



SMARTWALK

“DEMENTIA WANDERING SYSTEM”



INSTALLATION MANUAL

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2. INTRODUCTION

The Smartlink System is a means of detecting when a dementia patient has an opportunity to wander from a designated area and become missing.

2.1 Overview

A small Radio Transmitter is attached to the wrist of the wanderer and Door Stations are mounted near each door that lead to unsafe or restricted areas.

If a patient wearing a wrist transmitter opens a monitored door, an alarm will sound, warning staff of the breach. For security at night the system can be switched to NIGHT MODE, where any opening of a monitored door will alert staff.

If a monitored patient opens a monitored door, the Door Station indicates the alarm via a buzzer and alarm light. The alarm can also be extended to a Nurse Station, to operate a beeper, flashing lights, pagers etc.

For multiple door installations a total of 200 doors can be monitored through SmartLink's unique gateway receiver/decoder system, linking RF transmitters to each door.

2.2 Handling Alarms

Go to the door indicated by the Alarm and look for any of your monitored patients. It is possible that the patient opened the door, then turned around and went back inside. Alternatively a monitored patient may have been standing near the door when someone else opened it. Look for any of your monitored patients near the door.

When the patient has been located and brought back inside, press the CANCEL button on the Door Responder. You may cancel the alarm as soon as you get to the door, however this may cause the alarm to sound again when the patient is brought back through the doorway.

2.3 Fitting a Transmitter to a Patient

The transmitter is fitted to the patient by slipping the new band into the slot in the back of the transmitter and snapping the retaining clip onto both ends of the band. The excess band may then be cut off with scissors.

2.4 Removing a Transmitter from a Patient

Removal of the transmitter requires cutting the band, so a new band and clip are required for each fitting.

2.5 Maintenance of Transmitters

The transmitters are fully sealed which means they are resilient to wet conditions and are usually only damaged by physical abuse or through excessive environmental temperature (e.g. in a tumble-drier) which can melt the plastic case.

2.6 Multiple Patients

The SmartWalk System works with as many transmitters as you have dementia patients.

2.7 Replacement Wristbands

Your purchasing department may obtain packs of ten replacement bands with clips by faxing or emailing an order to SmartLink International Pty Ltd.

3. SYSTEM COMPONENTS

The SmartLink SmartWalk Dementia Wandering Alarm System must be installed by a qualified technician.

3.1 *SmartWalk Resonator*



Specifications

- Dimensions (W x L x D): 350mm x 250mm x 60mm
- Mountable on a non-metallic wall
- Generates an alternating magnetic field at 200khz
- Null transmit area parallel to mounting surface
- Adjustable range

Description

- The MCC/RESO is part of the SmartWalk door kit MCC/WDK.
- The Resonator is connected via two wires to the Door Responder MCC/RESP.
- The Resonator mounts opposite the Door Responder (see Section 5.1).
- The Resonator also has optional battery backup facilities (see Section 5.4).

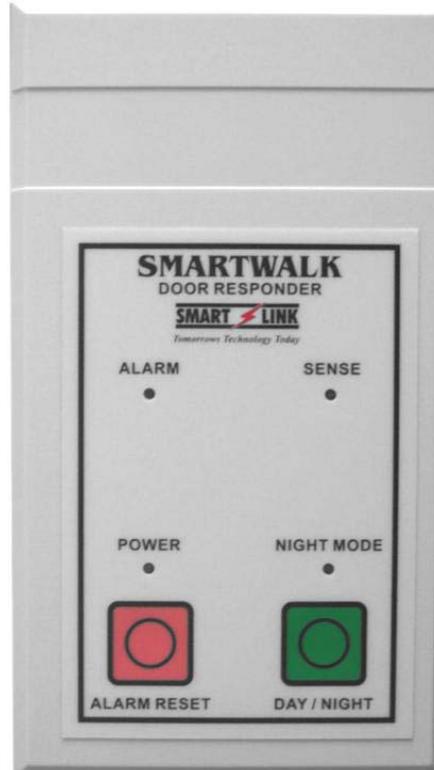
Operation

- The Resonator creates a magnetic field of approximately 8-10 feet.
- Once a SmartWalk wristwatch MCC/WTX comes within this field, it wakes up the internal transmitter, which then sends a signal to the Door Responder.

Applications

- Retirement Villages, Nursing Homes, Hostels, Hospitals.

3.2 SmartWalk Door Responder



Specifications

- Dimensions 200mm L x 110mm W x 50mm D
- ABS Plastic construction
- Relay output N/O contact – Momentary or latching
- Optional Transmitter board. 100-180
- Optional Digital bus interface MCC/WDIM
- Optional Door Locking Function

Description

- The MCC/RESP is part of the SmartWalk door kit MCC/WDK.
- The Door Responder is connected via 2 wires to the Resonator MCC/WRESO.
- The Door Responder mounts opposite the Resonator (see Section 5.11).

Operation

- The Door Responder receives a signal from a SmartWalk wristwatch MCC/WTX.
- The Door Responder then looks to see if the door has been opened (the reed contact broken).
- If both events have occurred, the Door Responder then triggers a response by closing the relay contact and sending a message to displays and/or paging.
- Other options of response are also available.
- The nurse then attends the call and retrieves the patient from the restricted area and cancels the Door Responder.

Applications

- Retirement Villages, Nursing Homes, Hostels, Hospitals.

4. SYSTEM OPERATION

4.1 Normal Operation

The Wrist Transmitter is normally in power-down mode (not transmitting) until the wanderer approaches a monitored door where a Resonator is located together with a Door Responder (each mounted on either side of the door at least 1.5 meters apart).

At a predetermined distance from the door the Wrist Transmitter is activated by a magnetic field being transmitted by the Resonator either by opening a door (Reed Switch) or PIR detector (proximity alert). The distance at which the Wrist Transmitter is activated can be controlled by adjustment of the field from the Resonator. In locations where the door is frequently in use (e.g. the front entrance), the wanderer would be almost right in the doorway before the alarm is activated.

Once activated, the Wrist Transmitter will transmit an RF signal continually until the Wrist Transmitter leaves the immediate area (beyond the range of the activating field of the Resonator).

