User Information

CADD-Legacy™ Remote Monitoring System

Intended Use

The Remote Monitoring System is used to monitor the alarm and delivered volume activity of one or more CADD-Legacy ambulatory infusion pumps in a laboratory environment. THIS SYSTEM IS NOT INTENDED FOR HUMAN USE.

Equipment needed and software requirements

To setup a CADD-Legacy Remote Monitoring System, the following equipment is required

- CADD-Legacy ambulatory infusion pump, Model 6300, 6400, or 6500.
- One 21-6330-01 transmitter for each CADD-Legacy pump to be monitored.
- One 21-6340-01 pouch for each CADD-Legacy pump to be monitored (optional).
- At least one 21-6335-01 receiver for every 40 transmitters. Additional receivers may be required depending on RF reception characteristics of the room in which monitoring takes place.
- Pentium 200 or faster Personal Computer (PC) with the following specifications
  - Hard drive with at least 20 MB available (additional hard drive space will be required for data files)
  - 32 MB RAM
  - CD-ROM drive
  - Windows 95 or newer
  - Mouse
  - At least one available RS232 port
  - Modem if paging function is to be used
- 21-6325-01 monitoring application
- At least one 21-6202-01 CADD-Legacy AC Adapter for every set of receivers connected to a separate RS232 port of the monitoring PC.
- RS232 cabling. The number and length of cables will vary depending on the particular installation. Note: Cables can be purchased at any computer equipment supplier. Deltec does not supply RS232 cables.

Setting up the CADD-Legacy pump and transmitter

- Program the CADD-Legacy pump to the desired delivery parameters. If needed use the manual shipped with the legacy pump as reference.
- Connect a transmitter to the CADD-legacy pump while the pump is powered up. After a short delay, the pump will sound a series of beeps. Once connected, the pump will no longer sound the audible alarm (except in the case of depleted battery or system error). In all other respects the CADD-Legacy pump will operate as specified in the manual shipped with the pump.
- Use the 21-6340-01 pouch to securely house the pump and transmitter prior to installing them on the animal subject.
- Note: If the beeps do not sound when the pump and transmitter are connected, the pump and transmitter are not communicating and no RF messages will be sent. See troubleshooting section for help.

Installing the receivers

One or more receivers will be required for every 40 transmitters that are within range of the receiver and no transmitter should be more than 50 feet from a receiver. Depending on the RF characteristics of the room in which monitoring takes place, additional receivers may be required to ensure that all RF messages can be received. Deltec recommends that at least two receivers be installed in every room. See Figure 1 for a diagram of the basic setup.

- Install the first receiver in a location close to the transmitters being monitored, close to AC power, and where RS232 cabling can be conveniently routed from the receiver to the PC running the monitoring program. Also, install the receiver in a location that is as protected as possible from moisture in the room.
- Run RS232 cabling from an available RS232 port on the monitoring PC to the OUT (Toward Computer) Port on the first receiver. Connect the 21-6202-01 CADD-Legacy AC Adapter to the receiver. Note: In order for the system to work, the AC Adapter must be connected to the first receiver (the receiver connected to the monitoring PC).
- Install the second receiver in a location close to the transmitters being monitored, but opposite from the first receiver. Again make sure the receiver is in a location as protected from moisture as possible.
- Run RS232 cabling from the IN (from AUX. Receivers) port of the first receiver to the OUT (Toward Computer) port of the second receiver. The second receiver does not require an AC adapter as the first receiver powers it, through the RS232 cable.
- If the room to be monitored is large or has poor RF transmission characteristics, additional receivers may be needed.
- To install a third receiver, locate the receiver in a location that improves RF reception.
- Run RS232 cabling from the IN (from AUX. Receivers) port of the second receiver to the OUT (Toward Computer) port of the third receiver. The third receiver does not require an AC adapter as the first receiver powers it, through the RS232 cable.
- If needed, use the same process to install additional receivers. Do not install more than four receivers in a single string from a single computer port. If additional receivers are needed, configure a second string of receivers connected to a second computer serial port.
- To setup a second monitoring room, use the same procedure, except connect the first receiver in the second room to a second open RS232 port on the monitoring PC.
- A single PC with four open RS232 ports can be used to monitor four rooms setup in the previously described manner.

