



R4KPLI - PHONE LINE INTERFACE

Application and Design Guide

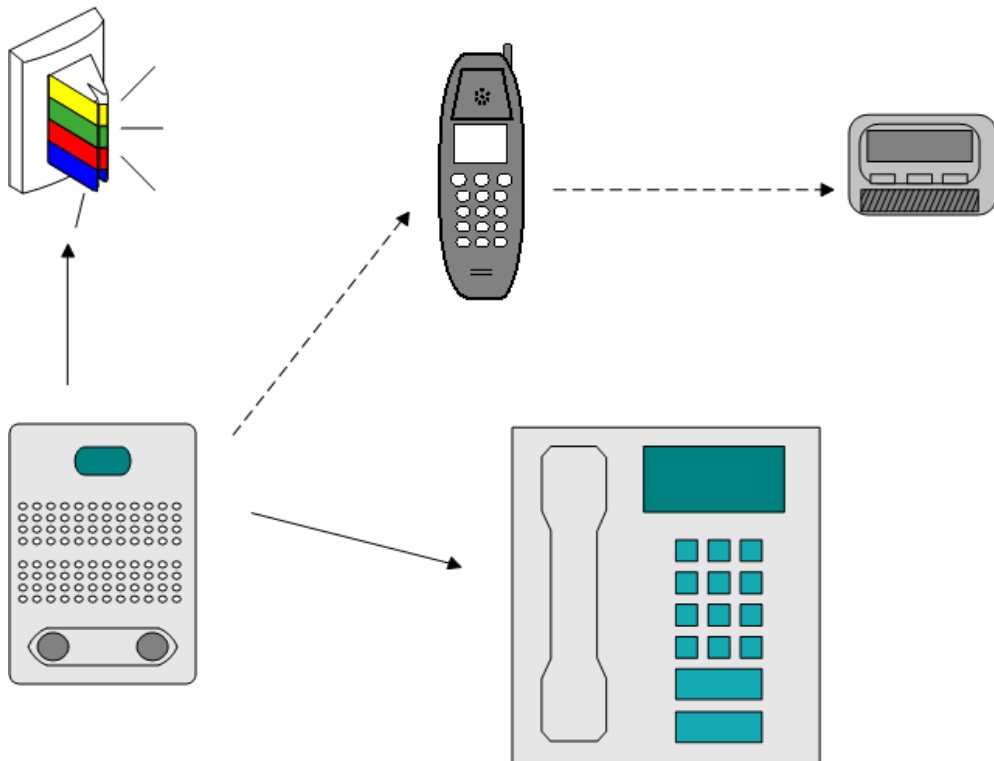


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GENERAL DESCRIPTION AND INFORMATION

The Rauland Responder® 4000 Network interfaces with Telephone Systems to enable wireless communication between patients and staff. The interface was designed to allow staff members to directly communicate with patients and, in some

cases, with other staff members. Direct staff-to-staff communication allows one staff member to dial another member directly using wireless telephones without tying up the Responder 4000 Network.

RESPONDER® 4000 Phone Line Interface **FEATURE / FUNCTION OVERVIEW**

The Responder 4000 network interfaces with a variety of telephone equipment, including cordless phones with built-in Caller ID capability and wireless telephone systems.

This section describes some of the key features and functions that the Phone Line Interface adds to a Responder 4000 Network. For more detailed descriptions of the basic features of the Responder 4000 System, refer to the operations manual.

There are 4 basic configurations that can be set up to provide phones on the Responder 4000 system:

- Cordless phones with no PBX connection
- Cordless phones with PBX connection
- Wireless telephone system with PBX connection (no Middleware)
- Wireless telephone system with PBX connection and Middleware.

SYSTEM FEATURES & FUNCTIONS

Cordless Phones (no PBX connection) – This configuration uses one R4KPLI for every 2 R4KNIMs on the network. A standard cordless phone with Caller ID capabilities, using a stand-alone base, is plugged directly into the PLI phone port. The corresponding PLI K-bus port is plugged directly into a K-bus cable coming from a NIM.

