monitoring Device Types

The AlarmView software is currently configured to be compatible with the following devices:

Nellcor Puritan Bennett Pulse Oximeter N-290
Nellcor Puritan Bennett Pulse Oximeter N-295
Nellcor Puritan Bennett Pulse Oximeter N-3000

Controls, Indicators, and Symbols

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Installation

Unpacking and Inspection

Be sure to carefully unpack all components carefully. If any boxes appear damaged in any way, contact the carrier. Visually inspect all components for obvious physical damage. If there are any cracks, dents, or any indication of mechanical damage, contact Data Critical Corporation before attempting to use any of the equipment.

List of Components

Please check that all of the following components are present:

AlarmView Transmitter

7" Antenna

Power Cable for Transmitter

Battery for Transmitter

AlarmView Programmer

Programmer Charging Cradle

Programmer Batteries

AlarmView Pager

Pager Batteries

Serial Cable for Connection from AlarmView Transmitter to PME

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Setup

Attach the antenna to the AlarmView transmitter.

Power the AlarmView transmitter.

Attach the monitor to the AlarmView transmitter.

Be sure the monitor is not running on battery.

General Warnings

Make sure that the antenna is attached to the transmitter before attempting to send any pages. Failure to do so may cause internal damage to the transmitter.

Be sure that the monitor has power, and is not running on battery. A monitor on battery power does not communicate via it's serial port, and the transmitter will be unable to establish communications with the monitor.

Connecting AlarmView

The AlarmView transmitter must be physically connected to the PME via the serial cable in order for communications to exist.

Performance Verification

Performance verification is discussed below in the Quick Start section.

Range Verification and Measurement

Range verification is discussed in detail in the Quick Start section below.

Basic Setup

The AlarmView system come from the factory with certain preset defaults. Some of these values may be modified by the user.

Factory Defaults Settings

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AlarmView Pager

Notification Mode:	Audible
Cap Code:	0000009
Frequency:	464.500 MHz
Display:	4 line

AlarmView Transmitter

Bed Number:	NewBed
Cap Code	0000009
Alarm Severity	Send All Alarms
Reminder Interval	30 seconds
Reminder Duration	Continuously
Survey Page Interval	15 seconds
Survey Page Duration	100 pages
Paging Frequency	464.500 MHz
Paging Baud Rate	1200 bps

AlarmView Programmer

Audible Tone	On
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Adjustable Settings

Some settings can be changed by the user. All settings that can be changed in the transmitter are described in detail below in the Quick Start section. To make changes to the other equipment, see the manufacturer's documentation.

AlarmView Pager

Notification Mode:	Audible
Cap Code:	0000009
Frequency:	464.500 MHz
Display:	1

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AlarmView Transmitter

Bed Number:	NewBed
Cap Code	0000009
Alarm Severity	Send All Alarms
Reminder Interval	30 seconds

AlarmView Programmer

Audible Tone	On
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Troubleshooting

Error Messages

If possible, the transmitter will send error messages to pages when errors occur.

The most likely message will be a low battery message:

***Low Tx Battery
Tx Shut Down***

Another possible error message pages would be a loss of communications with the PME:

***Comm Fail
Retrying Comms***

If, after an hour, communications is not established, a shut down message will be sent

***Comm Fail
Tx Shut Down***

The AlarmView Programmer will also post error messages encountered during communications with the transmitter.

If, during a communication attempt, the IR port could not be accessed, the AlarmView Programmer will post the following message in an error dialog box.

***UNABLE TO ACCESS PORT
PROBABLY IN USE***

If the IR port could be accessed, but communications could not be established between the PDA and the transmitter, the AlarmView Programmer will post the following message in an advisory dialog box.

***Please be sure the IR port
is pointed directly at the
transmitter, at a distance
less than 18in (60cm),
and try again.***

The following status message will also be displayed on the top middle of the Programmer screen.

Failed To Connect

If no bed number was selected before the “Program” button was tapped, the AlarmView Programmer will post the following message in an advisory dialog box.

***You must select or get a
bed number.***

If no cap code was selected before the “Program” button was tapped, the AlarmView Programmer will post the following message in an advisory dialog box.

***You must select or get one
or more caps.***

If the Programmer could not program the transmitter, the AlarmView Programmer will post the following status message on the top middle of the Programmer screen.

Programming Failed

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Suggested Corrective Actions

Error	Corrective Action
Low Transmitter Battery	Plug in the transmitter to wall power to recharge the battery.
Communication Failure	Ensure that the transmitter is connected via the serial cable to the PME. Ensure that the PME is plugged in.
Unable to access port	Reboot the Programmer.
IR port not pointed at transmitter Failed To Connect	Point the IR port on the programmer at the IR port on the transmitter at a distance less than 10m (60cm).
Must select a bed number	Select a bed number
Must select a cap code	Select a cap code
Programming Failed	Try to program again

EMI Interference

It is a known fact that electronic devices that emit radio frequencies may interfere with the operation of other electronic devices. This has become a significant concern in the health care community because of the proliferation of intentional electronic radiators such as cellular phones, paging systems, walkie-talkies, and wireless network LANs. The critical care areas such as intensive care, operating rooms, and emergency care are of special concern and incidents have been observed with apnea monitors, wheel chairs, and ventilators. The FDA and organizations such as AAMI, IEEE, and IEC have started to address this complicated issue through their respective working groups. The ANSI C63.6 working group made up of industry and the FDA released a technical information report (TIR). This TIR provides a means to evaluate critical care medical devices for electromagnetic interference problems by the clinical and biomedical staff using an ad hoc test method.

The report provides background information and basic EMI fundamentals. A possible outline for management of potential EMI sources and education of the hospital staff is as follows:

Encourage biomedical engineers to learn how to assess the EMI environment of their hospital and take actions on:

- managing (increasing) distance between sources of EMI and susceptible devices
- managing use of frequencies close to AlarmView™ System frequencies
- managing (reducing) devices that are highly susceptible to EMI
- lower power from non-hospital EMI sources under hospital control (paging systems)
- labeling devices susceptible to EMI
- educating staff (nurses and doctors) to be aware of, and to recognize, potential EMI related problems
- conducting technical remedial action to eliminate EMI, such as shielding
- sharing relevant EMI/EMC information with others, especially in evaluation of new equipment purchases which may have emissions
- identifying critical areas where life-support devices are in use and restricting the use of personal communicators (cellular phones) in those critical care areas

Purchase critical care devices that comply with IEC 601-1-2 EMC standards:

- the required level of EMI immunity is 3 volts per meter
- the interference level that a medical device can radiate (emit) is 0.0014 volts per meter

The AlarmView™ System has a transmit power level of up to 1 watt peak at a pre selected RF frequency between 450 MHz to 466 MHz

Protection Distance Estimate

<i>Peak Power of Transmitter</i>	<i>Immunity of Medical Device</i>		
	1 V/meter	2 V/meter	3 V/meter
1 watt	x ft	x ft	x ft
1 watt	x m	x m	x m

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Obtaining Technical Support

Direct all inquires to:
Data Critical Corporation
19820 North Creek Parkway
Suite 100
Bothell, WA 98011

For technical advice or information concerning any equipment in your AlarmView™ System, contact Technical Support. Call, toll free at 1-877-DCC-STAT (1-877-322-7828).

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Maintenance

Service

The AlarmView™ Pager

<Insert photo and or screen shot here>

Changing the battery

The AlarmView™ pager requires one AA alkaline battery.



- Use only 1.5 volt AA alkaline battery.
- Observe proper polarity when installing battery.
- Do not dispose of battery in fire.
- Do not attempt to recharge alkaline batteries.
- Remove battery from pager if the pager will not be used for 2 days or more.

To change the battery:

With the back of the pager facing you, carefully remove the battery cover. Remove the old battery and throw it away. Put a new battery in the slot. Be sure that the "+" on the battery matches up with the "+" on the pager. Put the battery cover back on the pager. Turn the pager on to make sure the battery works.

Power

Certain pagers will chirp or display a message to tell you that the battery will need to be replaced.

Screen

The pager screen should be protected to keep from being scratched and broken. If the screen should become cracked or moisture appears inside, the pager should be replaced.

Pager Maintenance

- Visual Inspection

Be sure to inspect the AlarmView™ Pager unit frequently. Check the case for cracks or other damage.

- Cleaning Procedures

To avoid damage to the device surfaces, do not use the following cleaning agents: organic solvents, acetone solution, alcohol-based cleaning agents, Betadine solution, a wax containing cleaning substance, or abrasive cleaning agents.

Recommended cleaning supplies:
sodium hypochlorite bleach, (diluted), or
mild soap and water
lint-free cloth
dust remover (compressed air)

To clean the exterior:

Dampen a lint-free cloth with one of the *recommended* cleaning solutions. Wring excess moisture from the cloth. Wipe the device exterior. Dry the surfaces with a lint free cloth. Clean the display screen with lens tissue.