While the Wrist Transmitter stays in the triggering area of the Resonator, the Wrist Transmitter will be detected by the Door Responder's RF receiver section.

If the door is now opened, while the Door Responder is picking up data from the Wrist Transmitter, the Door Responder will go into alarm. The Door Responder will attract the attention of staff either locally by internal beeper, or communicating via an optional RF transmitter, or as an alarm on a SmartWire Nurse Call System.

4.2 Resonator

The Resonator is housed within an ABS vacuum formed two (2) piece housing which is designed for attachment to a wall using its internal mounting brackets. The front cover can be removed by removing two small screws.

The Resonator obtains power either from a 16 VAC plug pack (connected to a dedicated 240 VAC GPO) or 12 volts DC from the Nurse Call System. Connection is made to on-board terminals within the enclosure. The plug pack is the preferred option as voltage drop in cabling of nurse-call systems combined with the current drain of the SmartWalk System is sometimes unsatisfactory.

The Resonator has terminals for a standby battery backup (optional) which has sufficient capacity to maintain operation of a Door Responder and Resonator (one of each) for a period of at least four (4) hours, should the mains fail. The battery is maintenance free and will automatically recharge when the AC mains are restored.

The Resonator has an AC power monitoring facility and will alert via a flashing LED (an on-board audible alarm) if the AC mains should fail (this of course only applies if backup battery is fitted). The alarm frequency is such that it will be noticeable when activated but can be tolerated if the AC failure is prolonged e.g. Electrician re-wiring on the circuit etc. This alarm will automatically reset when the AC mains are restored.

Access to the Door Responder power supply and 16VAC plug pack is provided via entry holes in the rear of the housing.

The Door Responder has a single green LED used to indicating three functions:

1.	Off (no light/black)	No supply power (no battery)
2.	Green Steady	AC mains present
3.	Green Flashing	AC mains failure (battery present)

4.3 Door Responder

The Door Responder is housed within a plastic case screwed together, designed for attachment to the wall using integral keyhole screw mounting. The Door Responder obtains 12 Volt D.C. power from the Resonator, which obtains its power from a 16 Volt AC 1.5 Amp plug pack power supply inserted into a 240 Volt general-purpose outlet. The reed switch on the monitored door connects to terminals on the Door Responder.

4.4 Wrist Transmitter Battery Life

The power down feature of the Wrist Transmitter provides a long service life. The actual service life will depend upon the amount of activations, i.e. how many times and for what period the wanderer goes to a monitored door. We expect a minimum service life of at least 12 months and up to two years. The only limiting factors, apart from the number of activations, would be physical damage to the Wrist Transmitter housing. The Wrist Transmitters are common coded and any Door Responder will detect any Wrist Transmitter.

4.5 Adjustment of Resonator Activation Field (10K Trimpot)

The Resonator controls the area where the Wrist Transmitter is activated, and hence sets the operating area of the Wrist Transmitter and Door Responder. **Note: Adjustment of the square blue 10k Trimpot WILL NOT increase the range of the system, adjustment of the square blue 10k Trimpot will only changes the waveform. If moved from the position set at SmartLink, it will only reduce the range due to the distortion of the waveform.**

5. SYSTEM INSTALLATION

5.1 Location Of Equipment

The Door Responder and Resonator should be installed at a height of approximately 1.5 meters (5 feet) on either side of the door, or with the Resonator near the door and the Door Responder 1.5 meters away. **The two units must be at least 1.5 meters (5 feet) to 2.20 metres (7 feet) apart.**

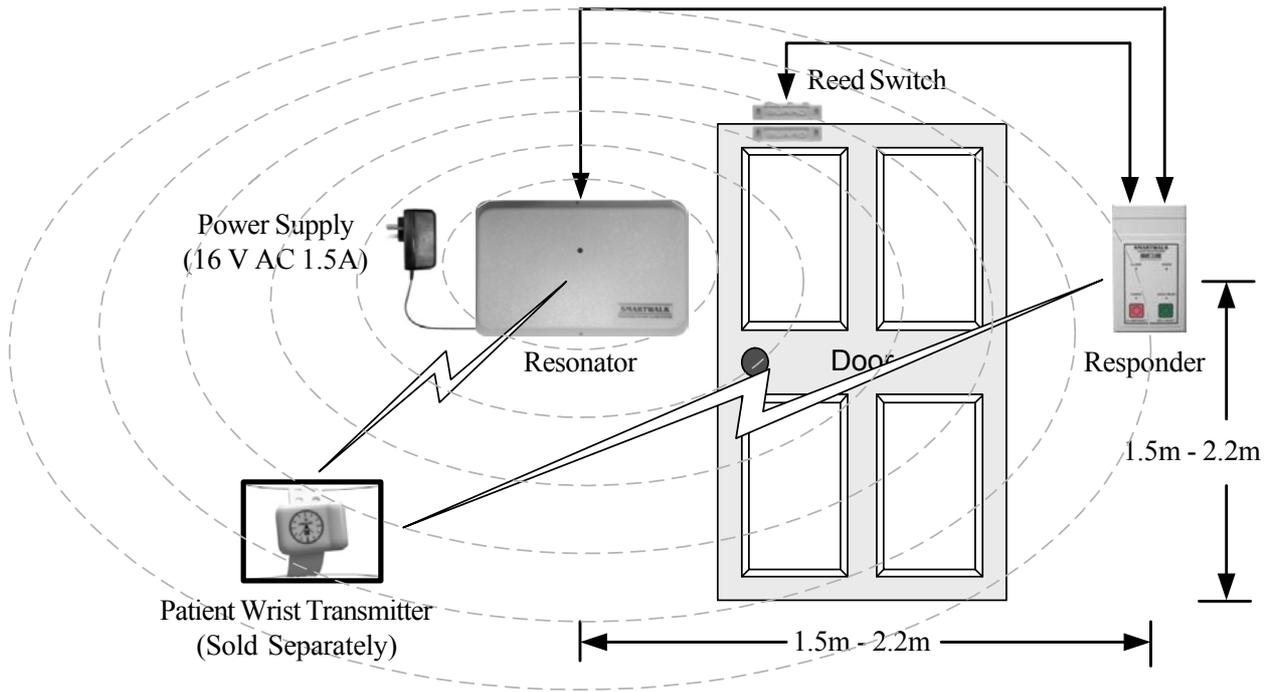
- **DO NOT MOUNT THE RESONATOR AND RESPONDER SIDE-BY-SIDE or NEAR ANY TRANSMITTING DEVICES (EG. PAGING TRANSMITTERS),** as this will reduce the effective area of the magnetic field resulting in an insufficient reception range.
- **DO NOT MOUNT THE RESONATOR ON A CONDUCTING METAL WALL/FRAME or WITHIN 1 METRE FROM THE EXIT SIGN,** as this will affect the transmission of the magnetic field by blocking its path.
- **DO NOT MOUNT THE RESONATOR HORIZONTALLY (EG. CEILING),** as this will affect the transmission of the magnetic field.