When a call is placed by a patient, the call may be immediately routed to the cordless telephone. The number of the calling room, the bed number (if applicable) and the call priority will be displayed on the phone. One call at a time can be routed to the phone. When the phone answers the call, based on the programming at the time of installation, the call is cancelled, not-cancelled, or an auto service requirement is set upon termination of the call. The staff member also has the option of setting a service reminder from the phone. Local codes should be reviewed to determine the required functionality.

No staff-to-staff communication is available because there is no PBX connection.

Staff members receive calls from patients or receive specific priority calls from a set group of patients based on the group assigned to the PLI phone port. In most cases, once coverage of the PLI port is set-up, it will not be changed. If they wish to change coverage of the PLI port, at the console, the staff member presses the *PLI* button, locates the PLI station and registers on duty. They can select a group of rooms for that PLI to receive calls from. When the patient places a call, it will always go to the assigned console(s) and duty stations.

If the staff member wishes to dial into a room, they need only to take the phone off hook and then dial the room and bed number of the station they wish to speak to. If calling a room that is connected to a different NIM than the one the PLI line is connected to, both K-bus audio lines will be busy for the duration of the connection. (for diagram, see Appendix A)

Cordless Phones (with PBX connection) – This configuration also uses one R4KPLI for every 2 R4KNIMs on the network. Each PLI phone port is connected to a line on the PBX and using a cordless phone with Caller ID capabilities will

bring true Caller ID to the phone. The corresponding PLI K-bus port is plugged directly into a K-bus cable coming from a NIM.

When a call is placed by a patient, the call may be immediately routed to a cordless telephone or a group of phones based on PBX settings. The number of the calling room, the bed number (if applicable) and the call priority will be displayed on the phone or group of phones. One call at a time can be routed to the phone(s). When a phone answers the call, based on the programming at the time of installation, the call is cancelled, not-cancelled, or an auto service requirement is set upon termination of the call. The staff member also has the option of setting a service reminder from the phone. Local codes should be reviewed to determine the required functionality.

Direct staff-to-staff communication allows staff to dial another member without tying up the Responder 4000 system (if allowed by phones and PBX).

Staff members receive calls from patients or receive specific priority calls from a set group of patients based on the group assigned to the PLI station. In most cases, once coverage of the PLI port is set-up, it will not be changed. If they wish to change coverage of the PLI port, at the console, the staff member presses the *PLI* button, locates the PLI station and registers on duty. They can select a group of rooms for that PLI to receive calls from.

When the patient places a call, it will always go to the assigned console(s) and duty stations.

If the staff member wishes to dial into a room, they need to first dial the extension of the PLI connected to the NIM that the station resides on. They will then hear a second dial tone and then they will need to dial the room and bed number of the station they wish to speak to. If the PLI extensions are put into a hunt group, then there is a chance that the staff will connect to a PLI line that is not connected to the NIM of the station they want to call. This means that 2 K-bus audio lines will be busy for the duration of the call. (for diagram, see Appendix B)

Wireless Telephones (with PBX connection, No Middleware) – This configuration also uses one R4KPLI for every 2 R4KNIMs on the network. Each PLI phone port is connected to a line on the PBX and using a wireless phone system will bring true Caller ID to the phone. The corresponding PLI K-bus port is plugged directly into a K-bus cable coming from a NIM. (Note: Digital cards are required in the PBX. For additional information, please refer to installation manual.)

When a call is placed by a patient, the call may be immediately routed to the wireless telephone or group of phones based on PBX settings. The number of the calling room, the bed number (if applicable) and the call priority will be displayed on the phone(s). One call at a time can be routed to the phone(s). When a phone answers the call, based on the programming at the time of installation, the call is cancelled, not-cancelled, or an auto service requirement is set upon termination of the call. The staff member also has the option of setting a service reminder from the phone. Local codes should be reviewed to determine the required functionality.

If the staff member is in communication and another call is placed in their coverage, the staff member will not be notified until they hang up. Direct staff-to-staff communication allows staff to dial another member with out tying up the Responder 4000.

