Alert-it Care Alarm Technology

Multifunction Guardian Monitor

P139 Instruction Manual

Versions covered by this document	
139AA	Wired Guardian Bedside Monitor (inc sound): English
139AAB	Wired Guardian Bedside Monitor (inc sound & radio trigger)
139AB	Wired Guardian Bedside Monitor (inc sound): French
139BA	Radio Guardian Bedside Monitor (inc sound): English
139BB	Radio Guardian Bedside Monitor (inc sound): French

UH1075

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Made in the UK

Safety Instructions and Warnings

This symbol indicates there are warnings and precautions associated with the use of this equipment that should be carefully read and understood before using the equipment

This symbol indicates where a Patient Applied part is connected, for which it is important to follow these instructions carefully

1. Ensure that the sensor cable is routed and secured to avoid the risk of entanglement or strangulation.
2. The Enuresis sensor cable (C) MUST be connected to the monitor prior to using the press-studs to connect the sheet sensor
3. Only the recommended power supply shall be used as it is certified to provide two means of patient protection to EN60601-1
4. Ensure the power cable is routed to avoid a trip hazard
5. Regularly check the power supplies for damage and potential shock risks
6. Clean and disinfect each item regularly in accordance with information herein
7. Regularly test all sensors as described herein
8. Ensure, by testing, that the alarm is annunciated at the carer's location(s)
9. Operate power supply and charge pager away from direct heat and uncovered.
10. As with all medical electronic equipment there is potential for the equipment to interfere with or be effected by interference from other electrical or electronic devices. For this reason avoid placing the monitor, sensor or connecting cable in close proximity to sensitive electronic devices or devices which produce strong electromagnetic fields such as radio transmitters, mobile phones or power cables.
11. Only use the monitor with accessories approved for use with this product and only in accordance with instructions.
12. If the equipment is modified in any way, appropriate inspection and testing must be conducted to ensure continued safe use of the equipment.
13. The carer must conduct a risk assessment to determine if the level of reliability offered by the monitor is sufficient or if additional monitoring is needed. Contact the manufacture for assistance with Risk Evaluation Tools.
14. Additional levels of mechanical protection may be needed for some patient disorders. Contact the manufacturers for advice
15. Some accessories are fitted with small screws and have plastic bags. Ensure these do not come into the possession of vulnerable patients who might choke on them
16. Any sensor over the mattress (Bed Vacation or Incontinence) has the potential to cause pressure sores . The carer must assess this risk and monitor the use of these products
17. Any sensor over the mattress could pose a fire hazard if in contact with a smouldering cigarette.
18. The monitor and all accessories are designed to operate indoors in a residential environment of 10ºC to 30ºC and 90%RH max.

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Quick Start Guide

The P139 is a complex device with the ability to monitor many sensors associated with distressing conditions that can occur in bed. It is especially aimed at supporting the care of those with Epilepsy. The alarm can then trigger an Alert-iT Safelink Pager or Nurse Call/Telecare systems.

This handbook and associated Quickstarts, are intended to assist in adjusting the many alarm parameters to suit the specific user. The adjustments must therefore be made by someone familiar with the users needs and competent to decide what additional safeguards will be needed, in the light of the health risks involved. The manufacture offers a free telephone helpline and a range of information sheets to assist (see page 20).

It is ESSENTIAL to adopt a methodical approach to setting each set of parameters, or the user will soon become confused as to which sensor is giving alarms or false alarms. Unless otherwise informed the unit will have been shipped with all alarms other than gross bed movement turned off and the internal audible sounder disabled. This will enable the user to gradually introduce one sensor at a time and not be confused by false alarms as each setting is tested. Once all the parameters are proved to be working as required, then the audible alarm can be enabled if required (see Hidden Menu).

In addition to the above, if only a limited number of sensors have been ordered with the unit, then those not required will be Hhidden (in the Hidden Menu) to stop the annoyance of having settings appear for sensors that are not fitted.

