EXHIBIT U – User Guide

FCC ID# NMEAVTS1030

DATA CRITICAL

AlarmView™

Wireless Data Network System
User's Guide

The AlarmView™ System is intended for use with Nellcor™ NPB-290, NPB-295, N-395, and N-3000 Pulse Oximeters

AlarmView™ Wireless Data Network System User's Guide

Table of Contents

Using this Guide

Procedures

As you work through this guide, steps to perform are numbered in sequence. For example:

1. Turn monitor off or disconnect cable from transmitter.

2. Press **On/Off** button on transmitter.

Warnings

Warnings alert you to potential serious outcomes (including death, injury, or adverse events) to the patient or user.

⚠	Warnings are identified by this symbol.

Cautions

Cautions alert you to actions or conditions necessary for the safe use of the equipment to prevent damage or malfunction.

◆	Cautions are identified by this symbol.

Notes

Notes provide additional tips or hints to make it easier for you to work with the AlarmView System.

✎ Notes are identified by this symbol.

For More Information

This guide contains instructions for the daily use of the AlarmView System only.

For information on system applications, installation, programming, testing and maintenance, refer to the *AlarmView Wireless Data Networking System Administrator's Manual*.

Safety Information

System Warnings

⚠ **Prescription** - Federal (USA) law restricts this device to sale by or on the order of a physician.

⚠ **Patient Monitoring** – The most reliable method of patient monitoring combines close personal surveillance with correct operation of monitoring equipment.

⚠ **Secondary Patient Monitoring System** – The bedside monitor and designated station make up the patient monitoring system. Patient alarm conditions and notifications are primary functions of the patient monitoring system. **It is imperative that patient alarm conditions be monitored at the primary monitor or designated station. The AlarmView System is not intended for use as the primary source for patient alarm notification.**

⚠ **Explosion Hazard** – Do not use the AlarmView System in the presence of flammable anesthetics, skin cleaning agents, disinfectants or gases. Care must be taken when the device is used in oxygen-enriched environments (where room air contains 25% or more oxygen or nitrous oxide).

⚠ **Electrical Shock** – To reduce the risk of electrical shock, do not remove the cover of the AlarmView transmitter. Refer servicing to qualified personnel. Do not spray or spill any liquid on the AlarmView transmitter, power supply, pager, programmer, or any accessories, connectors, switches or openings in the equipment.

⚠ **Pacemaker Interference** – The programmer's speaker may cause interference with some pacemakers when used in close proximity. For patients with pacemakers, do not use the AlarmView programmer near a patient's chest area or place the programmer on a patient's chest.

⚠ **Radio Frequency (RF) Radiation Safety** – The AlarmView transmitter is designed for use as a mobile device as defined by the Federal Communications Commission (FCC). Do not place the transmitter on a patient's or user's body. Ensure that the transmitter is located at least 20 cm (8 inches) from a patient or user's body. Location of the transmitter closer than 20 cm (8 inches) to a person's body will void the user's FCC authority to operate the equipment.

⚠ **Transmitter Placement** – Do not place the AlarmView transmitter in any position where it might fall on and potentially harm a patient. Do not lift the transmitter or connected monitor by the interface cable or power cord, as they may become disconnected and cause the transmitter and/or monitor to fall on and potentially harm a patient.

⚠ **Use During Defibrillation** – The AlarmView transmitter is not electrical shockproof. When attached to a monitor that is attached to a patient during defibrillation or while an electrosurgical unit is in use, the transmitter may temporarily lose communication with the monitor and/or pages may be delayed.

⚠ **Transmitter Range** – Users are not notified when the AlarmView pagers are out of range of the AlarmView transmitter. A range test must be performed (as indicated in the *Administrator's Manual*) to determine system boundaries.

⚠ **System Redundancy** – To provide redundancy, the AlarmView System should consist of at least two pagers. If one pager is not receiving pages for any reason and the alarm is not silenced at the monitor, the second pager will be notified by a reminder page. If redundancy is not possible, caregivers should use extra vigilance in monitoring the patient and use the primary monitoring alarm.

⚠ **Site Surveys** – Each institution is responsible for surveying existing equipment and ensuring no interference risk exists when introducing additional devices.

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

⚠   **Environment** – Data Critical does not assume responsibility for damage caused to the equipment by improper use or installation.

⚠   **Home Use** – The AlarmView System is not intended for home use.

⚠   **IEC Standards** – When connecting the AlarmView transmitter to any monitor, verify proper operation before clinical use. Both the transmitter and the monitor connected to it must be connected to a grounded outlet. Accessory equipment connected to the monitor's data interface must be certified according to IEC Standard 950 for data-processing equipment or IEC Standard 60601-1 for electromedical equipment. All combinations of equipment must be in compliance with IEC Standard 60601-1-1 systems requirements. Anyone who connects additional equipment to the signal input port configures a medical system and is therefore responsible for ensuring that the system complies with the requirements of system standard IEC Standard 60601-1-1 and the electromagnetic compatibility system standard IEC Standard 60601-1-2.

Section 1: AlarmView™ System Overview

Introduction

The AlarmView System is a complete, secondary patient monitoring system. AlarmView notifies caregivers of patient events using a wireless network that supplements the primary notification system.

AlarmView is intended for use in hospitals and hospital-type facilities, and is installed in care units where pulse oximetry monitors are used.

AlarmView consists of the following three basic components:

- Transmitter

- Pager

- Programmer

AlarmView™ Transmitter

At each bedside, a transmitter connects to the data port on the patient monitor. The transmitter detects alarms identified by the monitor, and sends the information within seconds to one or

more text pagers worn by caregivers.

AlarmView™ Pager

The pager is worn by the caregiver
responsible for the patient. It receives
Alarm Pages in the form of text
messages from the transmitter, and
displays immediate information about
the patient and type of alarm. If an alarm condition continues or
is not silenced at the monitor, a Reminder Page is sent to all
pagers on the AlarmView System.

AlarmView™ Programmer

The programmer is a handheld computing device used to define
or change bed and caregiver assignments, and to configure the
AlarmView transmitter.
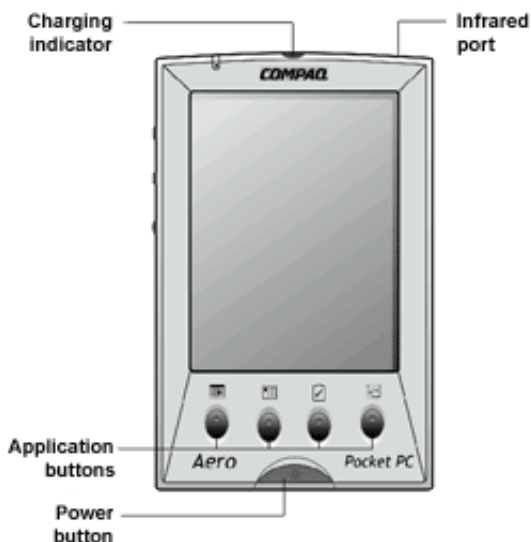
An AlarmView System includes up to 24 transmitters (one for
each bedside oximetry monitor), up to 12 pagers, and one

programmer. All transmitters and pagers within one system operate on the same radio frequency and the same baud rate.

◆   The AlarmView pager coverage is limited and designed to cover a care unit only. Operating range from the AlarmView transmitter to pager is approximately 150 feet with no intervening structures (walls, columns, doors, floors, etc.). Coverage is not long range. Exact coverage area will be determined during initial installation, and you can re-examine the coverage area at any time by performing a Transmitter Range Test (as indicated in the *Administrator's Manual)*.