Staff members receive calls from patients or receive specific priority calls from a set group of patients based on the group assigned to the PLI station. In most cases, once coverage of the PLI port is set-up, it will not be changed. If they wish to change coverage of the PLI port, at the console, the staff member presses the *PLI* button, locates the PLI station and registers on duty. They can select a group of rooms for that PLI to receive calls from.

When the patient places a call, it will always go to the assigned console(s) and duty stations.

If the staff member wishes to dial into a room, they need to first dial the extension of the PLI connected to the NIM that the station resides on. They will then hear a second dial tone and then they will need to dial the room and bed number of the station they wish to speak to. If the PLI extensions are put into a hunt group, then there is a chance that the staff will connect to a PLI line that is not connected to the NIM of the station

they want to call. This means that 2 K-bus audio lines will be busy for the duration of the call. (for diagram, see Appendix C)

Wireless Telephones (with PBX connection and Middleware) – This configuration uses 2 “dummy” R4KNIMs for every R4KPLI on the network. This allows for more flexible communication without tying up more talk paths than necessary but also uses less PLIs per network. Each PLI phone port is connected to a line on the PBX and a wireless telephone system is integrated on the PBX as well. An R4KPIP is connected to a Middleware computer for pocket paging capabilities. **To the Responder 4000 system, the phone looks like a pocket pager.** The corresponding PLI K-bus port is plugged directly into a K-bus cable coming from a “dummy” NIM. (Note: Analog cards may be used in the PBX. For additional information, please refer to installation manual.)

When a call is placed by a patient, immediately a “pocket page” message may be sent to one or more wireless telephones. The number of the calling room, the bed number (if applicable) and the call priority will be displayed on the phone.

If the staff member wishes to speak to the patient from whom they received a message, they can “quick” dial back to the room using an automatic dial back function. Based on the programming at the time of installation, the call is cancelled, not-cancelled, or an auto service requirement is set upon termination of the call. The staff member also has the option of setting a service reminder from the phone. Local codes should be reviewed to determine the required functionality.

If the staff member is in communication and another call or message comes in, the staff member will be notified. Direct staff-to-staff communication allows staff to dial another member with out tying up the Responder 4000.

Staff members receive messages from their assigned patients or receive specific priority calls from a set group of patients assigned to a pocket pager. The process begins when the staff member turns “on” the phone that they are carrying. At the console, the staff member presses the *PPage* button, enters the phone extension and turns it “on”. The phone’s message display extension should be printed on the phone itself. They can select a group of rooms for that pager to receive calls from. The paging mode can

be set as well: Call, Service, or Both. When the patient places a call, it will always go to the assigned console(s) and duty stations.

In the "Call" mode, staff members will receive a message on their phone as soon as a call is placed from one of their patient rooms (and only their patients). In the "Service" mode, staff members will receive a message on their phone only when a service request is placed on one of their patient rooms. In the "Both" mode, staff members will receive a message on their phone when a call or service request is present from one of their patient rooms.

If the staff member wishes to dial into a room, they only need to dial the extension of the hunt

group. They will then hear a second dial tone and then they will need to dial the room and bed number of the station they wish to speak to. Since the PLIs are connected to NIMs with no stations connected the call will only busy up the K-bus that the room is actually connected. (for diagram, see Appendix D)

COMMON FUNCTIONS

Setting Service Requirements – Once in communication with a room, a staff member can set a service requirement from their wireless phone. Pressing the follow number and ending the call sets a service requirement:

- **2** -- Green Level

The service requirement can automatically be forwarded to another assigned caregiver's pocket pager.

RESPONDER® 4000

SYSTEM COMPONENTS

R4KPLI Phone Line Interface Module



The R4KPLI Phone Line Interface Module is the direct interface between the Responder 4000 Network and the hospital's PBX or cordless phones. One PLI station may be connected to each R4KNIM on the system. All inter-network audio communications sent to the R4KPLI Phone Line Interface Module(s) is digitized to ensure

superior audio intelligibility over large Responder 4000 Networks. Each R4KPLI port switches automatically between either an outbound or inbound port configuration depending on which system features are being used.