A 16 VAC 1.5A Plug Pack is provided which is connected to the terminals marked AC in the Resonator, which has a 12 VDC output to power the Door Responder.

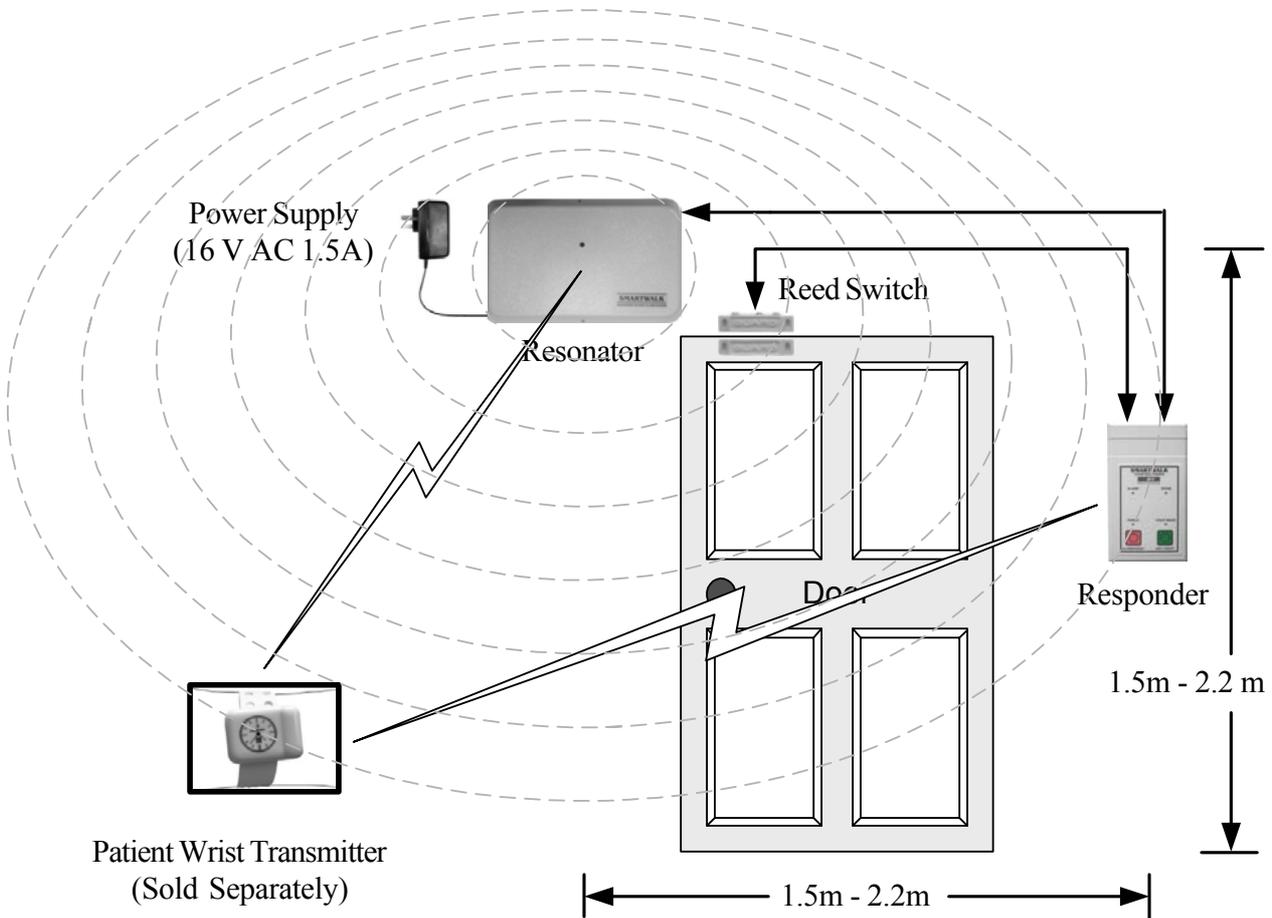
The Reed Switch is normally fitted at the top edge of the doorframe with the terminals on the top connected to the Door Responder and the magnet on the door in line with the door handle. Note that a normally closed Reed Switch is required, i.e. the reed switch is closed when the door is closed (this is the general type of Reed Switch available).

Where a door switch is not practical (e.g. in a corridor), a Passive Infra Red (P.I.R) Movement Detector can be used. Most P.I.Rs are fitted with a normally closed relay contact that can be used as a replacement for a Reed Switch.