The system communicates as indicated in the diagram below:
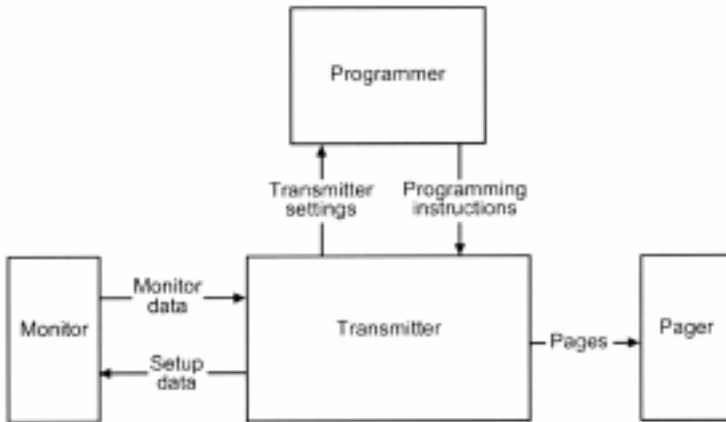
AlarmView™ System Communication Flow Chart

Section 2:   AlarmView™ Transmitter Overview

⚠   As with all medical equipment, carefully route patient cabling to reduce the possibility of patient entanglement or strangulation.

⚠   Do not use an AlarmView transmitter, pager, or programmer that appears to be damaged.

⚠   The AlarmView wireless data network system is a secondary alarm notification system. The AlarmView System is intended to supplement and not to replace any part of the hospital's device monitoring procedures (including procedures regarding bedside pulse oximeters and responding to bedside oximeter alarms). The delivery of pages cannot be guaranteed or verified. Do not rely on the AlarmView System as the sole source of oximetry alarms.

⚠   An AlarmView System must always consist of at least two pagers, so that if one pager is temporarily not receiving pages (for example, because the batteries are exhausted or the user is out of range) and no one silences the alarm at the monitor, the second pager will be notified via a reminder page.

⚠   To ensure accurate performance and prevent device failure, do not subject the AlarmView System to extreme moisture, such as direct exposure to rain. Such exposure may cause inaccurate performance or device failure. The transmitter, transmitter power supply, programmer and/or pager must be removed from service if they ever become submerged in liquid.

The AlarmView transmitter interfaces with a pulse oximetry monitor. Alarm settings and parameters are entered in the monitor – the transmitter itself does not screen or select alarms.

When the pulse oximeter goes into alarm, the transmitter detects the

alarm from the monitor, then transmits that alarm to an assigned pager or pagers. The alarm is transmitted as a text message to the pager(s). Data relayed includes patient bed number, alarm type, and parameter values.

Transmitter Product Description

Top Panel
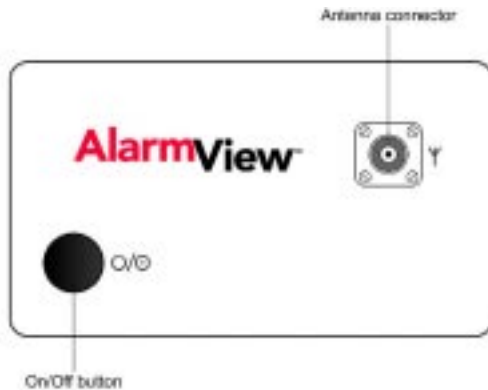
Transmitter Top View

Antenna Connector

Connector for the transmitter antenna.

◆ The antenna must be connected to the transmitter before the transmitter is turned on. Turning the transmitter on without the antenna connected may damage the transmitter. Do not disconnect the antenna while the transmitter is turned on.

◆ For best transmission range, the antenna must be pointing straight up.

⚠   The AlarmView transmitter is designed for use as a mobile
device as defined by the Federal Communications Commission
(FCC). Do not place the transmitter on a patient's or user's body.
Ensure that the transmitter is located at least 20 cm (8 inches)
from a patient or user's body. Location of the transmitter closer
than 20 cm (8 inches) to a person's body will void the user's
FCC authority to operate the equipment.

On/Off Button

Turns the transmitter on and off. Also used to initiate Test
Pages, and to assign All Pagers from the transmitter. (Refer to
Section 4: Using the Programmer for an explanation of assigning
Test Pages and for an explanation of assigning All Pagers from
the transmitter.)

Front Panel
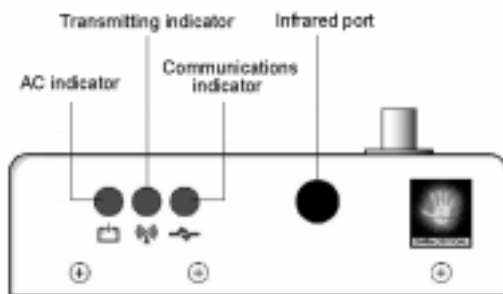
Transmitter Front View

AC Indicator

Off   Transmitter is not connected to AC power.

Green Transmitter is connected to AC power and the battery is
charging.

◆   A green AC indicator does not mean that the transmitter is
        turned on, only that it is connected to power. The Communica-
        tions Indicator must also be green or amber to show that the
        transmitter is turned on.

Transmitting Indicator

Off   Transmitter is not attempting to transmit.

Amber   Transmitter is attempting to transmit, but cannot due to
        interference (for example another transmitter is transmit-
        ting at the same frequency and in the same vicinity).

Green   Transmitter is transmitting a page.

◆   If the Transmitting Indicator remains green for more than two
        seconds, the transmitter is malfunctioning and should be taken
        out of service. Contact Data Critical for repair or replacement.

◆   If the Transmitting Indicator remains amber for more than 10
        seconds, it may be an indication of interfering transmissions in
        the vicinity. Contact the appropriate personnel at your facility for
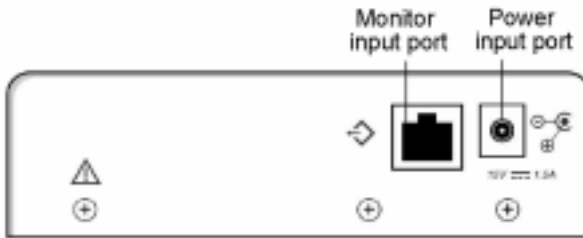   an assessment.

Communications Indicator

Off   Transmitter is turned off.

Amber   Transmitter is turned on, but is either not connected to
        the monitor, *or* is unable to communicate with the
        monitor.

Green   Transmitter is turned on and is communicating with the
        monitor.

Infrared Port

Allows communication between the transmitter and the programmer.

Rear Panel

Transmitter Rear View

Monitor Input Port

Data port for interface cable that connects transmitter to monitor.

Power Input Port

Input connector for DC power supply.

⚠   Do not connect the AlarmView transmitter to an electrical outlet controlled by a wall switch, because AC power may accidentally be turned off.

⚠   To ensure patient safety, do not place the AlarmView transmitter in any position that might cause it to fall on the patient.

⚠   Do not lift the transmitter by the data cable or power cord, because the cable or cord could disconnect from the transmitter, causing it to drop on the patient.


Using the Transmitter

To install, setup, and test the transmitter, refer to the *AlarmView System Administrator's Manual*.

Transmitter Placement

1. Place transmitter on top of or beside the pulse oximeter it is being used with.

To minimize the possibility of the transmitter creating interference with the monitor, place the transmitter at the rear of the monitor. For best results with N-395 monitors, place the transmitter to the right-rear of the monitor.
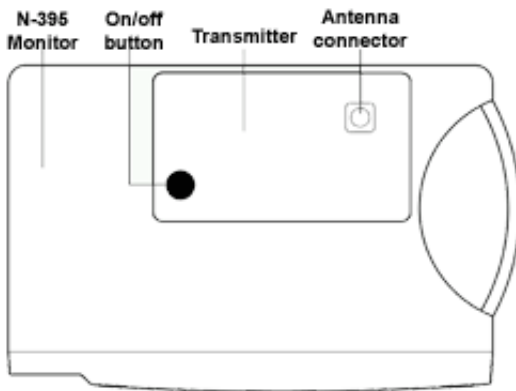
Preferred N-395 Transmitter Placement

Turning Transmitter On

1. Check oximetry monitor to ensure it is on and functioning properly, and that alarm settings are appropriate.

2. Check all transmitter connections:

    a. Antenna is connected to transmitter,

    b. Transmitter is plugged in and connected to power (**AC Indicator** should be green),

    c. Interface cable is connected to transmitter and to monitor.