Unless there is specific pressing needs, then the following order for setting the sensor parameters is recommended. After enabling a sensor, then it is recommended that the sensor is used for a few days to establish the optimum setting that has few false alarms while giving the required security, before proceeding with more sensors.

- Bed Movement
- Shallow Movement (Min=0)
- Bed Occupancy
- Moisture (wetting or vomit)
- Sound
- Shallow Movement (Max-Min) after learning mode

Finally remember there are a set of DEFAULT parameters stored in the unit. If you get into difficulty, these can easily be recalled to establish a known good working state. Once the changes have proven to be successful, then these new defaults can be saved within the Hidden Menu system.
On page 18 you will find a useful chart that lists all the menu items in order, with space to write the optimum settings found by the user.

Hint for Getting Started

- To start the process, press the top right “Menu” key for 3 seconds to switch the unit on. This key will also act to silence and accept any alarms that are triggered.
- Wait for the “Monitoring” screen. The P139 will return to this screen if no keys are pressed for 30 seconds.The “bar” display indicates the state of the battery charge. Ensure the charger is plugged in if only one bar is displayed, as the next stage will be that the unit will automatically power down.
- Press the MENU key again, and all the available settings will be displayed in rotation, starting with the Power Off capability.
- In general the RIGHT arrow key will turn-on and increase the displayed parameter, while the LEFT key will decrease and eventually turn off the parameter. The UP key will scroll back through he menu.

Refer to the main book section for hints on how best to begin setting each parameter., which will appear in a frame like this.

Look out for this “hint” frame throughout the handbook

IMPORTANT

Please read these instructions carefully before using the equipment and keep readily available for reference purposes.

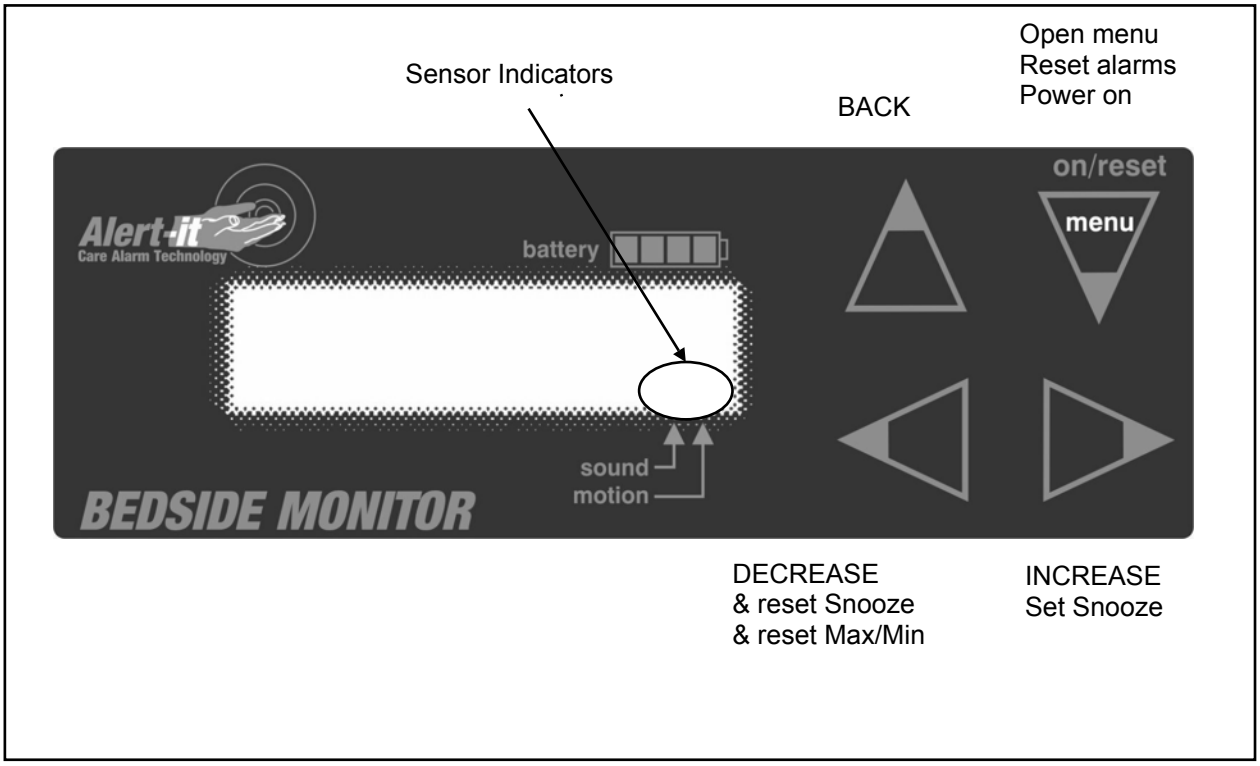
It is not intended for this equipment to be used in diagnosis of medical conditions or for the measurement of any physiological processes. If the user is considered to be at high risk it should not be used without medical advice and support.