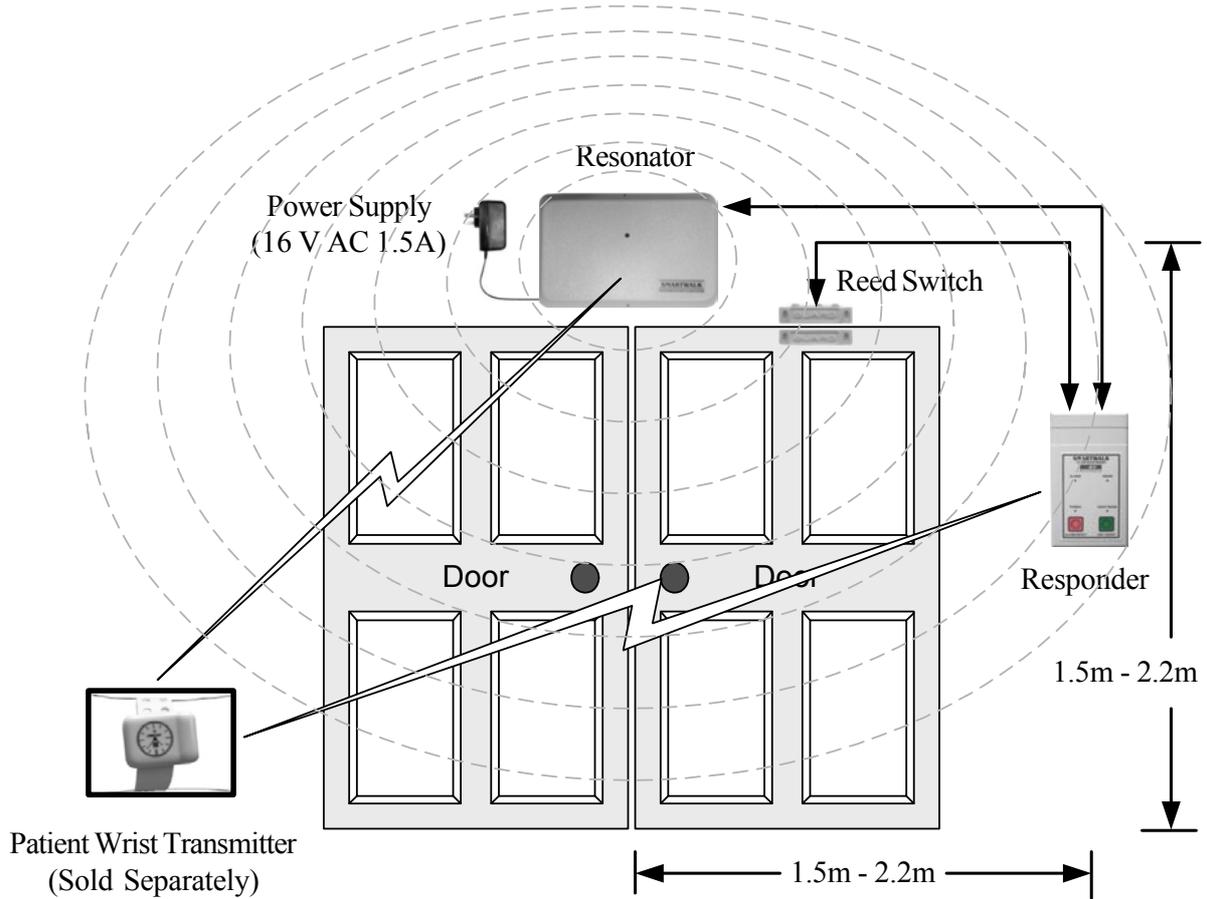
Example A: Single Door Installation



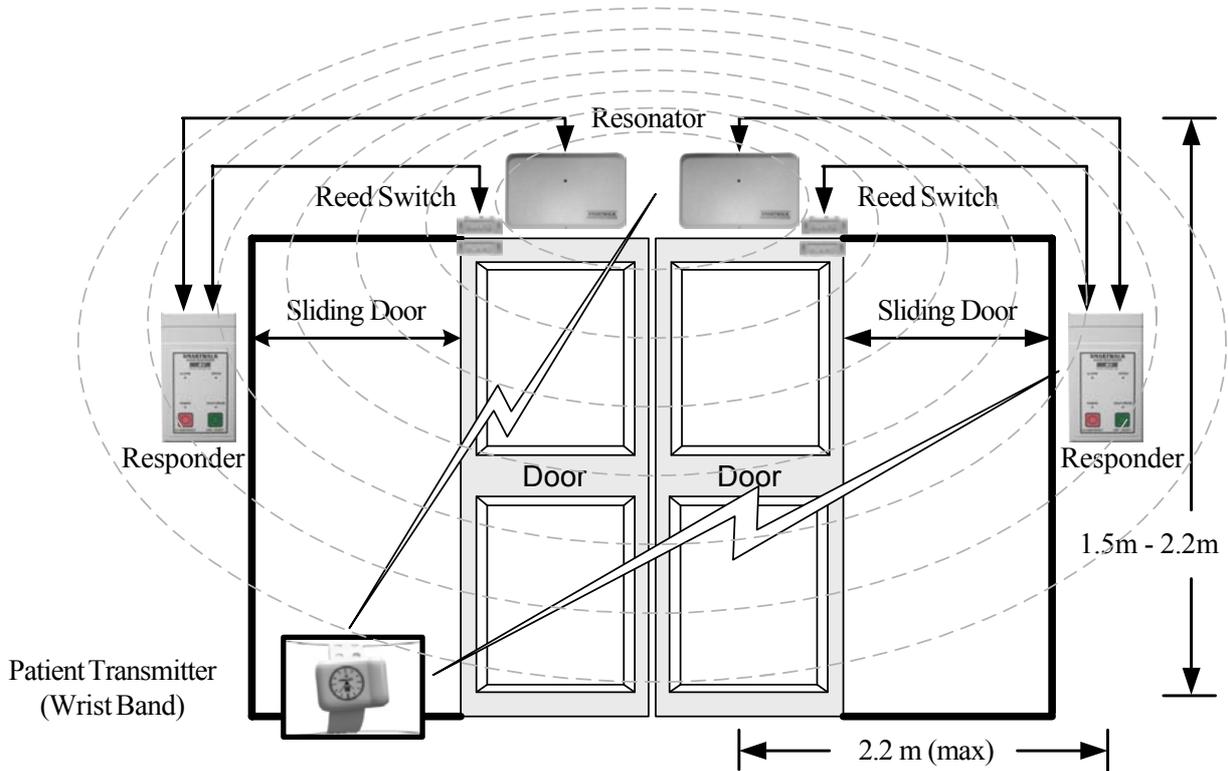
Example B: Single Door Installation



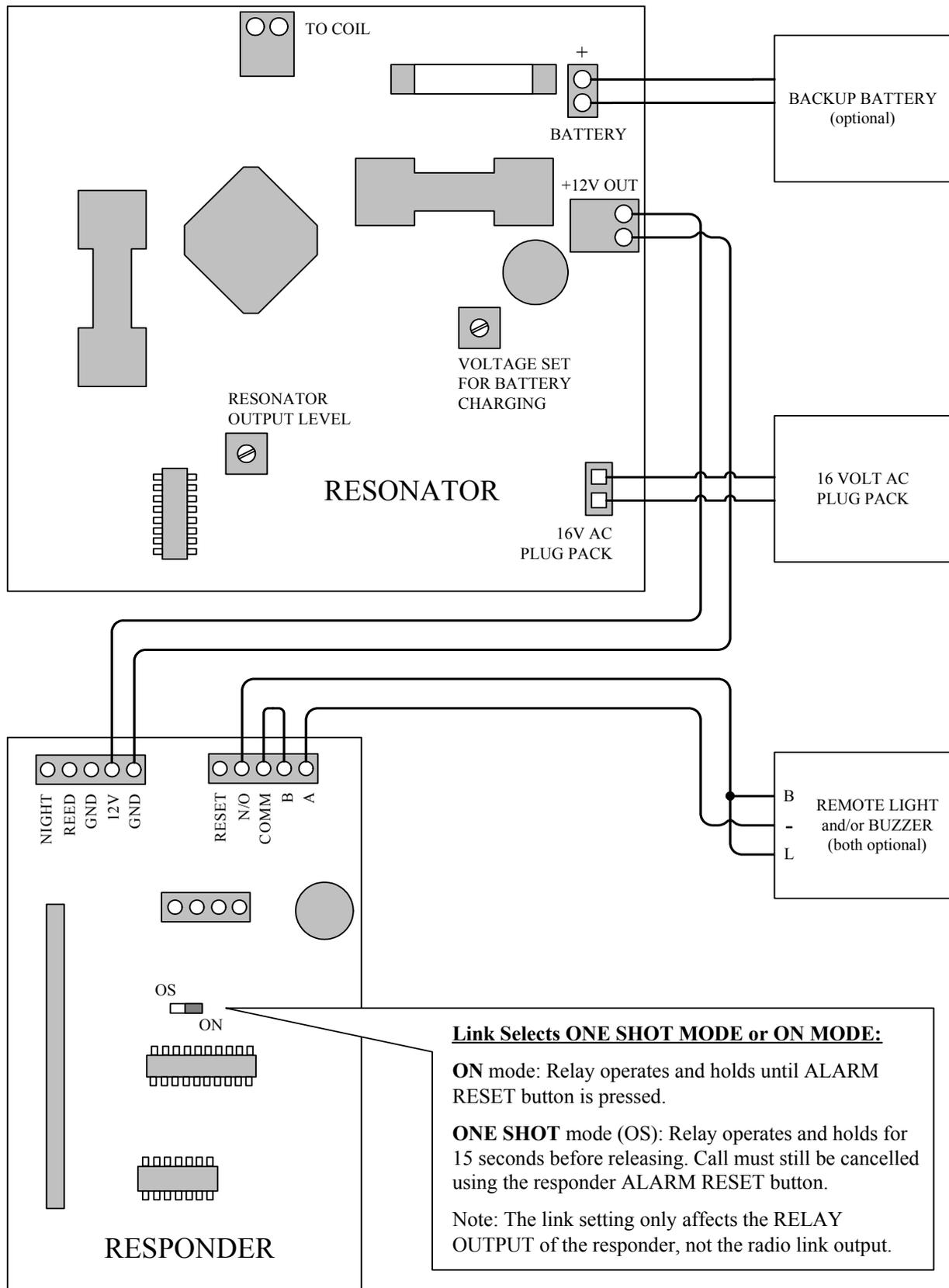
Example C: Double Door or Sliding Door Installation



Example D: Wide Double Sliding Door Installation