♦   The antenna must be connected to the transmitter before the transmitter is turned on. Turning the transmitter on without the antenna connected may damage the transmitter. Do not disconnect the antenna while the transmitter is turned on.

♦   Only use the power supply provided by Data Critical.

♦   A monitor that is running on battery will not communicate with the transmitter, so the AlarmView System will not be able to establish communication. The only exception is the Nellcor N-395 monitor, which will continue to communicate with the transmitter while operating on battery power.

3. Press **On/Off** button on top of transmitter

Indicators will flash on and off while the transmitter performs a Power-On Self Test (POST) to check its function.

The **Communications Indicator** will turn green when the transmitter has established communication with the monitor.

The **Transmitting Indicator** will flash green, and the transmitter will send a Communication Page to the assigned pager(s) to confirm communication between transmitter and monitor. The message will display:

```
Bed: 1234
Comm OK
All Pagers*
```

*All Pagers shows that the transmitter is set up to transmit to all of the pagers on the AlarmView System. All Pagers will be replaced with "Pager 1234" if one pager is assigned to the transmitter, and "Pager 1234 5678" if two pagers are assigned to the transmitter. The four (4) digits correspond to the last four (4) digits of the assigned pager(s) cap code. (Refer to *Section 3: AlarmView Pager Overview* for an explanation of cap codes.)

✎ Not receiving a "Comm OK" page at the assigned pagers is an indication to check pager assignments at the transmitter, and ensure that the pagers are turned on.

4. Verify that page is sent to the assigned pager(s) and that bed number is correct.

The transmitter will now send pages to the assigned pager(s) whenever it detects alarms identified by the monitor.

Turning Transmitter Off

The transmitter can be turned off only when it is not communicating with the monitor. To turn the transmitter off:

1. Turn monitor off or disconnect interface cable from transmitter or monitor. The Communications Indicator will turn amber after a few seconds.

2. Press **On/Off** button. The Communications Indicator will turn Off.

🖉   If you disable communications between the transmitter and monitor and do not turn off the transmitter, the transmitter will send Communication Failure pages to assigned pagers at periodic intervals for up to one hour. After an hour has passed, the transmitter will automatically turn itself off.

Operating Transmitter On Battery Power

The transmitter has an internal, rechargeable battery. It can operate on battery power for approximately 45 minutes if it becomes disconnected from AC power.

The battery will automatically recharge when connected to AC power. When the **AC Indicator** is green, it indicates that the transmitter is connected to power, and that the internal battery is recharging. A completely discharged battery takes approximately 17 hours to return to full charge. The transmitter can be used while it is recharging.

Testing System Setup

You should test the AlarmView System setup by conducting a Test Page when any changes affecting the system have occurred. The following are examples of when a Test Page should be performed:

- A transmitter is setup for initial use.

- A transmitter has been moved to a different monitor.

- You are concerned the system is not operating properly.

- Any of the transmitter or pager components appear to be or could be damaged.

- Any of the transmitter or pager components have been splashed with liquids (and component has been allowed to dry for 24 hours and checked before returning to service).

Send Test Page

With transmitter turned on and communicating with monitor, press and release **On/Off** button again.

All pagers assigned to the transmitter will display the following page (if a patient is not connected to the sensor, dashes will be displayed for SPO2 and pulse rate):

> Bed: 1234
>
> Test Page
>
> SPO2: 83%
>
> PR: 70 bpm*

* For the Nellcor N-3000 monitor, the last line of the test page will display heart rate (HR), if available.

Section 3: AlarmView™ Pager Overview

The AlarmView pager is worn by caregivers assigned to monitor patients. It is intended as an additional means of receiving patient alarm information.

Within seconds of detecting an alarm identified by the oximetry monitor, the transmitter sends an Alarm Page to its assigned pager(s) only. Each transmitter can be programmed to send the initial Alarm Page to one pager, two pagers, or all pagers.

Information communicated includes bed number, alarm type, and parameter values, such as blood oxygenation (SPO2), pulse rate, or heart rate that is outside alarm limits.

If the alarm condition continues or has not been silenced at the monitor, the transmitter will follow up with a Reminder Page sent *once* to all pagers in the system.

Pager Product Description

Below is a picture of a typical pager. Your pager may differ slightly from the one shown here.

AlarmView™ Pager

Because pager operations may vary in different models, the basic functions of your pager are described in *Appendix A: Basic Pager Functions* of this guide. Refer to Appendix A for instructions on the following functions:

- Turning Pager On/Off

- Selecting Tone or Vibrate

- Setting Date/Time

- Adjusting Contrast

- Viewing and Deleting Pages

- Replacing Pager Battery

◆   Replace pager batteries weekly. If pager batteries are low or depleted, the pager's range may be reduced or the pager may not correctly receive pages.

Alarm Pages

◆   The pager must be turned on to receive pages. Do not turn the pager off at any time when being used for alarm notification. Doing so may result in failure to receive notice of a patient alarm.

Alarm Page Event Levels

Alarm pages are prioritized for four (4) event levels: 4=immediate, 3=high, 2=medium, 1=low.

Initial Alarm Messages with a 4 priority are sent to all pagers in the system. Messages with priority 1, 2, or 3 are sent to assigned pager(s) only. Reminder Pages are sent to all pagers in the system regardless of priority level.

When the transmitter generates a page, it is placed in a queue that holds up to four pages while they are being processed. Pages in the queue that have the same priority will be sent in the order they were received. If a higher priority alarm occurs while a lower priority page is being processed by the transmitter, the higher priority alarm will be sent first.

If a new page is generated and the queue has four pages with a higher priority, the new page will be discarded. If a new page is generated, and the queue has four pages with a lower priority, it will replace the oldest page with the lowest priority.

Alarm Page Format

The transmitter will send alarm pages to the pager in a format similar to the following example:

Bed: 1234

Low Sat

SPO2: 83%

PR: 70 bpm*

*The first line displays the bed number of the patient being monitored. The second line of the message will display the type of alarm. All of the alarm types are listed in the following table. The third and fourth lines display the SPO2 percentage and pulse rate readings at the time of the alarm.

✎   If the page is sent from a transmitter attached to a Nellcor N-3000 monitor with ECG and/or respiration capabilities, the last line of the message will display the pulse rate, heart rate, or respiration parameter that is outside alarm limits.

Alarm Page Types

Alarm Pages

Message	Description	Priority
No Pulse, No Rdg	Monitor is not detecting patient motion or patient pulse	3
Asystole	Monitor is detecting no heart rate	3
High Sat	SPO2% has exceeded monitor's upper alarm limit	2
Low Sat	SPO2% has fallen below the monitor's lower alarm limit	2
High PR	Pulse rate has exceeded monitor's upper alarm limit	2
Low PR	Pulse rate has fallen below monitor's lower alarm limit	2
High HR	ECG measured heart rate has exceeded monitor's upper alarm limit	2
Low HR	ECG measured heart rate has fallen below monitor's lower alarm limit	2
High Resp Rate	Respiration rate has exceeded monitor's upper alarm limit	2
Low Resp Rate	Respiration rate has fallen below monitor's lower alarm limit	2
Motion, No Rdg	Monitor is detecting motion and cannot determine a pulse	1

System Error Pages

Message	Description	Pri
Tx Battery Low/Shutting Down	Transmitter operating on battery power has depleted battery charge and will shut down immediately	
Comm Failure/Shutting Down	Transmitter has not been able to communicate with the monitor for about an hour and is shutting down	
Sensor Disconn	Sensor has become disconnected from monitor during monitoring	
ECG/RSP Cable Dis	ECG cable has become disconnected from monitor or ECG leads during monitoring	
ECG/RSP Lead Off	ECG leads have become disconnected from patient during monitoring	
ECG/RSP Noise	Monitor has detected unwanted noise in the ECG or respiration signal	
ECG/RSP Op Fail	Monitor's ECG/Respiration function is non-operational	
Sensor Off	SPO2 Sensor has become disconnected from the patient during monitoring	
Low Mon Battery	Monitor's battery is running low (N-395 only. The other monitors will not communicate when running on battery.)	
Low Tx Battery	Transmitter's battery is running	

✎ Types of alarms depend on the functions of the monitor. Refer to the monitor's Operator's Manual for a more complete listing of alarm types.