Do not drip any liquid into open vents, plugs, or connectors. Cleaning agents must be diluted before use.

The pager's display screen is more sensitive to rough handling, scratches and breakage than the other outside surfaces of the device. Be careful, especially when cleaning the screen surface and replacing the battery.

The AlarmView™ Programmer

<Insert photo and or screen shot here>

Changing the battery

The AlarmView™ Programmer requires two AAA alkaline battery, and one CR2016 battery.



- Observe proper polarity when installing battery.
- Do not dispose of battery in fire.
- Do not attempt to recharge alkaline batteries.
- Remove battery from PDA if the PDA will not be used for 2 weeks or more.

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To change the battery:

With the back of the PDA facing you, carefully remove the battery cover. Remove the old batteries and throw them away. Put new batteries in the slot. Be sure that the “+” on the battery matches up with the “+” on the PDA. Put the battery cover back on the PDA. Turn the PDA on to make sure the battery works.

Power

There will be a dialog box notification to tell you that the battery will need to be replaced.

Screen

The pager screen should be protected to keep from being scratched and broken. If the screen should become cracked or moisture appears inside, the PDA should be replaced.

PDA Maintenance

- Visual Inspection

Be sure to inspect the AlarmView™ PDA unit frequently. Check the case for cracks or other damage.

- Cleaning Procedures

To avoid damage to the device surfaces, do not use the following cleaning agents: organic solvents, acetone solution, alcohol-based cleaning agents, Betadine solution, a wax containing cleaning substance, or abrasive cleaning agents.

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To clean the exterior:

Dampen a lint-free cloth with one of the *recommended* cleaning solutions. Wring excess moisture from the cloth. Wipe the device exterior. Dry the surfaces with a lint free cloth. Clean the display screen with lens tissue.



Do not drip any liquid into open vents, plugs, or connectors. Cleaning agents must be diluted before use.

The PDA's display screen is more sensitive to rough handling, scratches and breakage than the other outside surfaces of the device. Be careful, especially when cleaning the screen surface and replacing the batteries.

Overview

AlarmView Transmitter

- ❖ The transmitter operates at one of several frequencies.

The frequency of the transmitter must match the frequency of the pagers installed on the system. The transmitter has a range of approximately 300 feet. This range is site-specific and influenced by factors such as antenna placement and building construction.

AlarmView Pager

The AlarmView pagers are small, battery-operated pagers that can be worn on a belt.

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Installing the Equipment

Pre-Installation Requirements

Power Requirements

One properly grounded duplex wall receptacle should be provided for each system. Additional receptacles may be required to accommodate peripheral equipment connected to the system. The wall receptacles must be installed in an approved junction box. Use only 3-prong grounded, medical-grade wall receptacles to accommodate the 3-prong grounded, medical-grade plug on the computer equipment.



Warnings

The AlarmView transmitter and all peripheral equipment must be adequately grounded, or a shock hazard may exist.



Observe the following grounding recommendations:

- ❖ All wall receptacles and all exposed metal parts (beds, radiators, water pipes, etc.) in any patient area should be electrically connected together by sharing a common grounding point. This common ground point should be connected to the nearest equipotential ground through a bonded grounding system, or with a 10 AWG stranded copper grounding cable.
- ❖ The equipotential ground point should be as close to earth ground potential as possible. If a bonded grounding system is not available, the ground pin of each wall receptacle must be individually connected to a central grounding point. Do not jumper from ground pin to ground pin of the receptacles.

- ❖ The grounding system must not carry current, such as grounded neutral, since the current flow produces potential differences along the ground path. These potential differences are a shock hazard source for equipment users and patients.
- ❖ Do not use conduit as a ground conductor. Plastic (PVC) piping or fittings used in the conduit runs can break the electrical connection to ground, resulting in potential shock hazards.
- ❖ The electrical grounding system should be connected on an earth ground. If this is not possible, then a good ground reference such as a metal water pipe or an electrically-conductive building component should be used. It is more important that the ground objects in the patient area are at the same ground potential, rather than at earth ground potential.

Equipment Installation

Installation of the AlarmView system consists of the following steps.

	<p style="text-align: center;">Warnings</p> <p>SHOCK HAZARD – A shock hazard may exist if external devices are connected other than as described in this manual, or as directed by the manufacturer.</p>
	<p style="text-align: center;">Cautions</p> <p>External equipment must be connected to the system only by qualified biomedical engineering personnel. Only external devices specifically designed to be connected to the AlarmView system, approved by Data Critical for use with the AlarmView system, should be connected, as specified in this manual or as otherwise specified by the manufacturer. All external cabling used with the AlarmView system must be routed so as not to interfere with access or operation of the system. All cabling must be installed to protect against accidental disconnection of the cables.</p>

- ❖ Power for all peripheral equipment is installed, tested, and ready for use. This includes testing for proper grounding of the power source.
- ❖ All equipment, including all peripheral devices, must be unpacked and ready for installation. All required cables must be identified and prepared for installation.
- ❖ Install the transmitter at the desired location.
- ❖ Connect the transmitter to the power source.
- ❖ Connect the antenna to the transmitter.

CAUTION

Do not turn on the unit or attempt to transmit patient data unless the antennas are attached; if you **do not** attach the antenna, you may damage the radio module.

AlarmView Quick Start

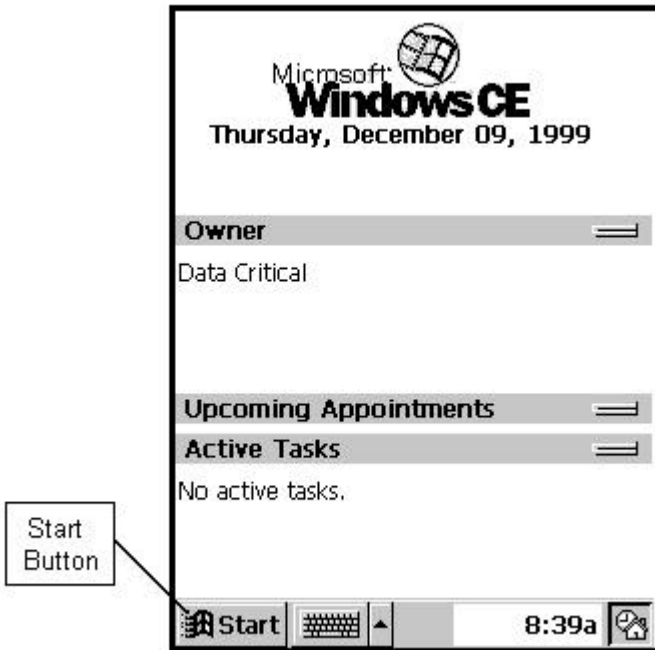
Configuring the System

The PDA is used to change or view the current setup (i.e. the bed number and the pager cap codes) of the transmitter. To program the transmitter, the transmitter must be trying to establish communications with the patient monitoring equipment (the LED is ORANGE), or have established communications with the patient monitoring equipment (the LED is GREEN).

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The Editor Program

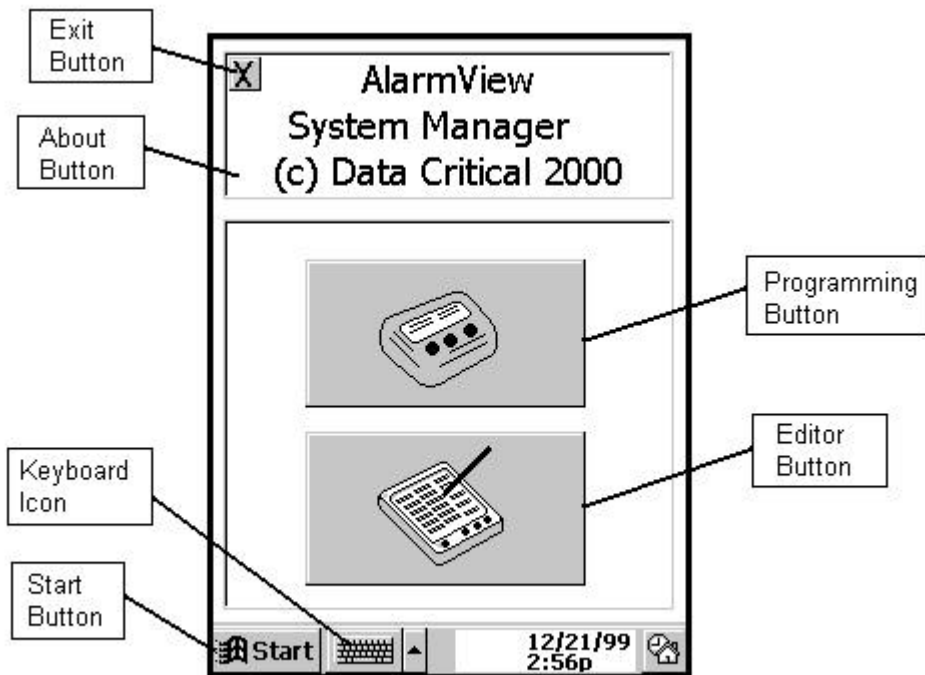
Turn the PDA “ON”. The first screen of the PDA will appear and will resemble the screen below.