R4KPIP Peripheral Interface Port



The R4KPIP Peripheral Interface Port is the direct interface between the Responder 4000 Network and middleware integrating computer. The middleware integrating computer is connected to one RS-232 port on the R4KSPA that is connected to the pocket paging port of the R4KPIP. Only one R4KPIP port can be

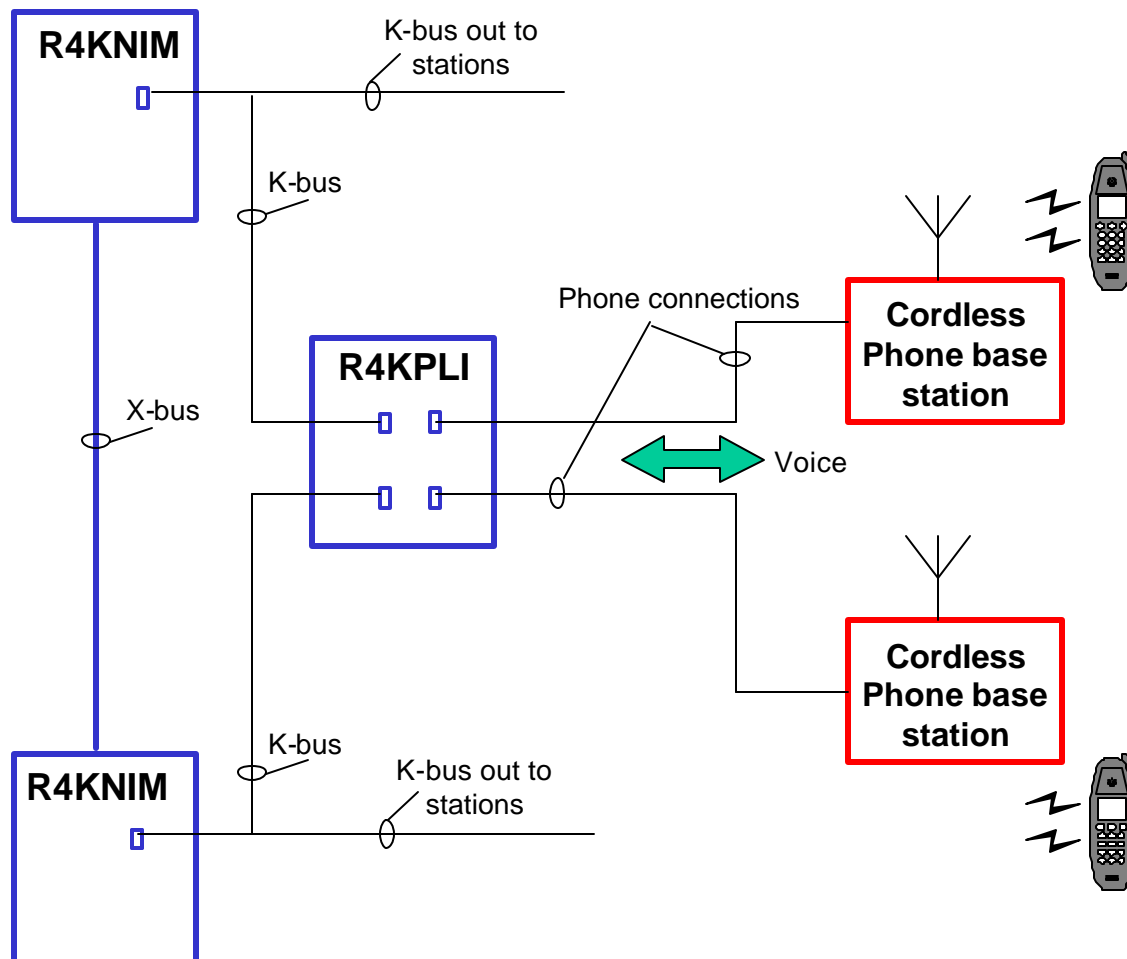
configured for pocket paging in a Responder 4000 Network. If standard pocket paging is desired by the facility in addition to the wireless telephone integration, the pocket page encoder will connect directly to the middleware integrating computer (see block diagram).