Section 4: AlarmView™ Programmer Overview

The AlarmView programmer is a handheld computing device, or personal digital assistant (PDA), that is used to setup and change the configuration of the AlarmView transmitter. Use the programmer to perform the following tasks:

- View or edit the list of bed numbers.

- View or edit the list of pager numbers and cap codes.

- View or change bed number and pager assignments.

- Set the Reminder Page Time Delay.

Changes and additions to bed numbers, pager numbers, and transmitter assignments are entered in the programmer. Entered or changed data is then sent to the transmitter via infrared (IrDA) ports on both the programmer and transmitter.

Information about the transmitter and monitor configuration can also be retrieved from the transmitter to the programmer through the infrared ports.

◆ The programmer is to be used for the AlarmView System only. Do not attempt to load or use other software with the programmer, as it may corrupt or damage system software.

⚠ The programmer's speaker may cause interference with some pacemakers when used in close proximity. Do not place the programmer on a patient or operate near a patient's chest area. Do not carry the programmer in a breast pocket.

Programmer Product Description

Below is a picture of a typical programmer. Your programmer may differ slightly from the one shown here.
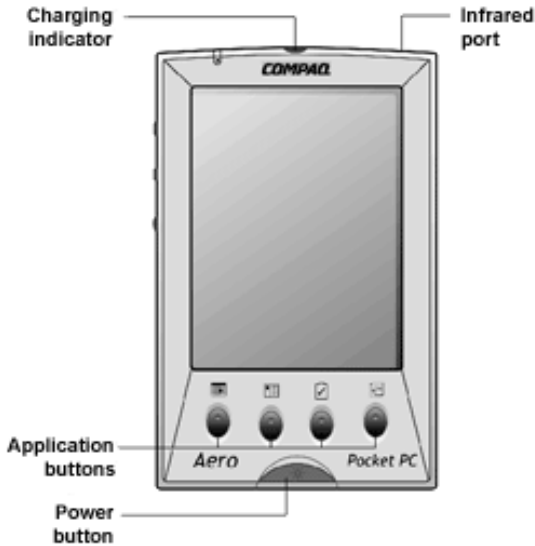
AlarmView™ Programmer

Because programmer operations may vary in different models, the basic functions of your programmer are described in *Appendix B: Basic Programmer Functions* of this guide. Refer to Appendix B for instructions on the following functions:

- Turning Programmer On/Off

- Adjusting Contrast

- Turning on Backlight

- Recharging or Replacing Programmer Main Battery

- Replacing Programmer Backup Battery

- Setting Date/Time

◆ Keep the programmer connected to the AC adapter and plugged in when it is not in use to ensure the programmer is always fully charged.

◆ Ensure that the programmer's main batteries are charged and a full backup battery is installed at all times or the AlarmView software and hospital specific data may be lost.

◆ Do not remove both the main and backup batteries from the programmer at the same time, as the AlarmView software and hospital specific data will be lost.

◆ Use the stylus that came with the programmer or other stylus designed specifically for use with a handheld computer. Use of other pointed items such as pens and pencils may damage the programmer screen.

Using the Programmer

The AlarmView System Manager (SysMgr) software will be installed and running when you receive the programmer. When you turn the programmer on, you will see the SysMgr main screen, with three buttons for **Assignments**, **Admin**, and **Service**.

For all programming functions, use the stylus to tap the appropriate spot on the screen to perform the desired action.
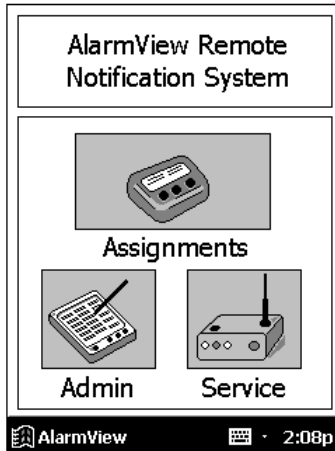
AlarmView System Manager Main Screen

You will also see a ⊞ button in the lower left corner of the screen. The **Start** button is used for installing and configuring the AlarmView System only; you should not need it for daily use of the programmer.

A **Keyboard** button ▦ is in the middle of the screen. The keyboard should be visible automatically when it is needed for programming. However, if it is not visible, tap the **Keyboard** button to open it.

Some help screens are available in submenus. Tap **Help** ⁇ button (in upper left corner) to view the help screen. Tap the X in the upper right corner of the screen to close help screen.

Viewing and Editing Bed Numbers

Turn the programmer on and use the following procedure to view, add, delete, or edit bed numbers stored in the programmer:

1. From SysMgr Main Screen, tap **Admin** button .

2. A warning screen appears, asking if you're sure you wish to continue. Tap **YES** to *view* bed numbers.
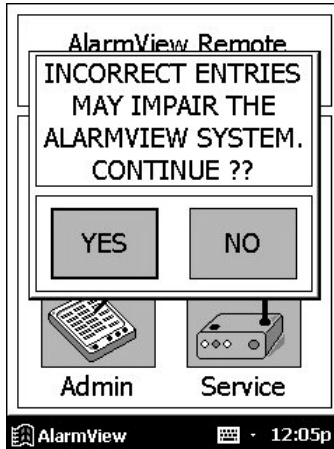
3. The current list of beds 1-24 is displayed. To display beds 25-48, tap **Beds 25-48** tab.

4. a. To *edit* bed number, double-tap or drag stylus across bed number to highlight it, and tap the keyboard characters to enter desired bed number (maximum of six characters).

b. To *delete* a bed number, highlight bed number and tap

the **Backspace** key ⬅ until bed number field is empty.

c. To *add* a cap code (up to a total of 12), tap in an empty cap code field and use the keyboard to enter the new code.

5. If you make an error, tap the **Backspace** key on the keyboard to delete single characters, or tap **RESTORE** to restore all values to what they were before you began editing.

6. Tap **SAVE** to save your changes.

✎   After tapping **SAVE**, values cannot be restored. Repeat the edit procedure to re-enter previous bed number.

7. Tap **Exit** button ◁ (in upper-right hand corner of the screen) to return to SysMgr Main Screen. If you have made changes and tap Exit before tapping Save, the programmer will prompt you to "Save changes?" Tap **Yes** to save changes and exit.

✎   **IMPORTANT:** When you save edits, entries are automatically resorted alphabetically and numerically. The bed numbers you changed or entered will move in the display to appear in their new place in the sort, not necessarily in the field where you made the changes. To view an edit you've made, look for the bed number in its correct place in the alphanumeric sort.

✎   Lists of all bed numbers in the AlarmView System are retained permanently in the programmer. The values in these lists are the values that will be selectable when programming the transmitter. These lists should be set up during installation of the AlarmView System and should not be changed unless beds need to be added or replaced.

Viewing and Editing Pager Numbers

Pagers are identified in the system using a Cap Code. Cap codes are 7-digit numbers unique to each pager. The seven (7) digits correspond to the last seven digits of the pager's serial number (located on the back of the pager). If the serial number is less than seven digits, then add zeros in front.