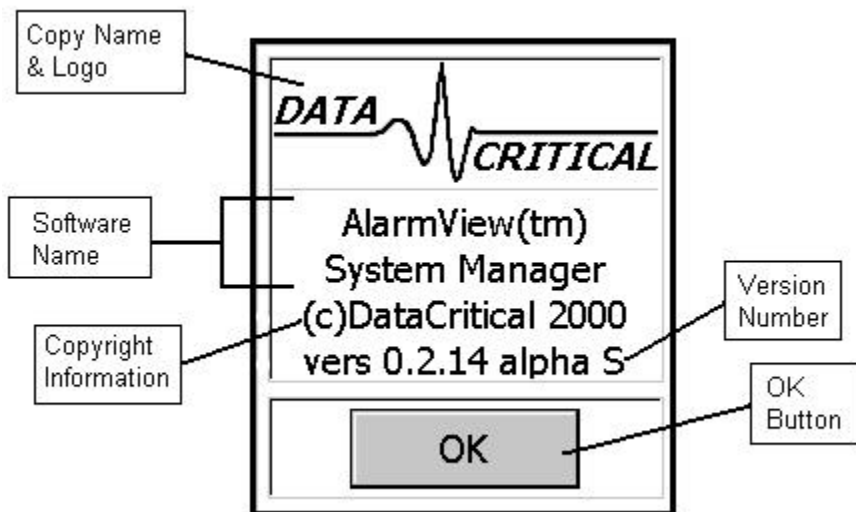
Select the Windows Start menu button.

From the Windows Start menu, select the “AV System Manager” program.

The AlarmView System Manager main screen will appear as shown below.

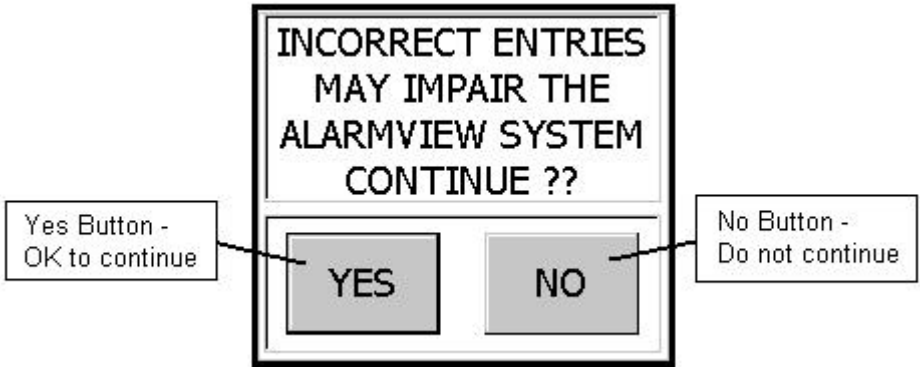


Tap the About button for information about the System Manager software.



Tap the OK Button to return from this dialog box.

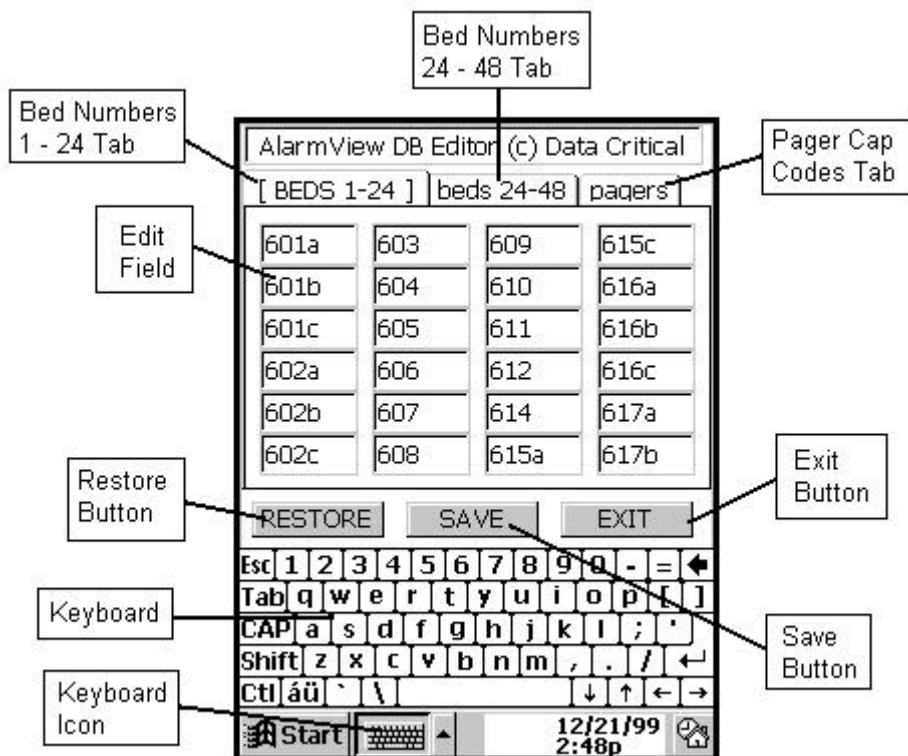
Now tap the Editor Button on the Main Screen. The following warning will appear.



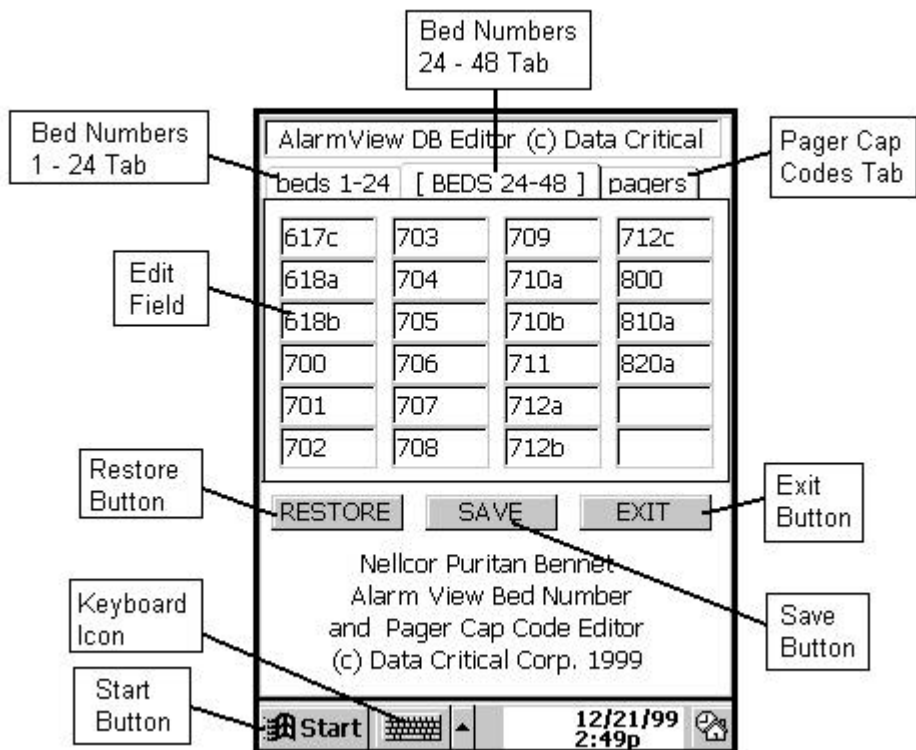
Pressing the “No Button” will return the user to the AlarmView System Manager main screen. Pressing the “Yes Button” will launch the “AlarmView Editor” program. This is the program used to setup which bed number and cap codes are present in the system. It can be reconfigured when pagers are sent back to the factory, or new pagers are obtained.

To configure the bed numbers available in the system, tap the Bed Numbers 1 - 24 tab or the Bed Numbers 24 – 48 tab. The first tab lists the first 24 bed numbers available to the system. The second tab lists the last 24 bed numbers available to the system. It is not necessary to fill in all 48 slots.