Installing the monitoring software application on the PC

- Insert the CD-ROM in the CD-ROM Drive.
- Click the Windows Start button and select Run.
- In the open box, type "d:\setup" (or replace "d" with the appropriate letter for the CD-ROM on your system).

- Click OK.
- Follow the instructions on the screen.

Configuring the monitoring application

Once the monitoring application has been successfully installed, use the on-line help system to familiarize yourself with the operation of the program.

The monitoring application must be told which RS232 ports have receivers attached and, if used, which port has a modem attached.

To configure the monitoring application for receivers

- Run the program and Select "Hardware" and "Configure Ports" from the menu bar.
- For each set of receivers connected to the monitoring PC, select a Port (A, B, C, or D) and the appropriate RS232 port number (1-16). After selecting a port number the program will give the status of the port and the number of receivers that are connected to the port.

To configure the monitoring application for the modem

- Run the program and Select "Hardware" and "Configure Ports" from the menu bar.
- Select the modem's RS232 port.

Messages from the CADD-Legacy Pump

When the transmitter is connected to the CADD-Legacy pumps, the following RF message will be sent.

Pump Event	Description
Air in line alarm	Air detected
Battery depleted alarm	Internal AA batteries depleted

Battery low alarm	Internal AA batteries low
Battery removed alarm	Internal AA batteries removed – occurs only if an AC Adapter is connected to the pump
Battery installed good	Good internal AA batteries installed
Cancel alarm	Alarm canceled by user
Disposable removed alarm	Disposable removed
Downstream high pressure alarm	Downstream high pressure detected
Alarm end	Alarm cleared
Resvol empty alarm	Reservoir went empty
Resvol low alarm, 5 ml	Reservoir has 5 ml remaining
Resvol low alarm, 4 ml	Reservoir has 4 ml remaining
Resvol low alarm, 3 ml	Reservoir has 3 ml remaining
Resvol low alarm, 2 ml	Reservoir has 2 ml remaining
Resvol low alarm, 1 ml	Reservoir has 1 ml remaining
Upstream occlusion alarm	Upstream occlusion detected
Run mode enter	Pump went to Run mode
Run mode exit	Pump went to Stop mode
Pump ok in Stop Mode	The pump is okay and stopped
Pump ok in Run Mode	The pump is okay and running

All messages sent from the CADD-Legacy pump include the pump's current value for GIVEN.

Trouble shooting

- If no beeps sound when a transmitter is connected to a CADD-Legacy pump –
  - Verify that the pump is powered up.
  - Try a second transmitter. If beeps sound when the second transmitter is attached, the first transmitter may be damaged.

Cleaning

CAUTION:

- Do not immerse the system components in cleaning fluid or water. Do not allow solution to soak into the system components or enter the connectors.
- Do not clean the system components with acetone, other plastic solvents, or abrasive cleaners, as damage to the components may occur.

Routinely clean the system components to keep them free of dirt, liquids, and foreign objects.

Use any of the following solutions to clean the system components:

- Soap solution
- Benzalkonium Chloride concentrate (0.13%)
- Glutaral Concentrate, USP (2%)
- 10 percent solution of household bleach (one part household bleach to nine parts water)
- Alcohol, USP (93%)
- Isopropyl Alcohol, USP (99%)
- Chlorohexidine (70%)
- PDI - Super Sani-Cloth®
- Mada Medical – MadaCide

1. Dampen a soft, lint-free cloth with cleaning solution and wipe the exterior surface of the system component. Do not allow the solution to soak into the component.
2. Wipe the entire surface dry with another soft, lint-free cloth. Allow the component to dry completely before use.

Figure 1
CADD-Legacy Remote Monitoring System