For example, if a pager's serial number is 45678, its cap code is 0045678.

Turn the programmer on and use the following procedure to view, add, delete, or edit pager cap codes stored in the programmer:

1. From SysMgr Main Screen, tap the **Admin** button.

2. A warning screen appears, asking if you're sure you wish to continue. Tap **YES** and current list of bed numbers 1-24 will display.

3. To view pager cap codes, tap **Pager** tab. A list of up to 12 pagers and their cap codes is displayed.

4. a. To *edit* pager cap codes, double-tap or drag the stylus across a cap code to highlight it, and then tap on the keyboard characters to enter the desired cap code (must be seven (7) characters).

    b. To *delete* a cap code, highlight the cap code and tap the **Backspace** key until the cap code field is empty.

    c. To *add* a cap code (up to a total of 12), tap in an empty cap code field and use the keyboard to enter a new code.

5. If you make an error, tap the **Backspace** key on keyboard to delete single characters, or tap **RESTORE** to restore all values to what they were before you began editing.

6. Tap **SAVE** to save your changes.

7. Tap **Exit** button to return to SysMgr Main Screen.

✐ When you save edits to cap codes, entries are automatically resorted in numeric order. The cap codes you changed or entered will move in the display to appear in their new place in the sort, not necessarily in the field where you made the changes. To view an edit you've made, look for the cap code in its correct place in the numeric sort.

✐ Lists of all cap codes in the AlarmView System are retained permanently in the programmer. The values in these lists are the values that will be selectable when programming the transmitter. These lists should be set up during installation of the AlarmView System and should not be changed unless pagers need to be added or replaced.

Viewing and Changing Bed and Pager Assignments

One bed is assigned to each transmitter. You must change the bed number assignment if you move the transmitter to a different bed or room.

One, two, or all pagers may be assigned to each transmitter. You can change pager cap code assignments if caregivers or pagers change. If you assign All Pagers, the transmitter will transmit to all pagers on the AlarmView System.

◆ Do not exchange transmitters or pagers from different systems. Because transmitters and pagers within a system operate on a single, defined frequency, interchanged transmitters or pagers will not correctly transmit or receive.

Viewing Current Transmitter Assignments

To view and change the bed number and pager cap codes
assigned to a transmitter, first retrieve the current assignments
from the transmitter. Use the following procedure to get current
transmitter assignments:

1. Turn transmitter on.

2. Turn programmer on.

3. From SysMgr Main Screen, tap the **Assignments** button
   .

The programmer will display the assignment screen. The Info
Line near the top of the screen will indicate that the programmer
is ready to "Assign Bed and Pagers."

✎ Pager numbers on this screen show the last four digits of the
   cap code only (which will also match the last four digits of the
   pager serial number).

---

4. Aim the infrared port on the programmer directly at the infrared port on the front of the transmitter and tap the **CHECK** button.
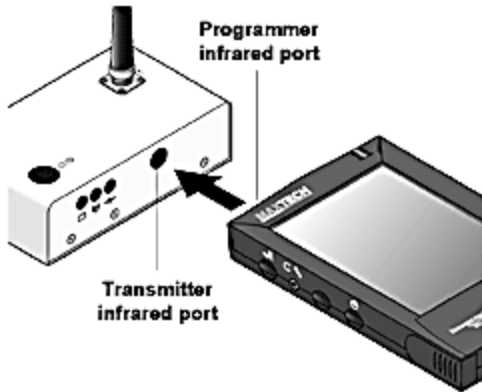
Aligning the Infrared Ports

🖉   The programmer must be within four feet (1.2 meters) of the transmitter and the infrared ports must be aimed directly at each other.

5. If the following error message is displayed, tap **OK**. Check to ensure the transmitter is turned on, check the orientation and the distance, then try again.

6. When retrieval of information from transmitter is successful, the Info Line will change to read "Current Unit Assignment."

The currently assigned bed number will be displayed in the bed number field, and the currently assigned pager numbers will be checked. The display will only show the last four digits of the pager number.

In the next example, bed number 1733-B and pager 0027 is assigned to this transmitter. Only pager 0027 will receive alarm pages from this transmitter.
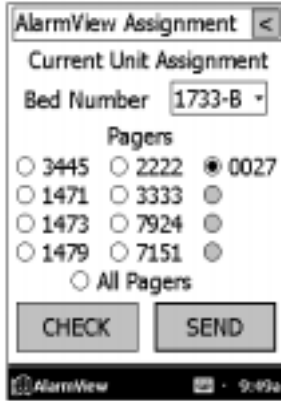
Changing Transmitter Assignments

✎   The bed numbers and pagers may be selected and the transmitter programmed without first retrieving the transmitter set up.

After you have retrieved the current transmitter assignments into the programmer, use the following procedure to change the bed number and cap code(s) assigned to the transmitter:

1. To change bed number, tap the **Down Arrow** in the bed number field. A current list of all bed numbers will be displayed. Continue to tap the **Down Arrow** until the bed number you want is displayed.

```
┌─────────────────────────────┐
│ AlarmView Assignment   │ < ││
│      Failed To Connect      │
│ Bed Number   ┌──────────┬─┐ │
│              │          │▼│ │
│      Pagers  │1723      │▲│ │
│  ○ 3445  ○ 222│1725     │ │ │
│  ○ 1471  ○ 333│1726-A   │ │ │
│  ○ 1473  ○ 792│1726-B   │═│ │
│  ○ 1479  ○ 715│1727     │ │ │
│      ○ All Page│1729     │ │ │
│              │1731      │ │ │
│  ┌─────────┐ │1733-A    │ │ │
│  │ CHECK   │ │1733-B    │▼│ │
│  └─────────┘ └──────────┴─┘ │
│ 🗐 AlarmView    ⌨ ·  12:36a │
└─────────────────────────────┘
```
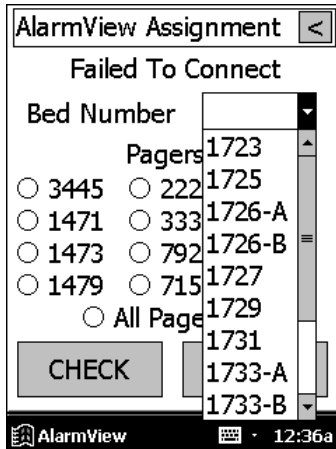
2. Tap a new bed number from the list to assign it to this transmitter.

3. To change pager numbers, tap the circles to the left of the cap codes to select or deselect pager(s) to assign to this transmitter.

   You can select one pager, two pagers, or tap **All Pagers** to assign all pagers in the system to this transmitter.

4. The Info Line will read "Now Press SEND Button" after you have made your bed number and pager selections. Now you need to program your new assignments into the transmitter.

```
┌─────────────────────────────────┐
│ AlarmView Assignment  │ < │     │
│     Now Press SEND Button        │
│   Bed Number  [1726-B ▾]         │
│          Pagers                  │
│   ○ 3445   ○ 2222   ○            │
│   ◉ 1471   ○ 3333   ○            │
│   ○ 1473   ○ 7924   ○            │
│   ○ 1479   ○ 7151   ○            │
│        ○ All Pagers              │
│   ┌─────────┐   ┌─────────┐      │
│   │  CHECK  │   │  SEND   │      │
│   └─────────┘   └─────────┘      │
│ 🏢 AlarmView      ⌨ ·  12:38a    │
└─────────────────────────────────┘
```

Tap here ⟶ (1471)

Cap codes ⟶ (All Pagers)
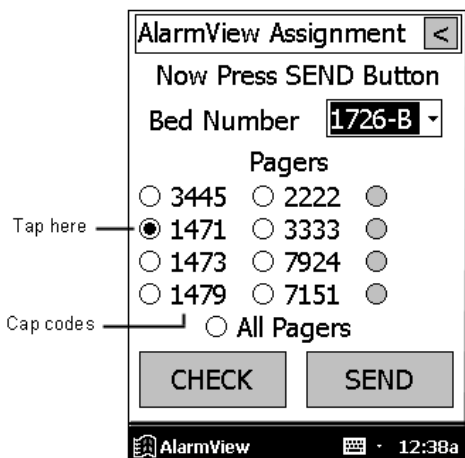
5. Ensure that transmitter is on and pagers assigned to this transmitter are on.