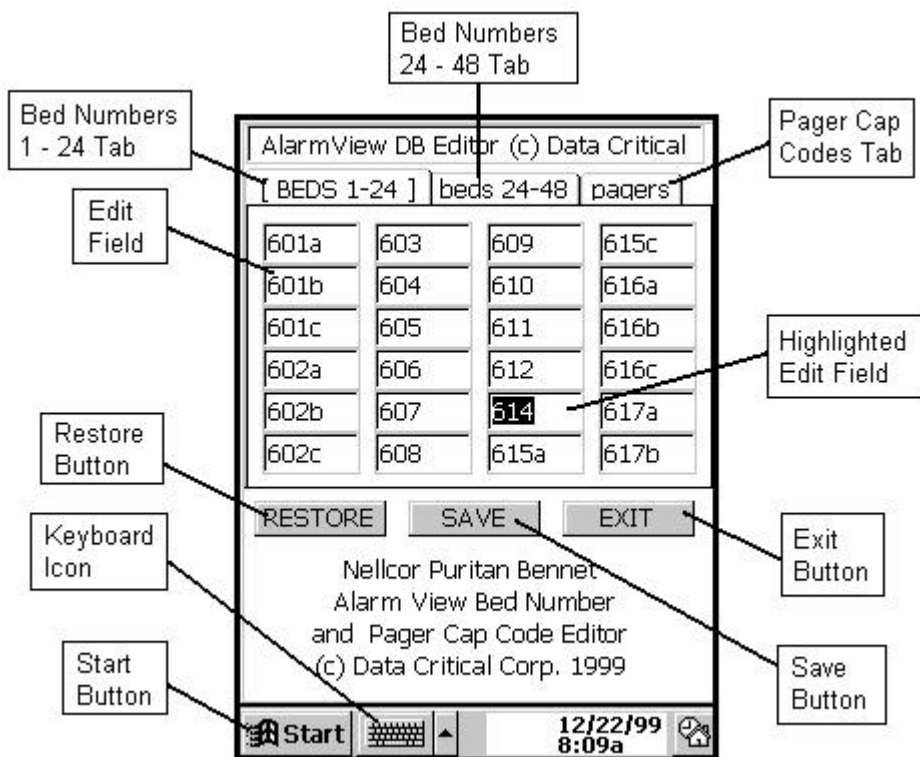
Below is the Bed Numbers 1 – 24 screen.



Below is the Bed Numbers 24 – 48 screen. Note that the “active” tab is displayed in all caps.

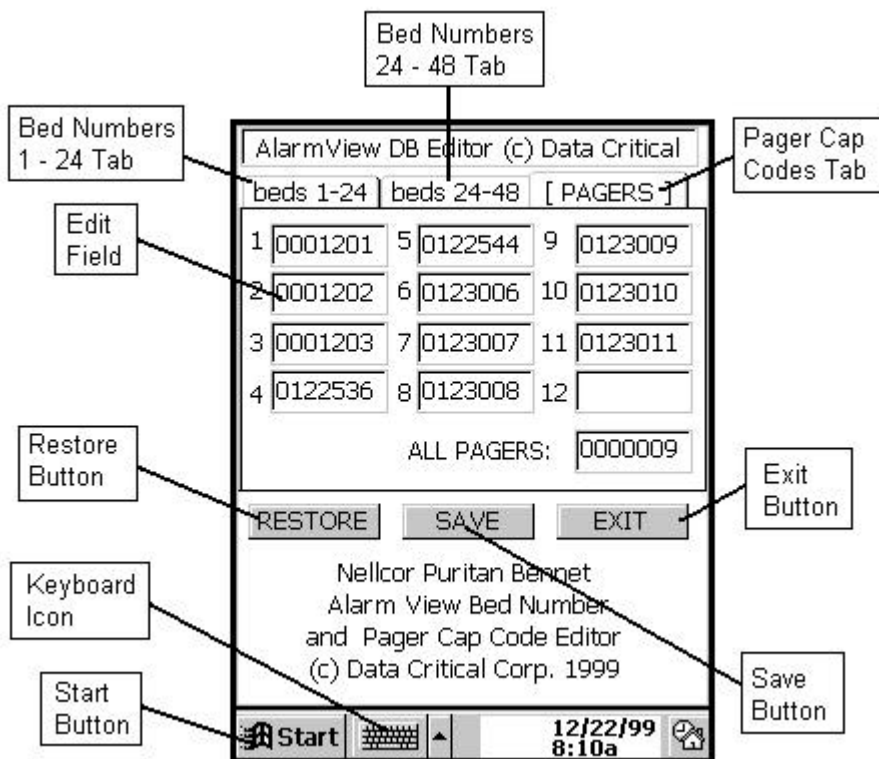


Bed Numbers can be added and deleted from this list. Click on a bed number to edit. Using the stylus, tap the backspace key on the keyboard to delete the bed number to be edited (or highlight the entire bed number as shown below), and using the numbers and letters on the key board, type in the new bed number. Tap the “Save” button on completion, or the “Exit” button to exit the Editor Program.



If the keyboard is not visible, tap the keyboard icon to display the keyboard. If an additional bed number is desired, a bed number can be added to any blank space on page one or two of the bed number listing. Simply tap the cursor in the blank space and begin typing the new bed number.

To edit the pager numbers, tap the “Pagers” tab on the upper right of the screen. The “AlarmView Editor” Screen Pagers page will appear.



Pager Cap Codes can be added and deleted from this list. Click on a cap code number to edit. Using the stylus, tap the backspace key on the keyboard to delete the cap code number to be edited (or highlight the entire cap code number), and using the numbers and letters on the key board, type in the new cap code number. Tap the “Save” button on completion, or the “Exit” button to exit the Editor Program.

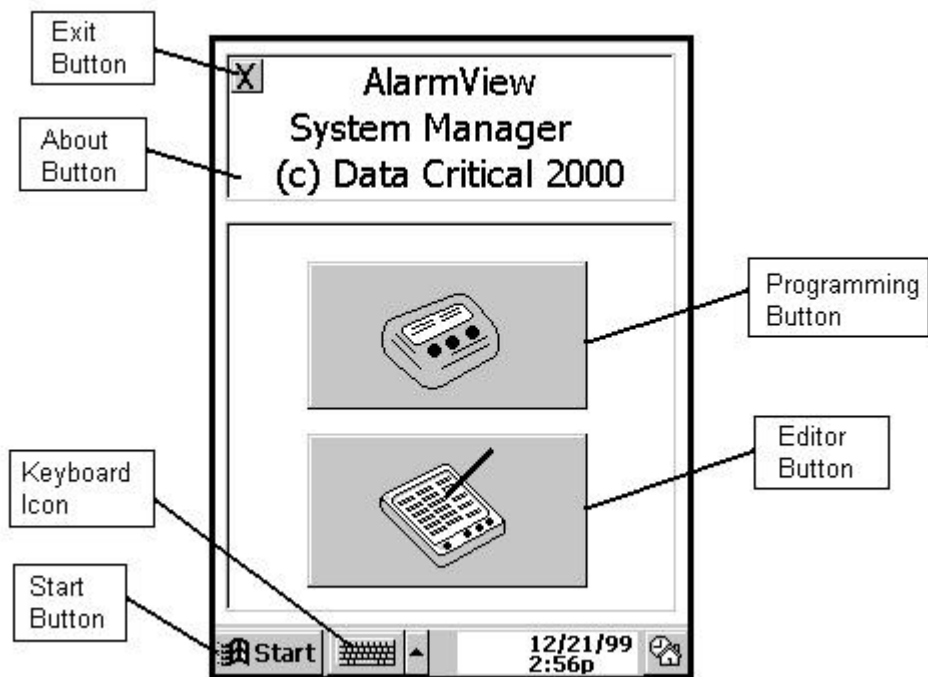
If the keyboard is not visible, tap the keyboard icon to display the keyboard. If an additional bed number is desired, a bed number can be added to any blank space on page one or two of the bed number listing. Simply tap the cursor in the blank space and begin typing the new bed number.

Note that the global cap code value can not be changed by the user.

To restore values to the state they were in before editing began, tap the Restore Button on any of the pages before pressing the Save Button. Once the Save Button has been pressed, however, the original values are not restored.

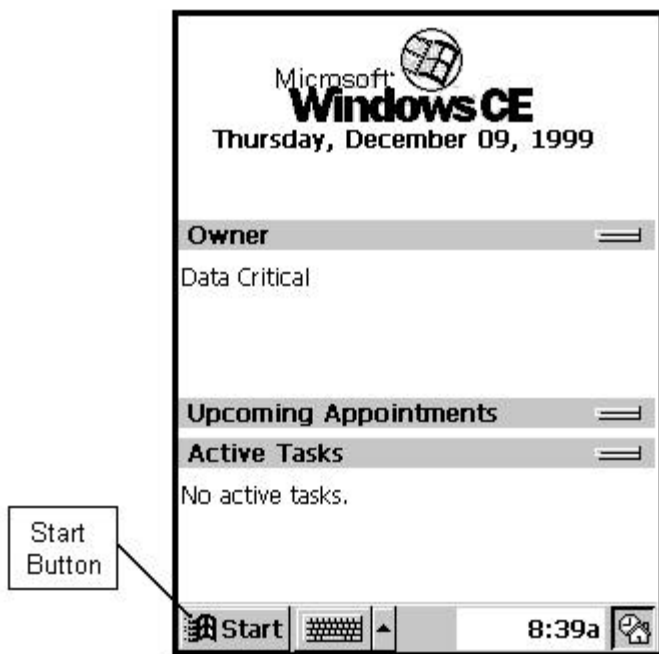
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When the "Editor Program" is exited, the Main Screen is again displayed.