5.2 Detailed Wiring Diagram



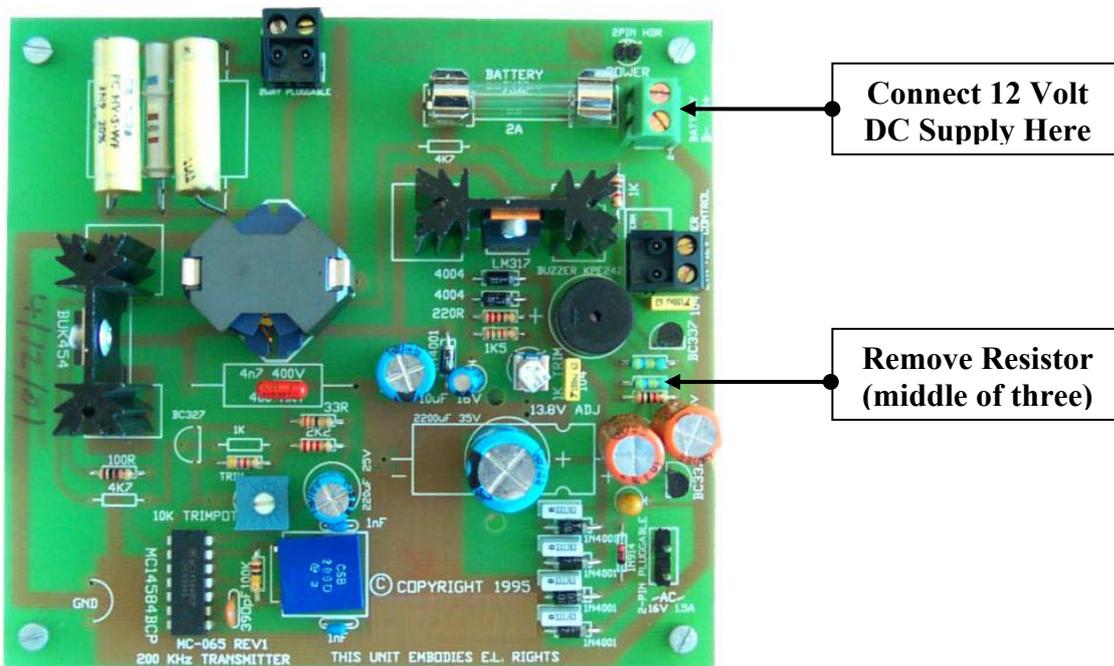
5.3 Connecting Indicators (Light and Buzzer)

The SmartWalk System can be connected to a light and buzzer at a remote location, for example a Nurses Station. See Detailed Wiring Diagram on Page 9.