6. Aim the infrared port on the programmer directly at the infrared port on the front of the transmitter and tap the **SEND** button.

🖉   The programmer must be within four (4) feet (1.2 meters) of the transmitter and the infrared ports must be aimed directly at each other.

If you attempt to send, but have not selected either a bed number or pager numbers, the following error message will be displayed on the programmer. Tap **OK**, perform steps 2-4 above, and try again.

7. The Info Line will display "Programming Successful" when transmission is complete.

The transmitter will send a Confirmation Page to the assigned pager(s) similar to the following example.

> Bed: 1234
>
> Programming OK

◆　　If a Confirmation Page is not sent to the assigned pager(s), the programming was not completed successfully. Repeat the procedure and check for confirmation.

✎   If the following error message is displayed on the programmer, the programmer's port could not be accessed. Use the stylus to tap the reset button on the back of the programmer. This will return you to the SysMgr Main Screen. Try the procedure again. Refer to Appendix B for more information.

Assigning All Pagers from the Transmitter

The All Pagers option can also be selected from the transmitter without using the programmer. The transmitter should be on, but not communicating with a monitor.

1.   Turn the transmitter on, but turn the monitor off or disconnect interface cable. The **Communications Indicator** should be amber.

2.   Turn on a pager.

3. Press and hold the transmitter **On/Off** button until a "Programming OK" confirmation message is received at the pager (approximately 5 seconds).

```
Bed: 1234

Programming OK

All Pagers
```

Setting Reminder Page Delay

If an alarm condition continues or has not been silenced at the monitor, the transmitter will follow up with a **Reminder Page** sent *once* to all pagers in the system.

The format will be the same as the initial page, except that the word "Rem" will be added to the first line. Current patient data at the time the **Reminder Page** was transmitted are displayed.

```
Bed: 1234 REM

Test Page

SPO2: 83%

PR: 70 bpm
```

The **Reminder Page** will be sent only once. The time delay of the reminder can be set using the programmer. Follow the next procedure to view and change the time delay.

◆ The time delay interval is intended to be the same for the entire system. When changing this value, you should program the change into every transmitter in the system.

1. Turn transmitter and programmer on.

2. From SysMgr Main Screen, tap the **Service** button .

3. The Info Line will read "Press CHECK Button." Aim the programmer's infrared port directly at the infrared port on the front of the transmitter and tap **CHECK** to retrieve the current **Reminder Page** setting from the transmitter.

```
┌─────────────────────────────────┐
│  ┌──────────────────────┐ ┌──┐  │
│  │   AlarmView Service   │ │< │  │
│  └──────────────────────┘ └──┘  │
│       Press CHECK Button         │
│  ┌────────┬───────┬─────────┐    │
│  │CONTROLS│details │more info│    │
│  └────────┴───────┴─────────┘    │
│  ┌──────────────────────────┐    │
│  │   Send the Reminder Page  │    │
│  │   After [        ▼]       │    │
│  │  ──────────────────────   │    │
│  │   Test Range  [~~⌐]       │    │
│  └──────────────────────────┘    │
│  ┌──────────┐   ┌──────────┐     │
│  │  CHECK   │   │   SEND   │     │
│  └──────────┘   └──────────┘     │
│  ▤ AlarmView        ▥ · 12:44a  │
└─────────────────────────────────┘
```

When retrieval of transmitter information is successful, the Info Line will read "Current Transmitter Setup" and the current value will appear in the Reminder Page field. In the next example, the time delay is set at one minute (1 min).

```
┌─────────────────────────────────┐
│  AlarmView Service        [<]   │
│                                 │
│   Current Transmitter Setup     │
│  [CONTROLS] details  more info  │
│  ┌───────────────────────────┐  │
│  │   Send the Reminder Page  │  │
│  │                           │  │
│  │   After  [ 1 min  ▾]      │  │
│  │                           │  │
│  ├───────────────────────────┤  │
│  │                           │  │
│  │   Test Range   [ ~⌐ ]     │  │
│  │                           │  │
│  └───────────────────────────┘  │
│                                 │
│   [  CHECK  ]     [  SEND  ]     │
│                                 │
│  🔲 AlarmView      ⌨ · 12:50a   │
└─────────────────────────────────┘
```
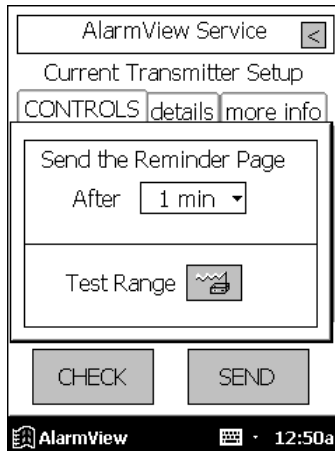
4. Tap the **Down Arrow** in Reminder Page field. A list of delay intervals will display with 30 sec, 45 sec, 1 min, and 2 min intervals. Tap the time delay value you want to store in transmitter.

```
┌─────────────────────────────────┐
│  AlarmView Service        [<]   │
│                                 │
│   Current Transmitter Setup     │
│  [CONTROLS] details  more info  │
│  ┌───────────────────────────┐  │
│  │   Send the Reminder Page  │  │
│  │                           │  │
│  │   After  [ 1 min  ▾]      │  │
│  │          ┌────────┬─┐     │  │
│  │          │ 30 sec │▲│     │  │
│  │          │ 45 sec │ │     │  │
│  │   Test Ra│■1 min ■│═│     │  │
│  │          │ 2 min  │ │     │  │
│  │          │ 3 min  │▼│     │  │
│  │          └────────┴─┘     │  │
│  │                           │  │
│   [  check  ]     [  SEND  ]     │
│                                 │
│  🔲 AlarmView      ⌨ · 12:53a   │
└─────────────────────────────────┘
```
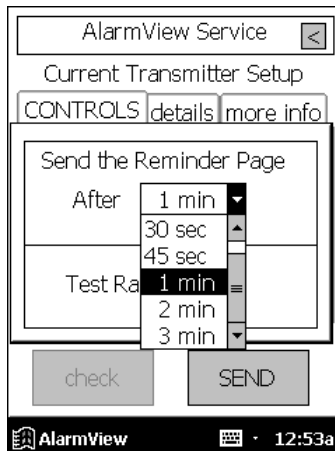
5. Now you need to program the changed value into the transmitter. Aim the infrared port on the programmer directly at the infrared port on the front of the transmitter and tap the **SEND** button.

Transmission is complete when the Info Line reads "Programming Successful" and the pager receives a "Programming OK" page.

6. Repeat step 5 for all transmitters in the system.

7. Tap the **Exit** button to return to SysMgr Main Screen.

Section 5: Maintenance, Service, and Support

Cleaning Procedures

When necessary, clean only the outer casing of the transmitter with a soft cloth, damp with a nonabrasive, commercial cleaner or 70% alcohol solution in water. Lightly wipe surfaces of the transmitter.

Use a clean cloth designed for lenses to clean the pager and programmer screens. Use a damp cloth to dust their casings, and wipe dry immediately.

◆ Do not spray, pour, or spill liquids on any part of the AlarmView System components. Do not submerge any of the components in liquids. If fluids are spilled on the equipment, take the equipment out of service for at least 24 hours. Have appropriate service personnel check the operation of the equipment before returning to service.