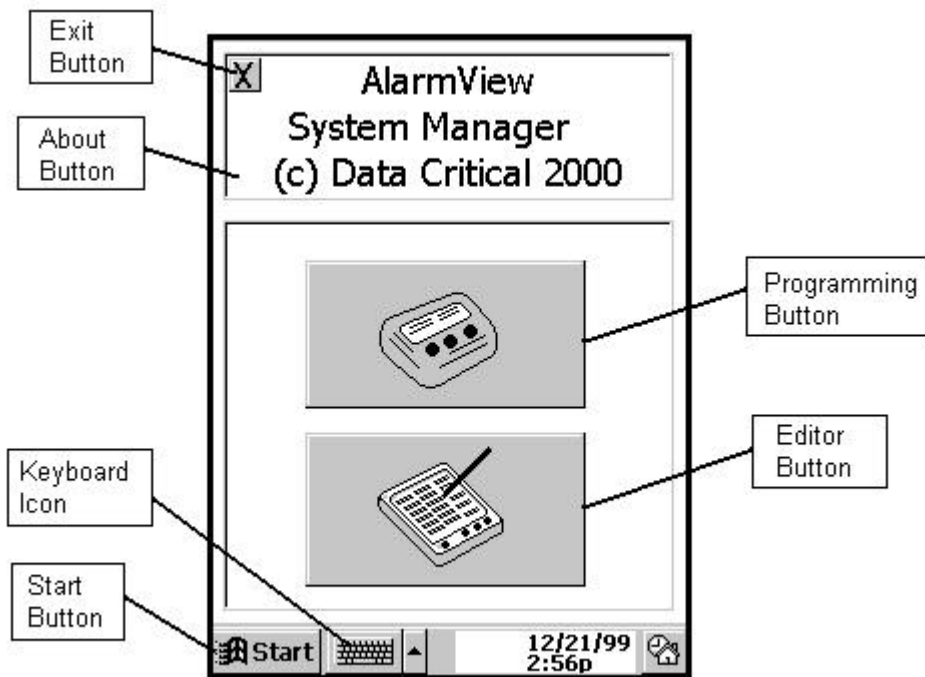
The Configuration Program

If the main PDA screen is displayed, tap Windows Start menu button.

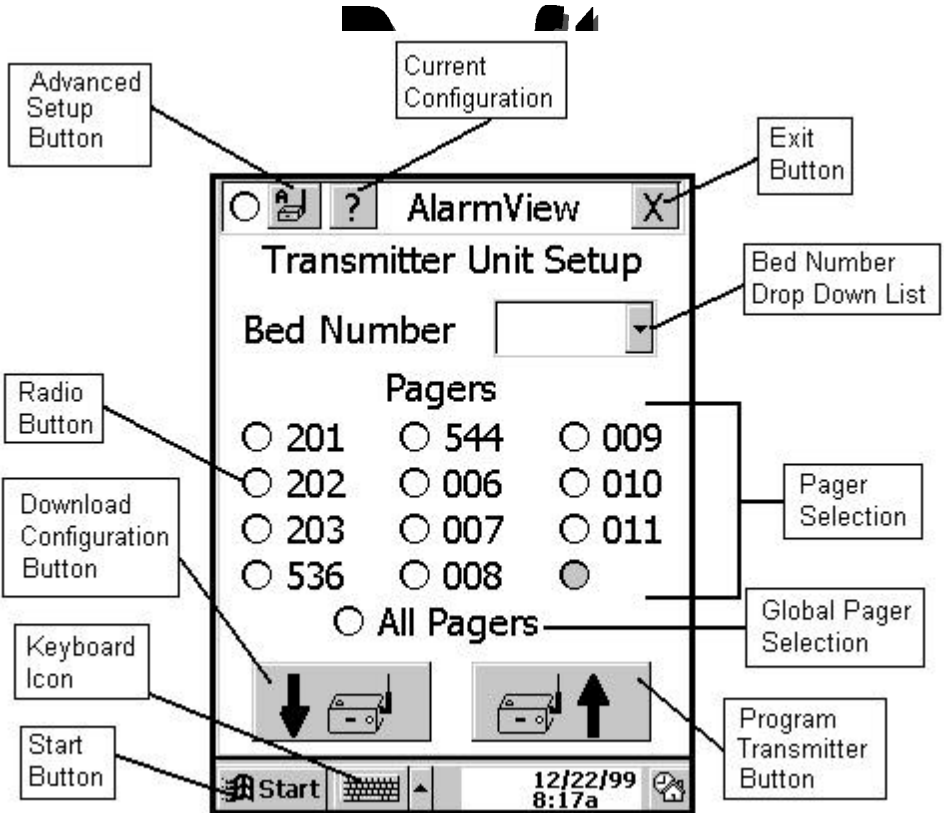


From the Windows Start menu, select the “AV System Manager program.

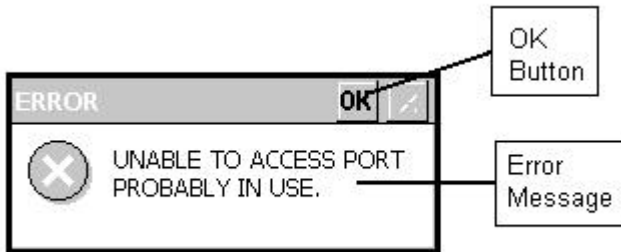
The AlarmView System Manager main screen will appear as shown below.



To launch the Configuration Program, tap the Programming button. The “Configuration Program” Main Screen will appear. This program is used to change the transmitter’s setup of bed numbers, cap codes, alarm severity, and reminder page interval. It also displays information that can not be modified by the user. This information includes: monitor identifier (N3000, N295, N290), transmitter number, hardware version, software version, protocol version, authorize identification, paging frequency, and paging baud rate. This program can be used at shift change, or whenever there is a need to change/view the current transmitter configuration.

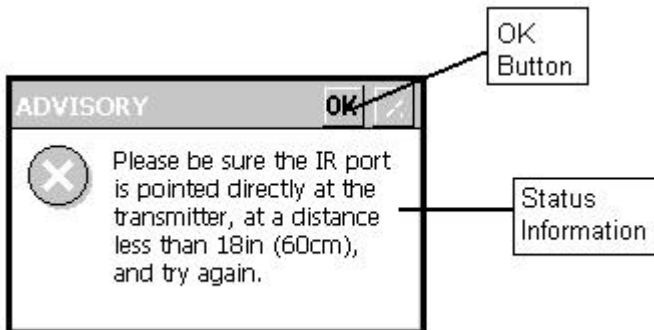


To obtain the current configuration programmed into the transmitter, tap the “Download Configuration Button”. When this button is tapped, the PDA attempts to establish communications with the transmitter. If the IR port could not be accessed, the following dialog box will be displayed.

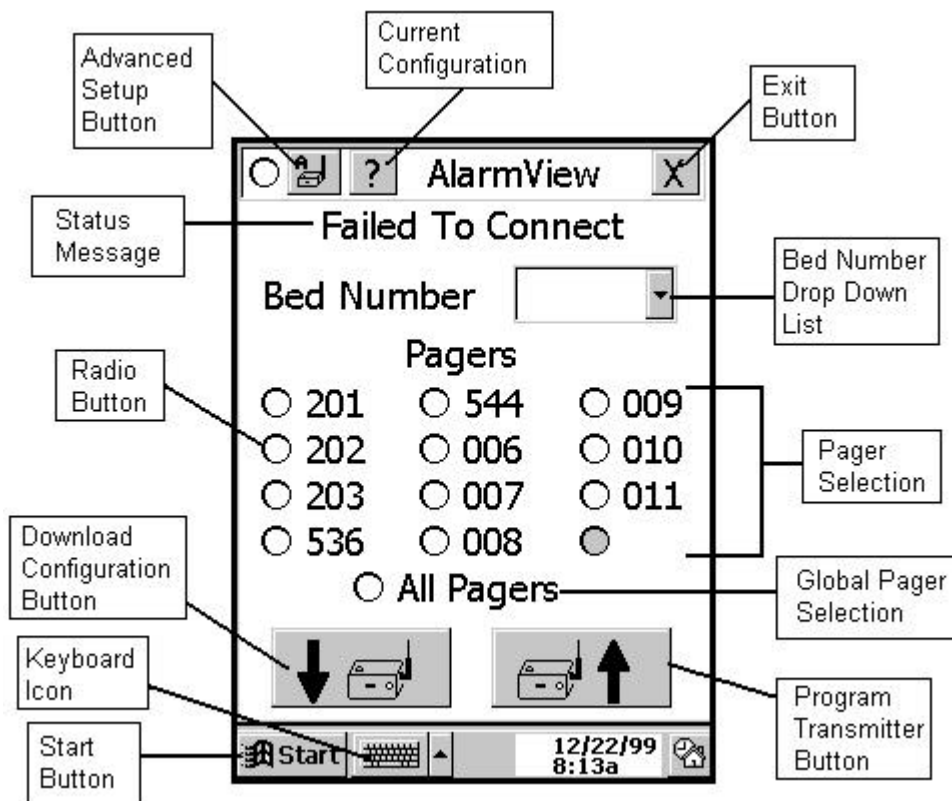


Tap the OK button to close this dialog box and return to the Configuration Program main screen.