The equipment can, when used correctly and in accordance with the instructions, be used to give warnings of symptoms that may be related to particular conditions. The equipment, for a number of reasons, cannot be guaranteed detect the symptoms being monitored and is not a substitute for direct supervision.

If there is ever any cause for concern with the performance of the equipment the supplier should be contacted.

DISPLAY & CONTROLS

Display



A liquid crystal display screen with back lighting and a touch sensitive keypad is provided in order to indicate and adjust, as required, the functions and the status of the system.

In the event of an alarm condition a highly visible red alarm light will flash on the top of the monitor (through this can be disabled if it cause a nuisance) There are a number of screen displays, which provide details of each function and allow adjustment of the various settings. Pressing the 'menu' button advances the screen display in sequence and the settings can be adjusted by pressing the ‘INCREASE’ or ‘DECREASE’ buttons. By pressing the 'menu' button repeatedly, the screen displays can be scrolled in sequence until the one required is observed. BACK reverses the menu scrolling.

The 'menu' button has the additional functions of a ‘POWER ON’ switch when the monitor is turned off and an ‘ALARM RESET’ button when an alarm condition is active.

Continuously pressing a button has the same effect as repeated pressing.

If no buttons are pressed for longer than 30 seconds and no alarms have been activated the backlight turns off and the screen will show the normal monitoring display.

When sound or motion is detected this is indicated by display symbols on the screen situated above the sound and motion arrows. This facilitates testing and validating the monitor.

POWER SWITCH

The monitor has an internal battery designed to maintain full operation during mains failure. It is charged by a mains adapter which should be mounted in a well ventilated area. To isolate the monitor remove the charger connection.

Press and hold the 'POWER ON' button for 3 seconds to switch on the monitor. A start-up display will indicate the model number and software issue, as well as the monitor identification and site identification numbers for the radio version.
After approximately 5 seconds the normal monitoring display will be observed on the screen. To maintain the start display for longer than 5 seconds, press either the 'INCREASE' or 'DECREASE' button. This will cause the display to remain for a further 30 seconds after the button has been pressed.

If an alarm is activated, the screen will indicate the relevant alarm message and override the start-up display.

To turn off the monitor press the 'menu' button until the "Power screen" is visible (one press from the normal monitor screen). Press the DECREASE < button once to suspend all alarms and again to turn-off the unit (note that turning off can be disabled in the HIDDEN menu)

STANDBY MONITOR SCREEN

Alarm monitoring is ONLY active when this screen is displayed. If no key is pressed for 30 seconds in any of the other "menu" screens, then the monitor will revert to this screen and alarm monitoring will commence.

LINE1: MONITOR ACTIVITY

With no alarms active the screen will show:
ALARMS OFF! This warns that no sensors have actually been enabled
ACTIVE: The normal state when the monitor is sensing for a condition
=zZ following ACTIVE shows the Snooze feature is enabled and can be activated
SUSPENDED: Followed by s (shallow movement), m(moisture), b (bed vacation) shows which sensors are temporarily suspended , until normal activity is again detected.