5.4 Operating the Resonator from 12V DC Only

If the SmartWalk Resonator is operated from a 12 Volt DC supply (e.g. from an existing non-SmartLink Nurse Call System) there are two possible problems to consider:

- As the unit normally operates at 13.7 volts DC, there may be a reduction in the Resonators Field range.
- As no AC supply is used, the Mains Fail alarm is not applicable and must be disabled. To do this, remove the resistor from the Resonator PCB as described in the diagram below. Then connect the 12 Volt DC Supply to the Battery Terminals. Note that the Door Responder should be connected to the usual terminals.

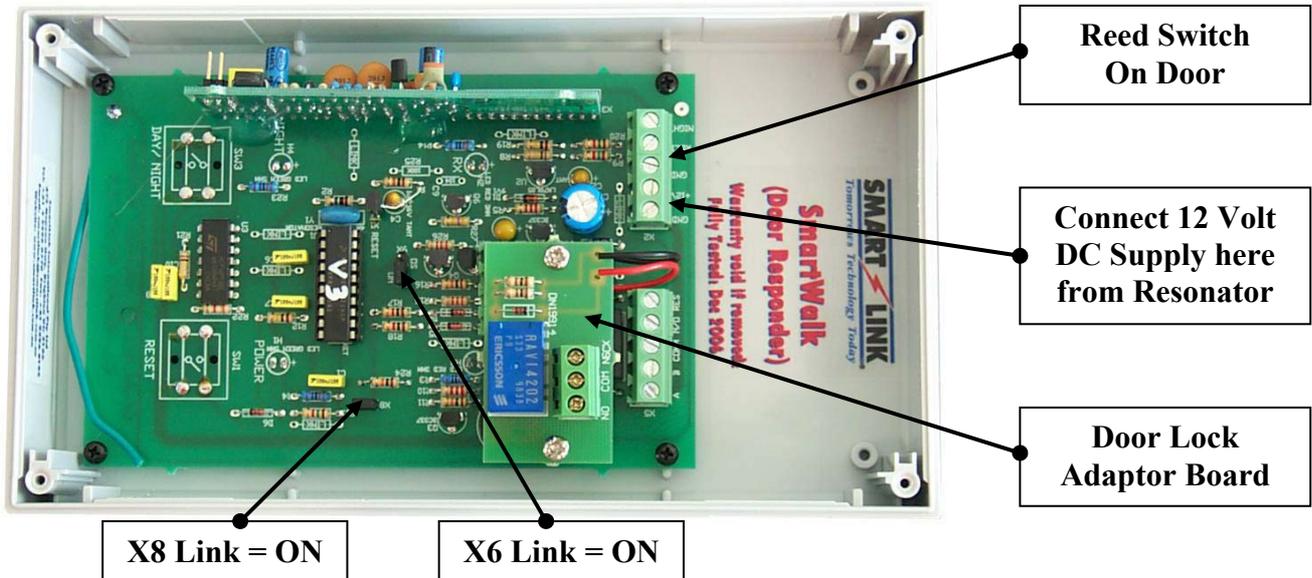


5.5 Powering the Door Responder (12V DC)

A SmartWalk Door Responder operates from a 12 volt DC supply usually provided by the Resonator. An alternative source can and should be used when:

- A Resonator is not required (e.g. when monitoring a door for Night Mode only) Note that the Wandering Patient feature will not be available on this door.
- Power is not available from the Resonator.

To connect an alternative 12 Volt DC supply, connect the supply wires to the 12V and GND terminals, as indicated in the picture below.

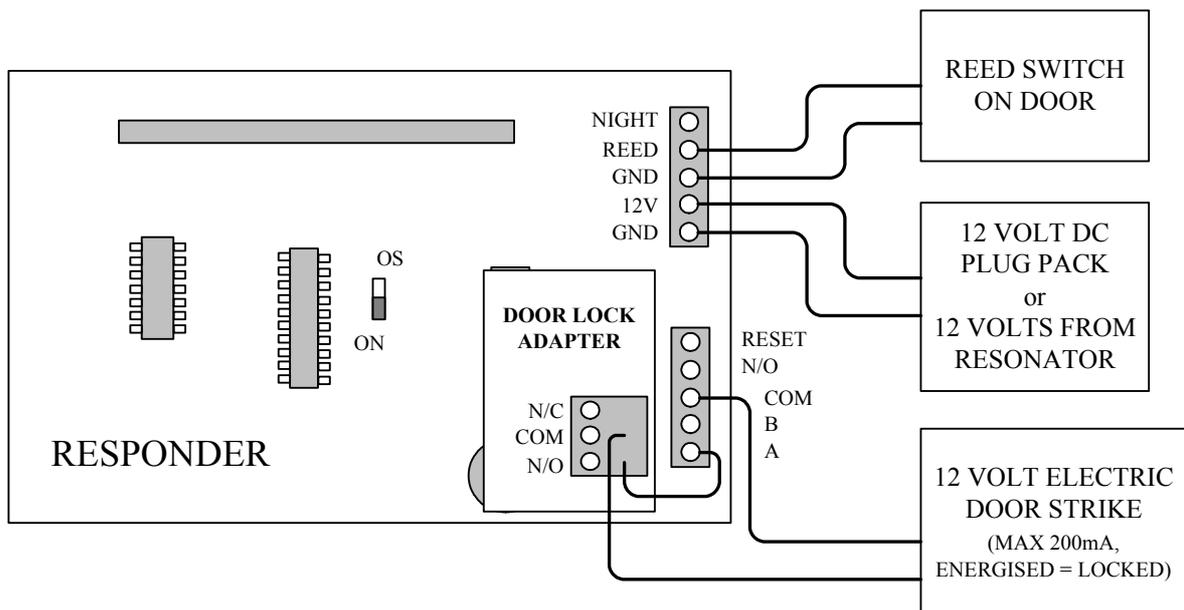


5.6 Connecting a Door Lock System

An optional 12V electric door strike can be installed with the SmartWalk system using the door lock adaptor on the Door Responder PCB.