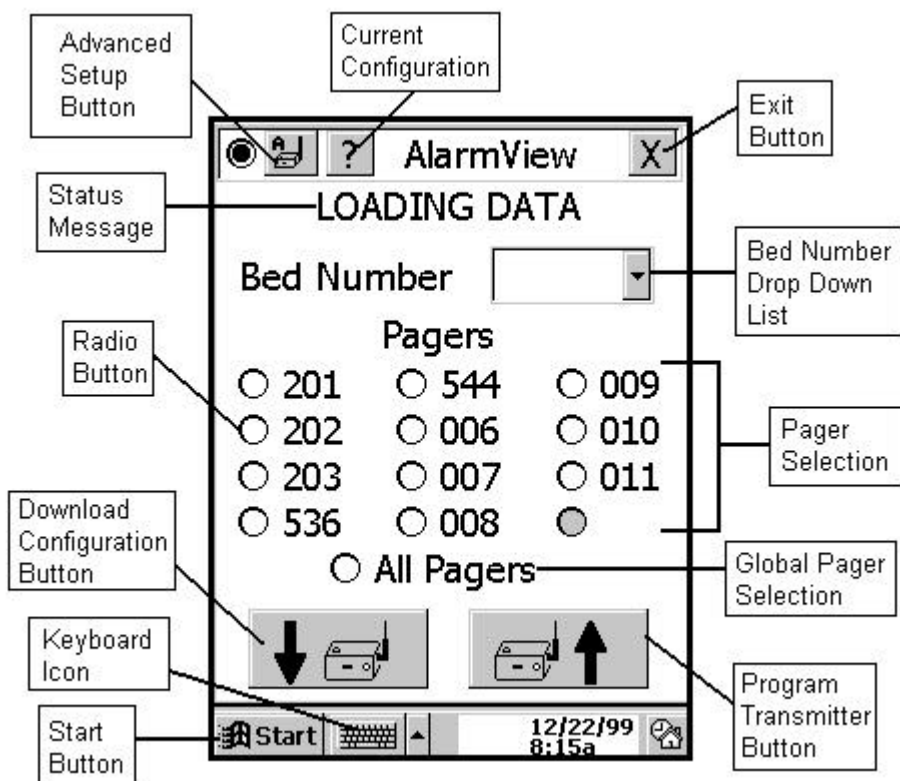
If the IR port could be accessed, but communications could not be established between the PDA and the transmitter, the following error dialog box will be displayed:



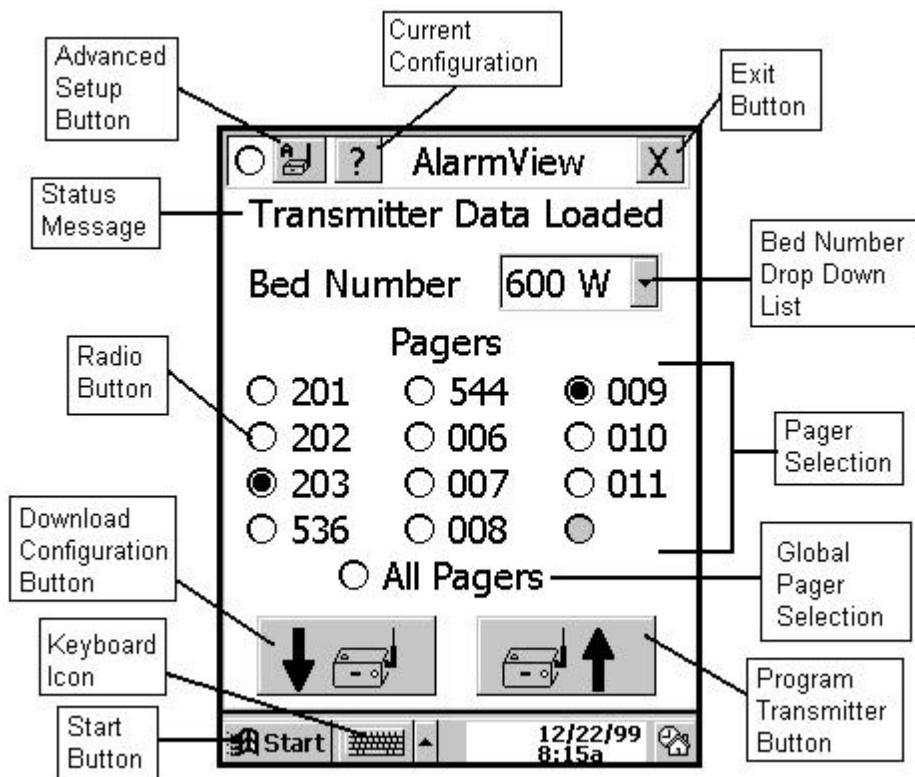
When “OK” is tapped on this dialog box, the Configuration Program main screen will be displayed with a status message informing the user of a “Failed to Connect” status.



At this point, simply point the PDA at the transmitter, and tap the “Download Configuration Button” again. While the transmitter is being queried, the Configuration Program main screen will be displayed with a status message informing the user of a “Loading Data” status. The PDA will be in this state for less than 2 seconds.



When the transmitter has been successfully queried, the Configuration program main screen will be displayed with a status message informing the user of a “Transmitter Data Loaded” status.

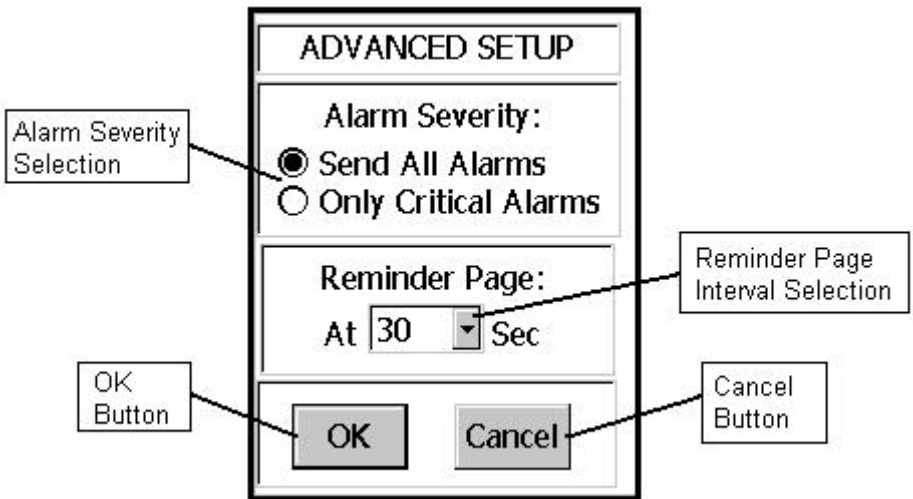


At this point, if the displayed data is correct, no changes need be made, and the user is done. Exit the Configuration Program by tapping the "X" in the upper right corner of the screen.

If the data needs to be changed, the Patient Bed Number can be selected by tapping on the bed number drop down list, and highlighting the desired bed number.

A maximum of two pagers can be selected by clicking the radio button next to the desired pager number.

To change/view alarm severity selection or reminder page intervals, tap the Advanced Setup button on the upper left of the screen. If no data has been previously downloaded, the PDA will attempt to establish communications with the transmitter. When the data is downloaded, the following screen will appear.