Appendix A

Responder® 4000 – R4KPLI

Block Diagram

Cordless Phones (No PBX connection)

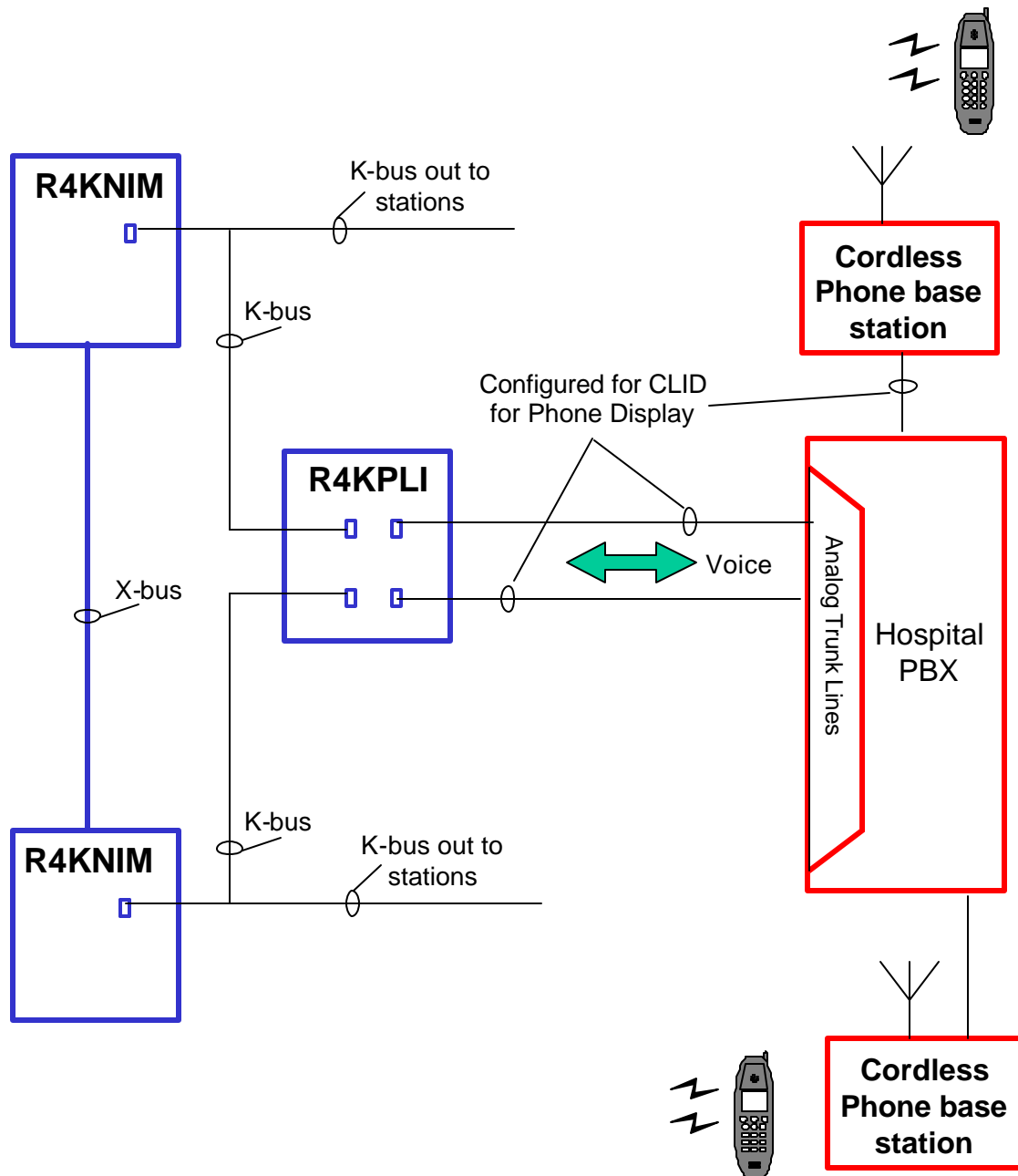


Appendix B

Responder® 4000 – R4KPLI

Block Diagram

Cordless Phones (on PBX)