LINE2: STATUS INFORMATION

There are three different modes of presentation on this line:
In the basic monitoring condition the shallow movement rate will be displayed in movements per minute
Or If the Max/Min Shallow Movement Recorder is enabled (in HIDDEN menu) this will show instead.
Following this, if a Bed Occupancy Sensor is fitted, the word VACANT will appear when appropriate.
However:
If SNOOZE is active then the time countdown will be displayed instead of all the above

ALARM ACTIVATING & RESET

When an alarm is activated the cause appears on line 1 of the screen with a minute/seconds counter on line 2 showing how long the alarm has been active. Any active alarm condition can be reset immediately by pressing the 'ALARM RESET' button so that the message "ALARM RESET" is displayed. After a period of 3 seconds the display screen will return to the Standby Monitoring Screen, providing that no further alarm conditions are activated.
Many of the alarms can be individually configured to be latching or automatically resetting. When an alarm is configured as latching, then once activated the alarm will continue until it is manually reset by pressing the 'ALARM RESET' button. When an alarm is configured as auto resetting, the alarm will automatically cancel as soon as the conditions causing the alarm have reverted to normal., though the screen will continue to show that the alarm was activated for 60 seconds. The configuration of the alarms as latching or auto resetting is made with the Hidden Settings screens. It is our practice to set all the alarms as LATCHING on radio versions to ensure the carer has to attend to the user and there is no uncertainty as to the cause of the alarm. For the wires versions, which are usually connected to Nurse Call or Telecare, we set all the alarms as non-latching so that the carer only has one RESET point, that being the Nurse Call point.

SNOOZE

There may be short times when it is desirable to have the Bed Movement alarms temporarily disabled. This is particularly useful if the user is restless for a period after going to bed, there is a need to use the bed for a caring activity or the user wants some privacy for a while. From the STANDBY screen pressing the RIGHT INCREASE button (as indicated by >=Zz) will show a time increasing in 5 minute steps. This will count down to zero, at which point the alarm monitor will recommence. Pressing the DECREASE button at any time will cancel the snooze period.

Radio Transmitter option (P139Bxx)

Model P139B includes a transmitter module and external aerial, which will pass an alarm condition to a remote P137 or P138 Pager. Any alarm indication that causes the red beacon on the P139 to flash will also cause an Alarm to be indicated on the Pager. Resetting the alarm at the P139 will also reset the Pager.
The radio transmission is “failsafe” in that if a regular heartbeat signal is not received, then the Pager will indicate that the RF link has failed (and hence the user may be at risk). This should be remedied immediately. Please see the Pager handbook (UH1068) for fault finding suggestions.
The communication address for this option is the ID Number displayed on the front panel, which can be adjusted from 1-64 within the hidden menu.

Alarm Receiver Option (P139xxB)

Models without a radio transmitter can house a P155 radio receiver unit that can be triggered by any compatible Alert-iT Care Alarm. In particular this has application for monitoring day-time falling, where the client wears a radio linked Fall detection badge (eg P135). Should the detector be activated then a radio communicated alarm will trigger the P139 to display “External Alarm”, and pass the alarm to any connected equipment (eg Nurse Call). For details how to pair the receiver with alarm units please see the P155 handbook (UH1093). The EXTERNAL ALARM is always non-latching be default, as it assumes the external equipment will control the rest condition.

MONITOR FUNCTIONS AND DETECTION OF SYMPTOMS AND CONDITIONS

SHALLOW BODY MOVEMENTS TO SUPPORT A TONIC (STATIC) SEIZURE or SUDEP

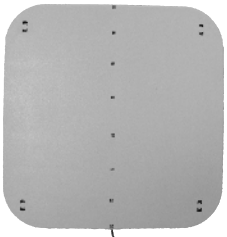
This function can be used when the movement Sensor Plate is plugged into the black socket marked “movement sensor” on the rear of the monitor.