Alarm Severity selections:

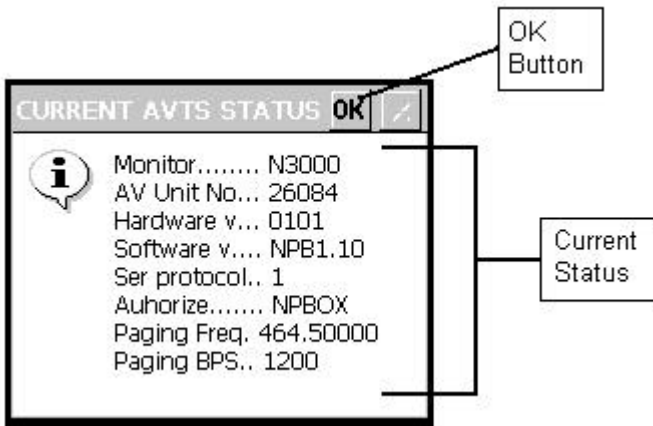
Send All Alarms indicates that all alarms will be sent to the pagers regardless of the severity of the alarms.

Only Critical Alarms indicates that only critical (high priority and medium priority) alarms will be sent to the pagers.

Reminder interval indicates the time interval at which reminders will be sent after the original alarm has not been silenced.

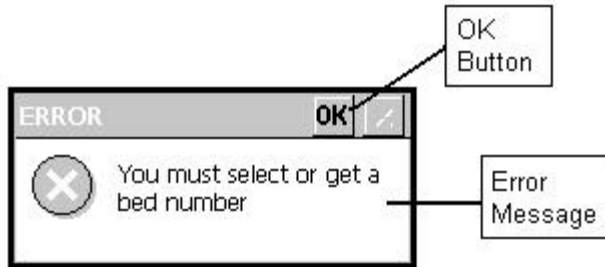
Tap the OK button when all changes have been made.

To view transmitter data that can not be modified by the user, tap the Current Configuration Button in the upper left of the screen. If no data has been previously downloaded, the PDA will attempt to establish communications with the transmitter. When the data is downloaded, the following screen will appear.

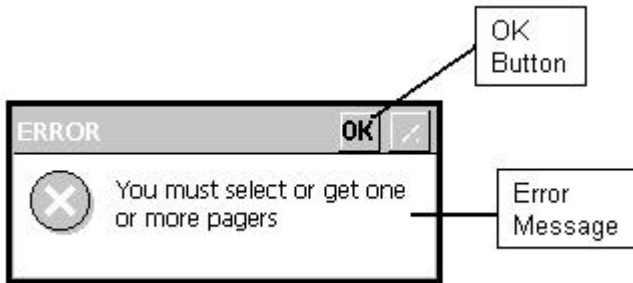


Tap the "Program Transmitter" button to program the transmitter with the newly selected values.

If no bed number was selected before the “Program” button was tapped, the following error dialog box will appear.

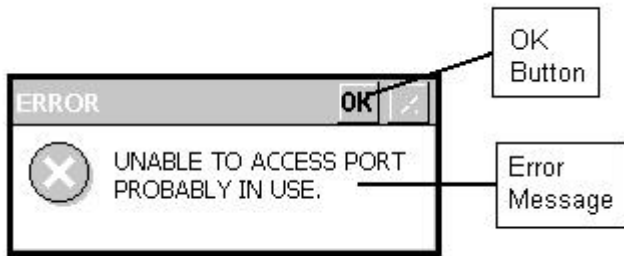


If no cap code was selected before the “Program” button was tapped, the following error dialog box will appear.



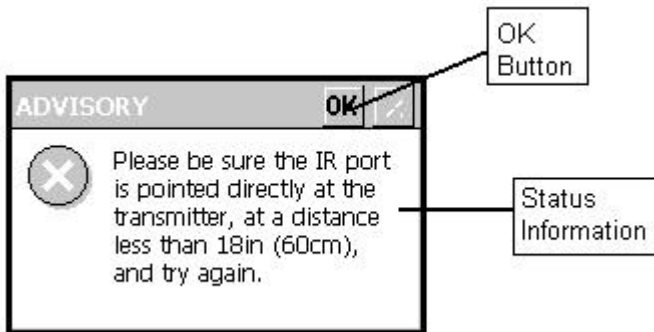
Exit both of the above dialog boxes by tapping the OK Button. After the above error conditions are rectified, tap the “Program Transmitter” button again. When this button is tapped, the PDA attempts to establish communications with the transmitter.

If the IR port could not be accessed, the following dialog box will be displayed.

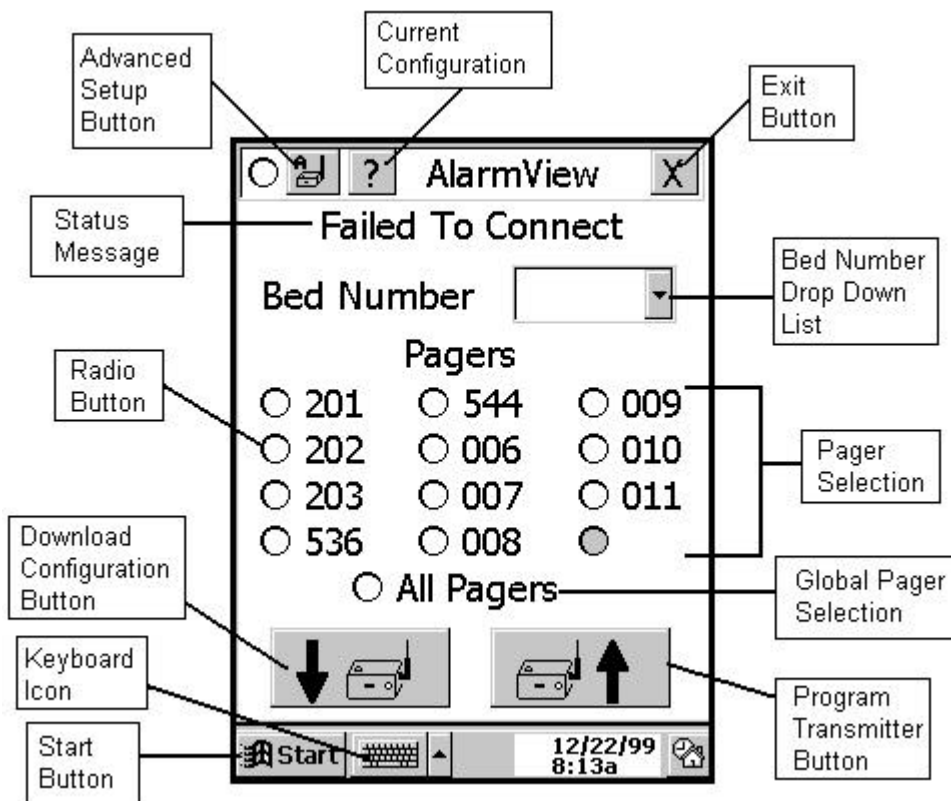


Tap the OK button to close the dialog box and return to the Configuration Program main screen.

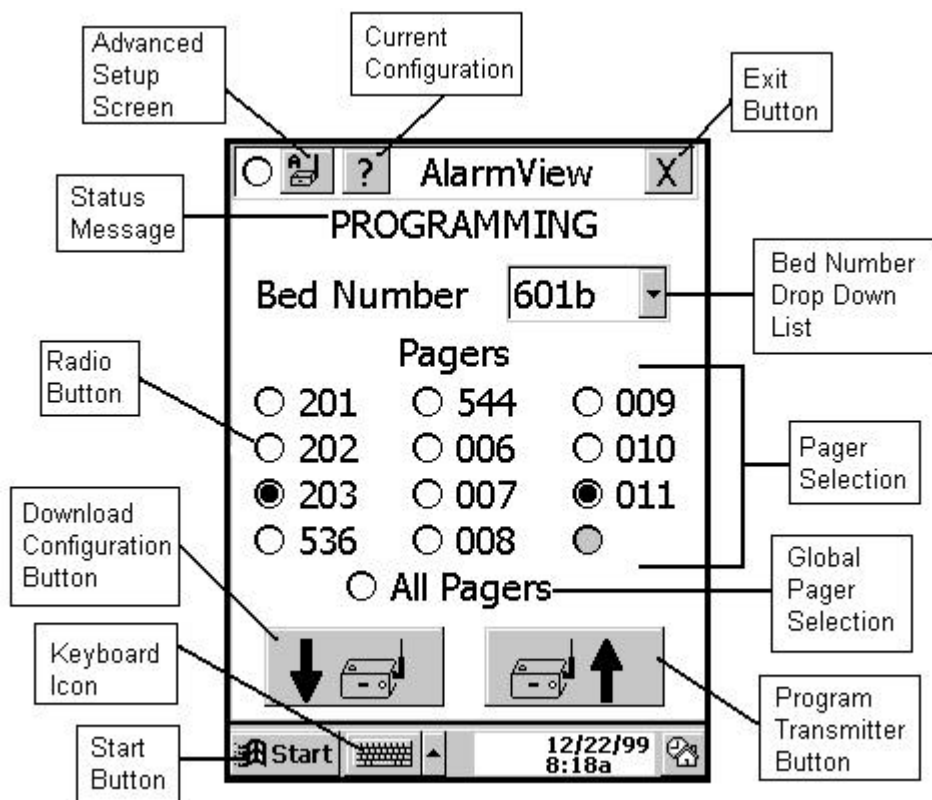
If the IR port could be accessed, but communications could not be established between the PDA and the transmitter, the following error dialog box will be displayed:



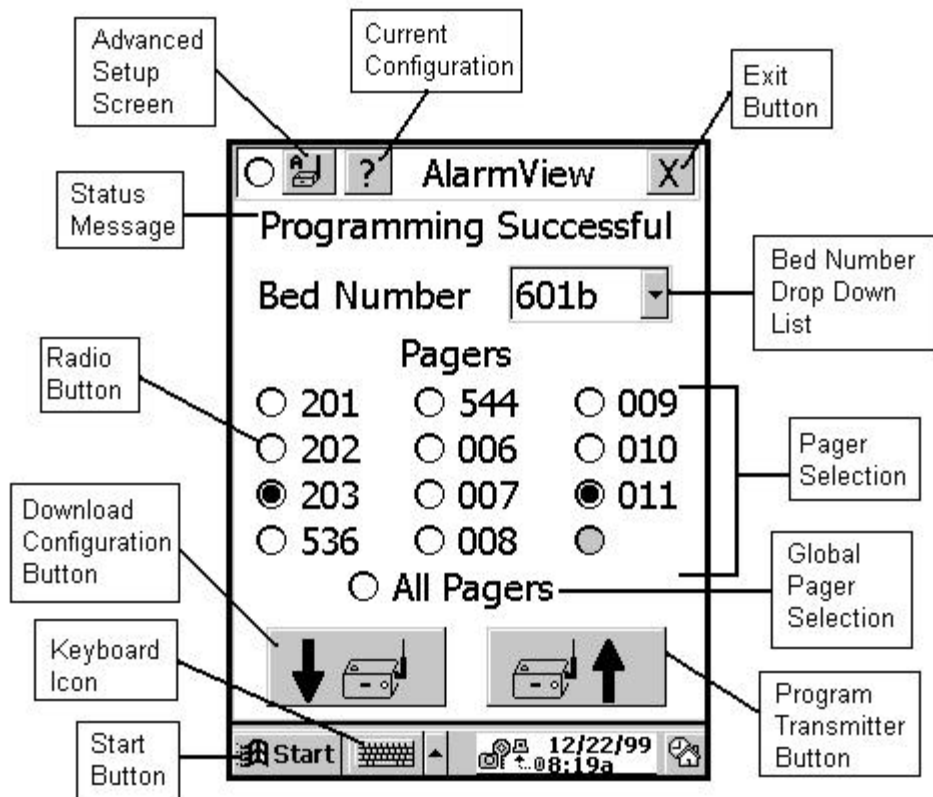
When “OK” is tapped on this dialog box, the Configuration Program main screen will be displayed with a status message informing the user of a “Failed to Connect” status.



At this point, simply point the PDA at the transmitter, and tap the "Program Transmitter Button" again. While the transmitter is being queried, the Configuration Program main screen will be displayed with a status message informing the user of a "Programming" status. The PDA will be in this state for less than 2 seconds.



When the transmitter is successfully programmed, the Configuration Program main screen will be displayed with a status message informing the user of a “Programming Successful” status.

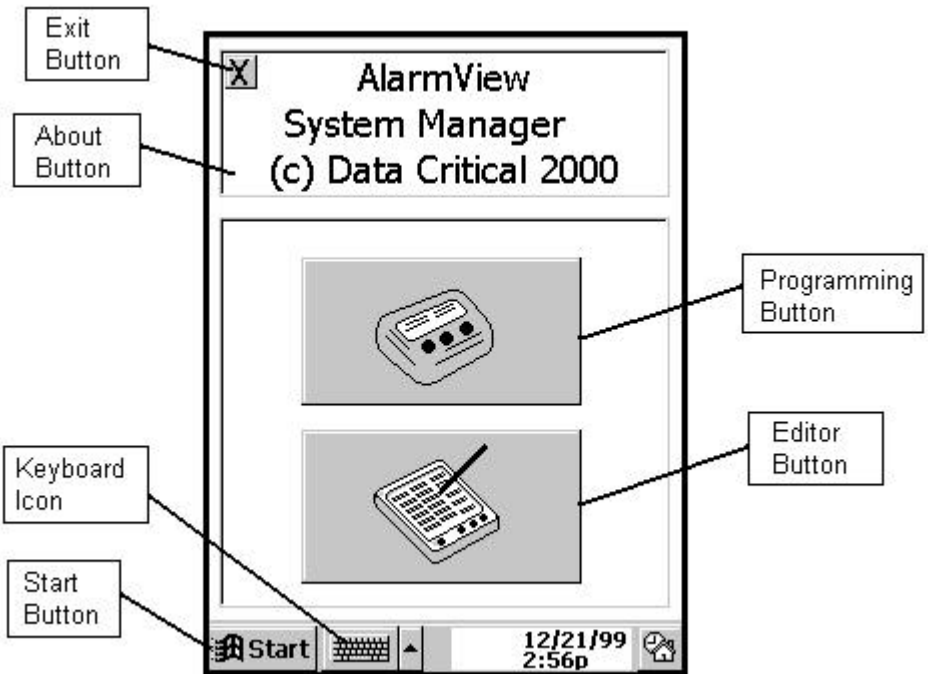


A “Programming Successful” page will also be sent to the newly selected pagers, displaying the newly selected bed number.

<Insert photo and or screen shot here>

Exit the “Configuration” program by tapping the “X” in the upper right corner of the screen.

When the Configuration Program has been exited, the System Manager Program main screen will be displayed as shown:



Exit this program by tapping the Exit Button in the upper left of the screen.

Survey Pages

The Survey Mode is a mode in which frequent periodic pages are sent from the transmitter to the assigned pager(s). This mode can be used to determine areas of coverage for the system. To begin the Survey Mode, turn on the transmitter, as described above. The transmitter should not be attached to any patient monitoring equipment as this point. The LED on the front of the transmitter will be ORANGE to indicate that the transmitter is attempting to establish communications with the patient monitoring equipment. Press the button on the top of the transmitter, and hold the button down for approximately 5 seconds. A number of "Survey Pages" will be sent. Every 15 seconds, another "Survey Page" will be sent. This will continue until one hundred pages have been sent. To stop the survey mode before one hundred pages have been sent, press the button on the top of the transmitter, and hold the button down for approximately 5 seconds.

Pages sent during the Survey Mode will have a line of data, which will indicate that the Survey Mode is in process.

Pages sent during the Survey Mode will contain the following data:

Bed Number
Transmission Number (in sequence)

<Insert photo>

Communicating With Patient Monitoring Equipment

Turn on the transmitter, as described above. Attach the serial cable to the RJ-45 port. Attach the other end of the cable to the patient monitoring equipment. The transmitter will automatically detect the monitor (assuming it is an N-3000, N-295, or N-290). Once communication has been established with the patient monitoring equipment, a pager will be sent to the pager indicating this, and the LED will turn GREEN.

The communications established page will have the following data:

Bed: xxxxx
Comms OK

<Insert photo and or screen shot here>

From that point, all alarms at the patient monitoring equipment will be sent to the pager(s), as assigned by the PDA (as described above).

Test Pages

Test pages can be used to verify proper communications with the patient monitor. Turn on the transmitter, as described above, and establish communications with the patient monitoring equipment (the LED will be GREEN). Once communications is established, press the button on the transmitter (but, do not hold it down). A "Test Page" will be sent indicating the current patient data (SPO2, and Pulse Rate). Note that alarms take precedence over Test Pages, and will be sent first.

Test Page
Bed: xxxxx
PR: xxx
SPO2: xxx

Draft

<Insert photo and or screen shot here>

POST

TBD

Glossary

BNC Connector:	A type of connector used with coaxial cables. The basic BNC connector is a male type mounted at each end of a cable. This connector has a center pin connected to the center cable conductor and a metal tube connected to the outer cable shield. A rotating ring outside the tube locks the cable to any female connector. This is the type of connector that a radio antenna uses to connect to the transmitter.
IR Port:	Infrared port. An IR Port is used by the PDA to "talk" to the transmitter.
PDA:	Personal Digital Assistant (Palm Pilot, Cassiopeia, etc.)
POCSAG:	Post Office Code Standardization Advisory Group
RF Transmissions:	Radio Frequency transmissions
RJ-45 Connector:	Short for Registered Jack-45, an eight-wire connector commonly used to connect computers. Looks similar to the connectors used for connecting telephone equipment, but they are somewhat wider.
UHF Band:	Ultra High Frequency Bandwidth
Windows CE:	The operating system of the PDA