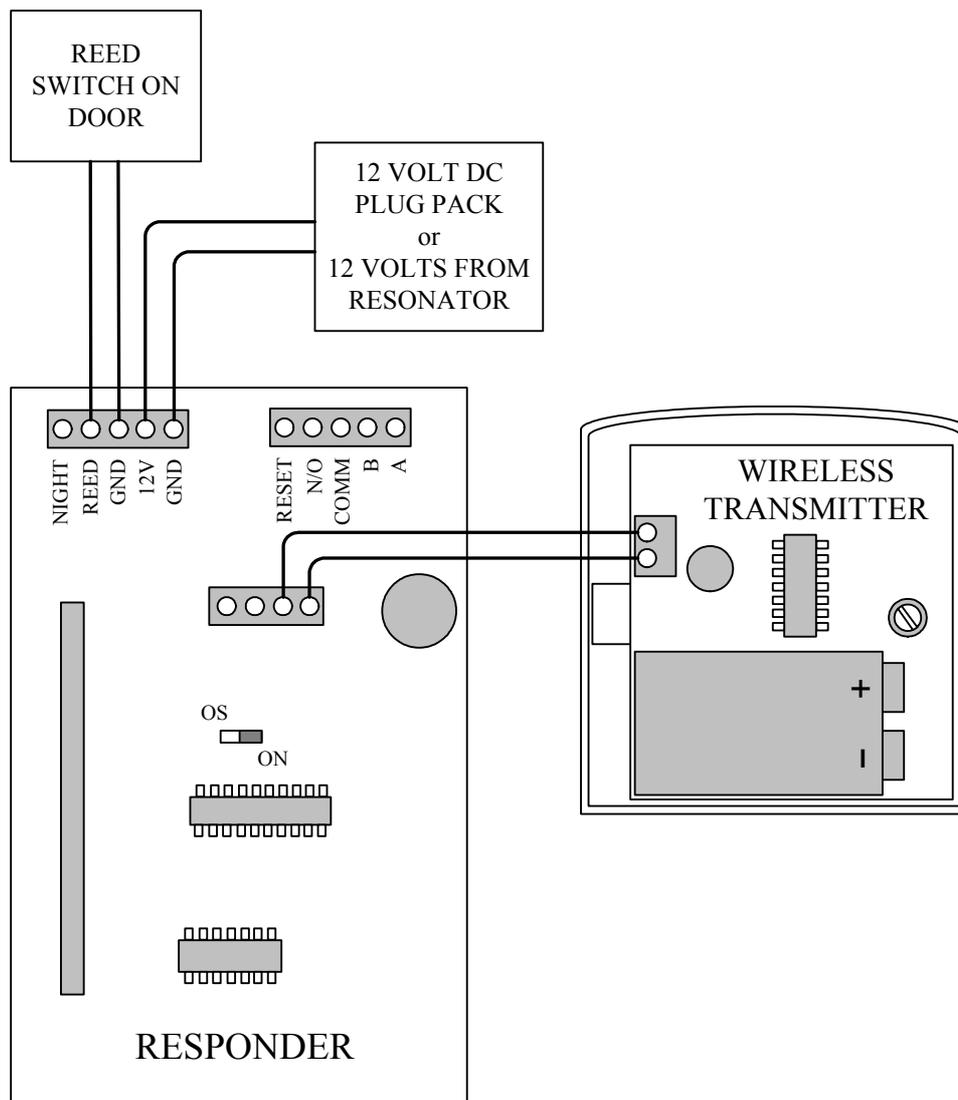
When used to operate a door lock system, the Door Responder will detect a patient wearing a Transmitter that wanders into its range. When this occurs the door will automatically lock until the patient has moved away from the door, returning it to the normally unlocked condition.

Wire the Door Lock Adapter (on Door Responder) to Door Strike as follows:



5.7 Connecting a Universal Wireless Transmitter

Interfacing with a wireless transmitter can be achieved using the Door Responder unit in conjunction with operation of an RF receiving Medi-Call Dialler. Below is an example for wiring a wireless reed/vibration sensor (product code 100-112) to the SmartWalk Door Responder. Note that the Door Lock adapter board is not present, providing access to the 4-block terminal directly on the Door Responder PCB.