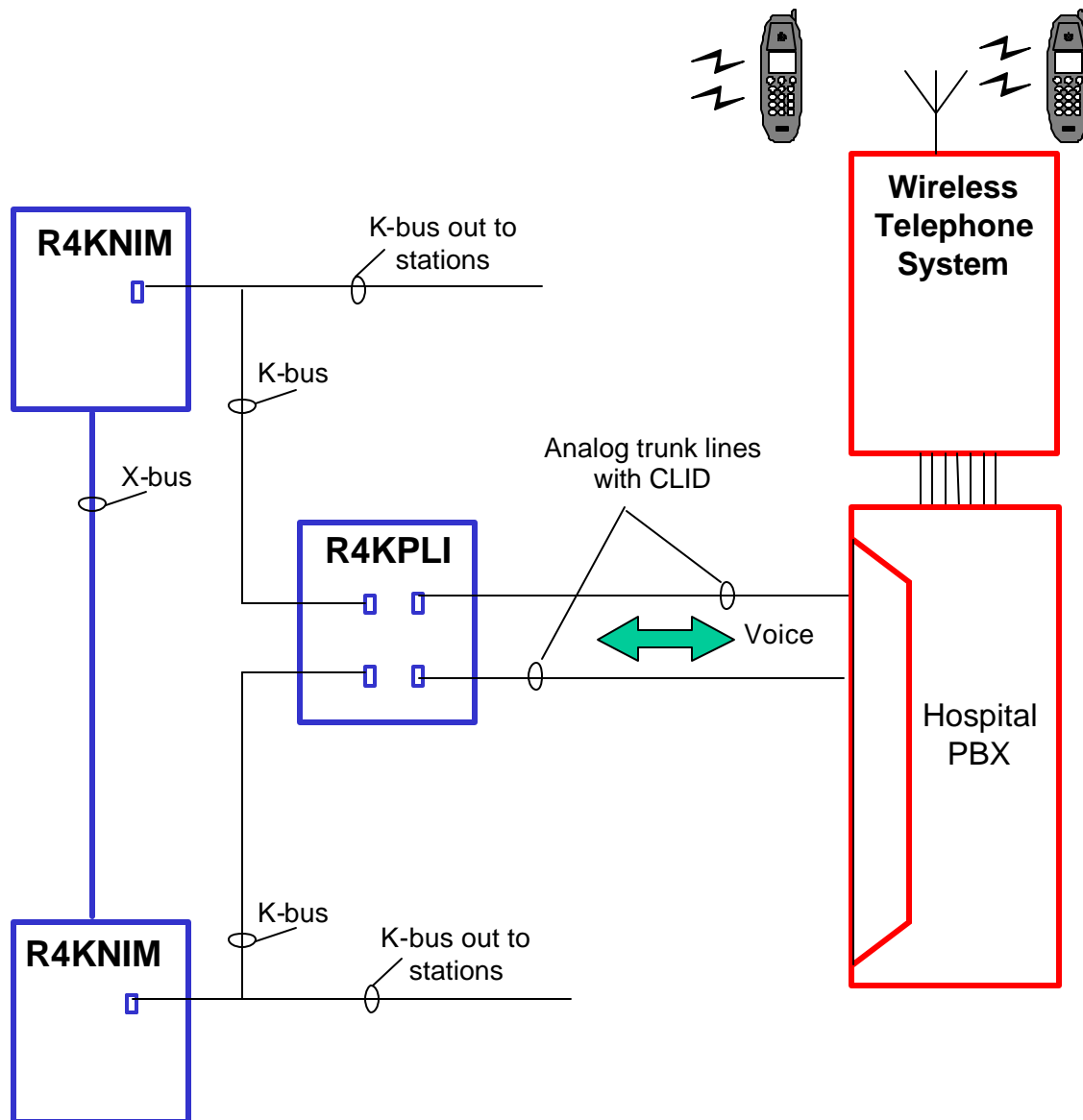


Appendix C

Responder[®] 4000 – R4KPLI

Block Diagram

Wireless Phones (No Middleware)



Appendix D

Responder® 4000 – R4KPLI

Block Diagram

Wireless Telephones with Middleware