Inspection and Testing

At least every two years, inspect the transmitter, pagers, cables and programmer for mechanical and functional damage. Inspect safety labels to ensure they are legible.

If any system components appear to be damaged, or subjected to potential damage (such as being dropped or exposed to liquids), qualified personnel should test the system using the procedures in the *AlarmView™ System Administrator's Manual.*

Electromagnetic Interference (EMI)

The AlarmView transmitter has been tested and found to comply with the limits for medical devices to the FDA guidance for electromagnetic compatibility (EMC). These limits are designed to provide reasonable protection against harmful interference in a typical medical installation.

◆   It is possible that high levels of radio frequency or conducted frequency electromagnetic interference due to close proximity or strength of source may result in performance disruption of transmitter.

⚠   The transmitter is designed for use as a mobile device as defined by the Federal Communications Commission (FCC). Do not place the transmitter on a patient's or user's body. Ensure that the transmitter is located at least 20 cm (8 inches) from a patient or user's body. Location of the transmitter closer than 20 cm (8 inches) to a person's body will void the user's FCC authority to operate the equipment.

The Nellcor NPB-290, NPB-295, N-395, and N-3000 pulse oximetry monitors are not designed for use in environments in which the pulse can be obscured by EMI. Interference may cause measurements that seem inappropriate or monitor may not seem to operate correctly. The AlarmView System may generate alarms or error messages during these conditions.

The AlarmView System generates, uses, and can radiate radio-frequency energy and – if not installed and operated according to these instructions – may cause interference with other devices in vicinity.

Evidence of disruption may include erratic readings, amber Tx LED, equipment ceasing to operate, or other incorrect functioning. If this occurs, survey the site to determine the source of disruption, and take the following actions to eliminate the source(s):

1. Turn equipment in vicinity off and on to isolate disruptive equipment.

2. Relocate or re-orient interfering equipment.

3. Increase distance between interfering equipment and this equipment.

4. Manage use of frequencies close to AlarmView System frequencies.

5. Remove devices that are highly susceptible to EMI.

6. Lower power from internal sources within facility control (such as paging systems).

7. Labeling will not eliminate interference with devices susceptible to EMI.

8. Educate clinical staff to recognize potential EMI-related problems.

9. Eliminate or reduce EMI with technical solutions (such as shielding).

10. Restrict use of personal communicators (cell phones, computers) in areas with devices susceptible to EMI.

11. Share relevant EMI information with others, particularly when evaluating new equipment purchases which may generate EMI.

12. Purchase critical care equipment that complies with IEC 601-1-2 EMC Standards (3V/meter EMI immunity, limit interference level to 0.0014 V/meter).

Use the following chart to estimate protective distance:

Appendix A: Basic Pager Functions

The following instructions are for the PerComm model PA8002 pager only. If you have a different pager, contact your administrative personnel or Data Critical for instructions.

Not all pager functions will be described here, only the basic functions needed for AlarmView System operations.

🖉　　Pressing the left button multiple times will eventually take you back to the pager's main menu.
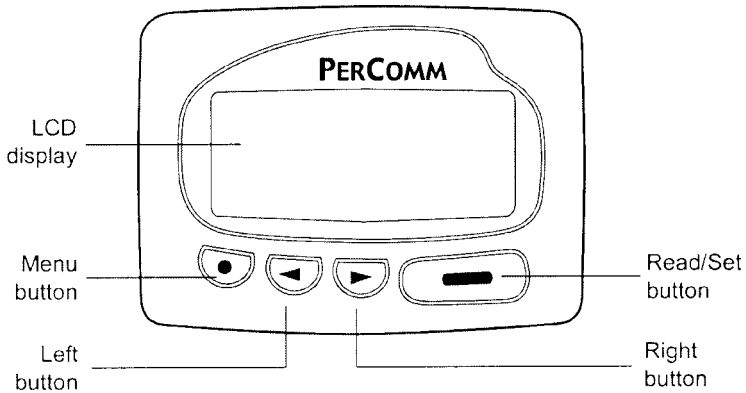
Pager On/Off

Power On

1.　Press the 🔘 key and wait until the screen shows "POWER ON?".

2.　Press the ▭ key to confirm.

---

3. The screen will show the **Standby Screen** in the normal condition.
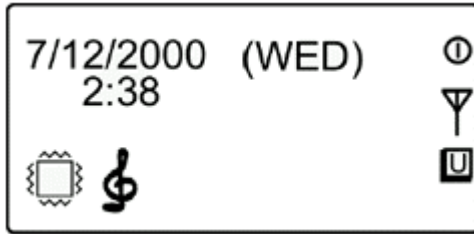
Main Screen

Power Off

1. Press the ⦿ key to reach the **Icon Screen**:
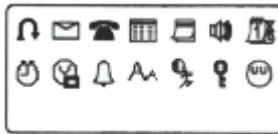
2. Press the ◀ key to select the **Power Off** icon ☺, then press the ▭ key to display "POWER OFF?".

3. Press the ▭ key again to confirm.

◆ The pager must be turned on to receive pages. Do not turn the pager off at any time when being used for alarm notification. Doing so may result in failure to receive notice of a patient alarm.

Setting the Pager Functions

Press the ⦿ key twice to enter the **Icon Screen** mode.

Setting Tone

1. To set the private alert tone, press ◀ or ▶ to highlight **Alert/Vibration/Sleep Mode** button 📳 and press ▬▬ to select.

2. Press ◀ or ▶ to highlight the **Alert** icon 𝄞.

3. Press ▬▬ to select.

4. Press the ▶ to scroll through alert tone options. Press ▬▬ to confirm.

5. Repeat steps 1 through 4 to set public alert also.

◆   The pager should never be used in **Vibration Mode** 📳 unless absolutely necessary.

◆   When using the pager in **Vibration Mode**, it must be carried or worn in a location where the vibration can be detected.

◆   Do not use **Sleep Mode** ☐ when using the pager for alarm notification. Doing so will result in failure to receive notice of a patient alarm.

Setting Time

1. From the **Icon Screen**, press ◀ or ▶ to select the **Time/Date Set** icon 📅 and press ▬▬ to select .

2. Press ▶ to select the **Time** icon ⬡ , and press ▬▬ to activate the time setting.

3. Press ◀ or ▶ to set the value and ▬▬ to confirm each input.

Setting Date

1. From the **Icon Screen**, press ▶ to select the **Time/Date Set** icon 🕮, and press ▭ to activate the date format.

2. Press ▶ once to select the Date Format icon 🕮 and press ▭ to confirm.

3. Press ◀ or ▶ to select the format and press ▭ to confirm.

Adjusting Screen Contrast

1. From the **Icon Screen**, press ▶ to select the **Auto-scroll/ Contrast** icon 🕮 and press ▭ to activate the **Auto-scroll/Contrast** screen.

2. Press ▶ to go to the **Contrast** ◗ line.

3. On the **Contrast** line, press ◀ or ▶ to select the contrast, and press ▭ to confirm.

Message Mode

Viewing Messages

When paged, a unread message icon 🅄 will appear on the Standby Screen. The icon will remain until the page is read. (The unread "private" message icon may also be displayed. All Alarm View messages are sent as private messages.)

1. Press ▭ to read the message.

2. Press ◀ or ▶ keys to scroll forwards and backwards through the messages.

Deleting Messages

Deleting a Single Message

1.   While reading the message, press ⬤ .

2.   Press ◀ once to select the **Single Message Delete** ◻ icon.

3.   Press ▭ to show "DELETE?"

4.   Press ⬤ again to confirm.

Delete All Messages at Once

1.   Press ▭ to enter the message screen.

2.   Press ⬤ , then press ◀ twice to select the **Delete All Messages** ◻ icon.

3.   Press ▭ to show "DELETE ALL?"

4.   Press ▭ again to confirm.

Replacing Battery

Typical pager battery life under normal usage is one week. When the battery is low, the user will be alerted by a tone, and the Standby Screen will display the **Low Battery** icon ◣. These alerts will subside only when a fresh battery has been installed. The pager uses one AA Alkaline battery.
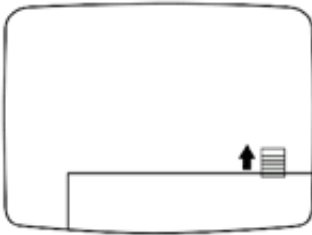
⚠️ A fresh battery must be installed within 5 minutes of alert, or all data and memory could be erased.