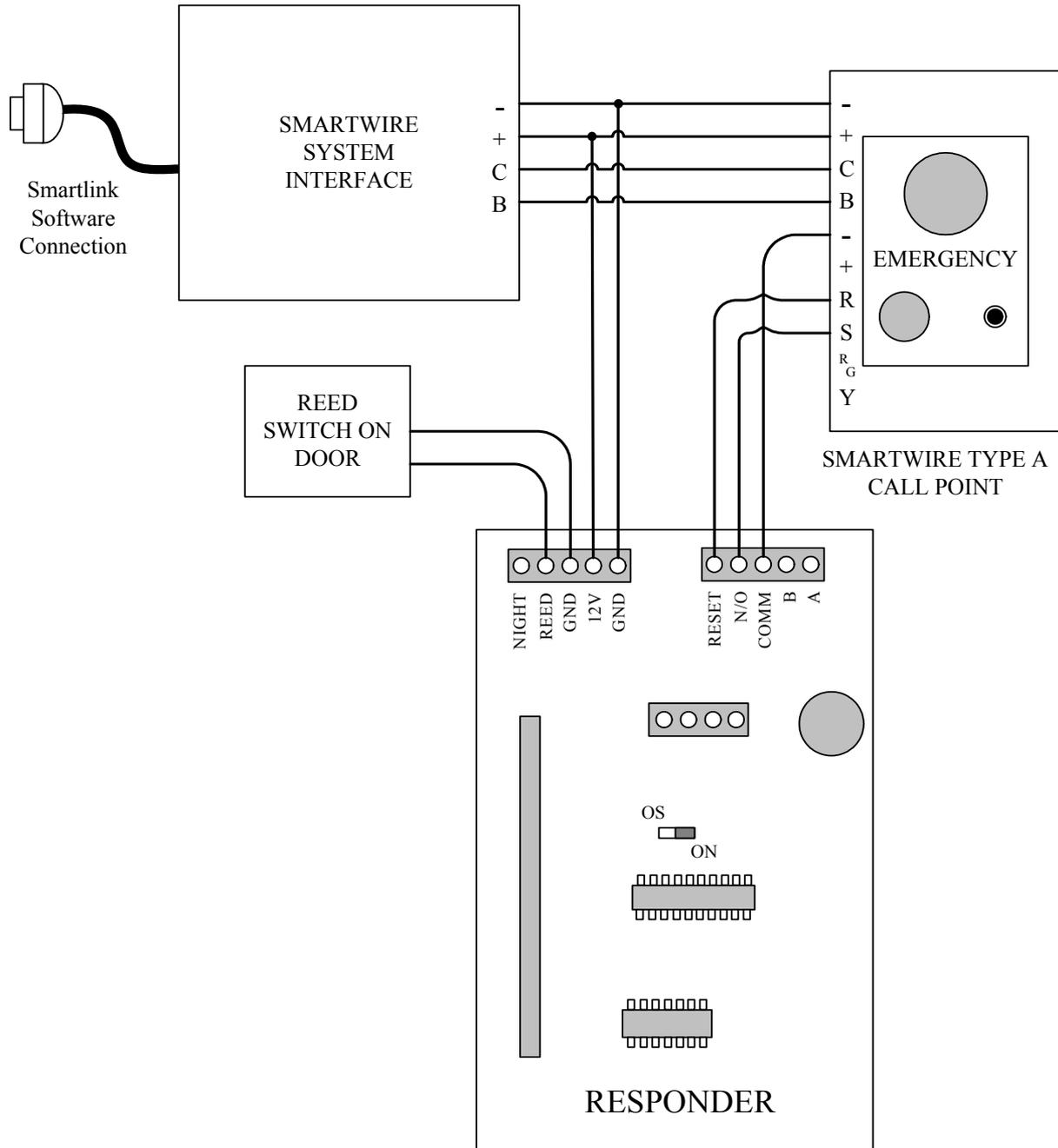


5.8 Integrating to a SmartWire Nurse Call System

The SmartWalk System can be integrated with a SmartWire hard-wired Nurse Call System. The Door Responder connects directly to the systems four-wire bus, which will supply the Door Responder and Resonator with power.

Once connected, the SmartWalk system can produce an alarm similar to a TYPE B call point, which can be monitored via Smartlink software and reset via a TYPE A call point feature. The SmartWire system will ensure alarm is associated with an identification (client code) that can be used for monitoring and recording purposes on a PC (see SmartWire Installation Manual).

Note: SmartWalk can be connected to other nurse call systems, however this will not be covered within the manual.



6. TROUBLESHOOTING

Problem	Explanation/Solution
<p><i>Wanderer NOT being picked up when in Door Responder range. (Red LED does not pulse)</i></p>	<p>Firstly, ensure that the Door Stations and Base Station are all switched on and being supplied with power.</p> <p>When testing a system, observe the red sensing LED in the Door Responder. As soon as the wanderer is within the field of the Resonator, the LED should start flashing at a constant rate to indicate that the wrist unit is transmitting. If the LED is not flashing either the wrist transmitter or the Resonator is not functioning. To confirm the wrist transmitter operation, test with a different wrist unit and observe the result. Wrist transmitters are subjected to damage through normal use, and can be rendered inoperative by a substantial physical shock or repetitive physical treatment.</p> <p>If no wrist transmitters will activate the red LED then the Resonator or Door Responder may be inoperative. Bring the wrist transmitter up very close to the Resonator and check the LED. If it starts flashing, then the Resonator is operating on a very reduced range and will require replacement.</p> <p>If these tests do not rectify the problem please contact your distributor.</p>
<p><i>Wanderer is picked up but alarms are not activating.</i></p>	<p>If the Reed Switch on the exit door is faulty (i.e stuck in the closed position), then the alarm will not activate.</p> <p>To test a Reed Switch, turn off the power, connect a multi-meter (set to read resistance in Ohms) between the Reed Switch connection and the Responders ground terminal, then open and close the door to ensure that Reed Switch is opening and closing the circuit. If not, replace the Reed Switch.</p>
<p><i>No alarms are reported at the Base Station.</i></p>	<p>If the internal RF transmitter in the Responder is incorrectly set, then no alarm will be activated at the Base Station. Check the RF transmitter, in particular the settings of the access codes on the transmitter, and the Base Gateway Receiver. If they do not match, a signal will NOT be received.</p> <p>To easily confirm the operation of the transmitter set the RF Base Station to night operation.</p>
<p><i>Occurrence of False alarms.</i></p>	<p>False Alarms are usually a result of a Wrist Transmitter being left within the field of the Resonator unintentionally. Make sure all spare Wrist Transmitters are stored well away from any door stations, preferably in a metal cabinet. Also note that wrist transmitters can be triggered by other alternating magnetic fields, including those from scanning circuits in TV's, video monitors etc.</p> <p>Also check that a resident who wears a wrist unit does not occupy a bed adjacent to a door station. The field can penetrate through brick walls and activate nearby Wrist Transmitters in another room.</p> <p>False alarms can also occur when a wanderer lingers close to the field of a door station, and a door to another station nearby is opened. The nearby door station may pick up the signal of the wanderer at the other door, even though they have not opened that door. The signal from the Wrist Transmitter can penetrate up to 15 meters under ideal conditions. The best practice is to discourage wanderers from lingering near monitored doors.</p>



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