⚠ **•The detection of TONIC seizures or SUDEP cannot be guaranteed with precision. The monitoring of shallow bed movements is a powerful tool in supporting users vulnerable to these conditions but may need to be supplemented depending on the health risks involved. The carer must make this risk assessment and the manufacture should be contacted for further advice as necessary**

The Sensor Plate can detect normal slow body movements which are associated with general muscle, diaphragm, stomach or heart activity. While the monitor ignores most low-level vibrations, care must be taken to ensure that the cot / bed being monitored is not subjected to continuous vibration, as this could delay or prevent activation of the alarm. This point can usually be covered via the Confidence Check procedure described later.
A “learn mode” is used to establish the normal shallow movement activity from which a Max and Min alarm condition can be set, which may help to warn of the onset of a TONIC condition. It is also possible to send an alarm if all movement ceases for a set period, as may indicate a SUDEP condition

Bed Movement Sensor Installation

The Sensor Plate with the label side uppermost should be placed on a firm, flat surface **UNDERNEATH** the mattress so that it will be located centrally under the area of the abdomen of the user. If the surface below the mattress is not firm or flat, the Sensor Plate should be supported by placing it on a piece of non-resilient board. Ideally the board should be made to cover the area under mattress and be made of a material such as plywood of at least 3 mm (1/8”) thickness. The cable from the Sensor Plate should be located so that it will not be liable to damage or present a hazard to the user. Ensure that thick bedclothes are not tucked under the edges of the mattress which might lift the underside of the mattress away from the Sensor Plate.



P140 Bed Movement Sensor
Mount with side shown uppermost for best sensitivity

⚠
- **The Sensor Plate should not be used in a moving pram, vehicle or in a rocking cot/crib.**
- **Draughts blowing over the bed/cot/crib may be detected by the Sensor Plate as shallow movements. This would delay or prevent activation of the alarm. The use of fans directed towards the bed/cot/crib should be avoided.**
- **The movement alarm will not necessarily detect early stages of choking as the rapid body movement and strengthened heart rate may be interpreted as acceptable shallow movements**
- **The use of this monitor alone for detecting SUDEP is not recommended**

SHALLOW MOVEMENT MINIMUM

If the movement rate falls below this setting the monitor display will show the alarm message “SHALLOW MIN”.and the alarm output will be activated. The setting ranges from OFF to 10 mpm (movements per minute)
The movement rate is usually averaged over a minute, but as an additional precaution zero movement detection is ONLY delayed by the Shallow Movement Delay, which should be set to avoid false alarms during apnoea type events (30 seconds is recommended)
See SHALLOW MOVEMENT ADJUSTMENT below on how to set the optimum value.

SHALLOW MOVEMENT DELAY

This sets the time after which an alarm (SHALLOW MOVEMENT) is raised when all shallow movement ceases. The value is set to avoid false alarms if the user exhibits periods on excessive stillness normally (eg in sleep apnoea), but fast enough to protect the user should a serious life threatening condition occur. If the user is know to be susceptible to this condition then the carer is responsible for assessing the risks of using this monitor and determining any additional surveillance necessary

SHALLOW MOVEMENT MAXIMUM ALARM

If the movement rate rises above this setting, the monitor will show the message “SHALLOW MAX”, and the alarm output will be activated. The setting ranges from OFF to between 20 and 30 mpm..
See SHALLOW MOVEMENT ADJUSTMENT below on how to set the optimum value.

SHALLOW MOVEMENT ADJUSTMENT

The normal sleeping pattern of a user will lead to great variability in the normal shallow movement pattern. The Guardian Monitor has a built-in MAX/min movement recorder to help assess the optimum settings.

- In the HIDDEN MENU (see later) the MAX/min DISPLAY function is enabled.
- The STANDBY screen (when no alarm is active) will then display the Maximum and Minimum recorded values at the start of the second line.
- The carer resets these to a nominal value of 15 at the start of the recording period by pressing the DECREASE (<) button.
- At the end of the recording period the values are noted and used to judge the best limits for the SHALLOW alarms.