Removing and installing the battery

1. Unlock the battery cabinet by sliding up the lock.

2. Slide the lid forward to open the cabinet. Remove old battery and insert new one according to polarity diagram (+ -).
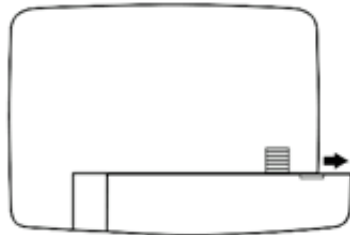
1.   2.

Replacing Pager Battery

Dispose of old battery according to facility policy.

◆ Replace pager batteries weekly. If pager batteries are low or depleted, the pager's range may be reduced or the pager may not correctly receive pages.

Appendix B: Basic Programmer Functions

Safety Information

General Precautions

Retain the product's safety and operating instructions for future reference. Follow all operating and usage instructions. Observe all warnings on the product and in the operating instructions.

To reduce the risk of fire, bodily injury, and damage to the equipment, observe the following precautions:

Damage Requiring Service

Unplug the product from the electrical outlet and send to Data Critical under the following conditions:

- The power cord, extension cord of plug is damaged.

- Liquid has been spilled or an object has fallen into the product.

- The product has been exposed to water.

- The product has been damaged in any way.

- There are noticeable signs of overheating.

- The product does not operate normally when you follow the operating instructions.

Servicing

Except as explained elsewhere in the Compaq
documentation, do not service any Compaq
product yourself. Opening or removing covers
that are marked with the symbol to the left may
expose you to electric shock. Service needed
on components inside these compartments
should be done by Data Critical.

Heat

The product should be placed away from radiators, heat regis-
ters, stoves, or other pieces of equipment (including amplifiers)
that produce heat.

Water and Moisture

Do not use the product in a wet location.

Accessibility

Be sure that the power outlet you plug the power cord into is
easily accessible and located as close to the equipment opera-
tor as possible. When you need to disconnect power to the
equipment, be sure to unplug the power cord from the electrical
outlet.

Internal Battery

Your programmer may contain an internal battery-powered real-
time clock circuit. Do not attempt to recharge the battery, disas-
semble it, immerse it in water, or dispose of it in fire. Replace-
ment should be done by Data Critical using Data Critical spare
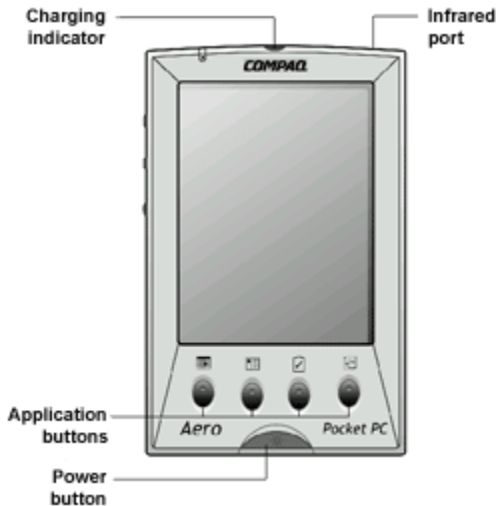parts for the programmer.

Rechargeable Battery Pack

Do not crush, puncture, or incinerate the battery pack or short the metal contacts. In addition, do not attempt to open or service the battery pack.

Programmer Functions

The following instructions are for the Compaq® Aero® programmer model only. If you have a different programmer, contact your administrative personnel or Data Critical for instructions.

Not all programmer functions will be described here, only the basics needed for AlarmView™ System operations. The left application button at the bottom of the programmer will take you to the AlarmView System Manager (SysMgr) main screen. The other three application buttons are not used for the AlarmView System.
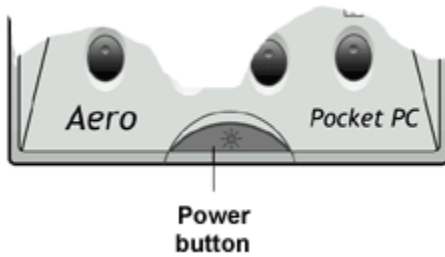

The stylus is stored in the top right corner of the programmer. The infrared port (for retrieving and sending programming from/to the AlarmView transmitter) is located on the top right corner of the programmer next to the stylus.
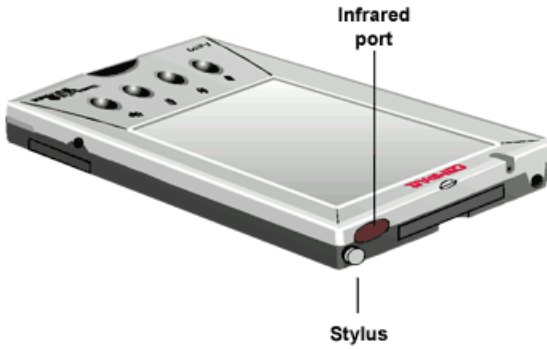
Programmer On/Off

Press and release **On/Off** button at bottom center of programmer to turn on and off.

Turn on Backlight

When the programmer is on, press and hold the **On/Off** button to turn on or off the screen backlight.

Adjusting Screen Contrast

1. Press the **Q button** on the left side of programmer. The QLaunch menu will appear on screen.

Q button

2. Tap **Contrast**, then **Set Contrast**.

3. Tap to increase or decrease contrast and tap **OK** in upper right corner to return to the main screen.

Setting Date/Time

1. Tap **Start** button.

2. Tap **Settings**.

3. Tap **System**.

4. a. To change the time, tap **Clock**.

b. To change the date, tap **Date**.

5. Enter the new time or date, then tap **OK** to return to the main screen.

Batteries

Typical battery life is one week, programming up to 24 transmitters, 3 times per day. The programmer uses a rechargeable battery pack as its main power supply.

To check current battery power:

1. Press the **Q button**.

2. Tap **Power**.

3. Tap **OK** to return to main screen.

The programmer also has a coin cell backup battery used to preserve data and programming when main batteries have been drained or removed from programmer.

◆   Store the programmer connected to the AC power jack when not in use to ensure that the main battery pack stays charged. Ensure that the programmer has charged main batteries and a charged backup battery installed at all times, or programming and data in the programmer will be lost.
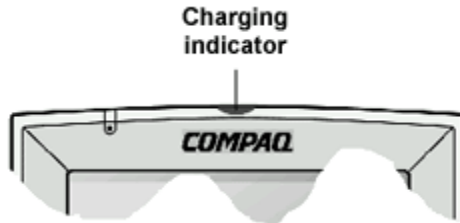
Recharging Main Programmer Battery

1. Plug AC power cord into a properly grounded AC outlet.

2. It will start charging automatically. The amber battery charging indicator light flashes.

Charge the battery for at least three (3) hours if the battery is not charged.

Charging indicator

Replacing Programmer Backup Battery

◆ To prevent the loss of data or programming, ensure that a fully-charged main battery pack is in the programmer before removing the backup battery.

    1. Turn off the programmer.

    2. Press the recessed button on the back lower left corner of the programmer with the stylus. The cover will pop open.

    3. Take out the old battery. Insert a new battery according to the diagram on the inside of the battery compartment.

    4. Close the compartment door.

Data Critical Corporation

19820 North Creek Parkway, Suite 100

Bothell, WA 98011

1-888-881-1322

www.datacritical.com