Hints on setting Shallow Movement Monitoring

1. Using the TICK function is very useful to hear the movement sensor working.
2. Set the Shallow Magnification at 4 and with no user in the bed and no one touching the bed, check the small x symbol does NOT appear on the screen. Decrease the magnification if necessary to stop any sensor activity.
3. With the user or someone of similar weight lying on the bed check that the small x symbol appears regularly on the screen (particularly with each breath). Increase the Magnification if not, then recheck the x stops with no-one in the bed.
4. If SUDEP is of concern then set the Shallow Delay to 30 seconds and Shallow Min to 0. In this case also perform a risk assessment to ensure an appropriate range of monitoring is used
5. On the first few nights do not use the Shallow Alarm Max/Min alarms but enable the “MAX/min Display” recorder function in the hidden menu to detect the suitable settings
6. Once the user is sleeping press the DECREASE button (<) to reset & start the recorder
7. In the morning and before the user is awake, note the Max/Min readings and use these to set the alarm values with a margin to prevent false alarms.
8. Validate operation during observed seizures and adjust the magnification and detection limits as required. The manufacturer can be contacted for advice as required

RESET and SUSPEND SHALLOW MOVEMENT MONITORING

If the alarm is active and latched (eg on radio units), then press RESET to clear the alarm. The monitoring will then be suspended until 10 movements are detected (indicating the user safely in bed). This allows the monitor to remain dormant in the day, and automatically revert to monitoring at night.
For non-latched (eg Nurse Call) units, the alarm will automatically clear once movement is again detected. Alternatively press RESET to suspend the monitoring.

The monitor must be checked that it has returned to ACTIVE once the occupant has settled back in bed
To suspend monitoring for the day when no alarms are active, press the RESET/menu key, which will display the SUSPEND/POWER OFF screen. Select SUSPEND by pressing the DECREASE < key.

SHALLOW MOVEMENT MAGNIFICATION

To allow for different thickness, structure and composition of mattresses and the depth and degree of the user's movements, the monitor has an adjustable threshold setting.

- To help set this an audible “tick” can be enabled to sound each time a shallow movement is detected. Hence set TICK VOLUME to 8 (full volume) and have the user or a suitable subject lie as still as possible on the bed.
- Any Bed Occupancy Sensor should be disconnected for this test.
- The SHALLOW MAGNIFY is then increased until a regular series of ticks is heard, at least as often as any chest motion is observed.
- The bed should then be vacated and the ticking should cease, to check that room vibrations or air currents do not cause unwanted activation of the movement detection function. Should this occur then the MAGNIFICATION must be reduced and the above tests repeated.
- After successful setting, turn off the TICK facility.

ROUTINE TESTING SHALLOW MOVEMENT DETECTION

The Monitor should be tested on a regular basis. The confidence check establishes that the shallow movement alarm is operating correctly. For test purposes the bed should be empty. Push the mattress gently and rythmically and note that a * symbol appears in the bottom right of the display. Check this does not appear when there is no movement applied.

BODY SPASM MOVEMENT MONITORING

The spasm movement monitoring function of the monitor uses the bed movement sensor. For details see Bed Movement Sensor Installation (Page4)

When the Monitor has detected a spasm movement of sufficient intensity, a ‘#’ symbol will flash on the screen above the motion arrow in time with each movement.

SPASM ALARM

The seizure alarm is activated when movements are detected which are greater than a pre-set energy level and faster than a pre-set frequency, as well as lasting for at least a pre-set period. The monitor will then display the message “SPASM MOVEMENT ALARM”, and the alarm output activated.

SEIZURE DELAY

This setting adjusts the minimum period that movements need to persist before the alarm is activated. The period is adjustable between 5 and 60 seconds or, alternatively, the spasm alarm feature can be switched off. This can be done by pressing the 'menu' button until the screen “SPASM DELAY” is observed. Press the ‘INCREASE’ button to turn the seizure alarm function on and increase the setting. Press the ‘DECREASE’ button to decrease the time setting. Decreasing the time below 5 seconds will turn off the seizure alarm function.

If the time delay is set for too short a period, this will give an early warning of body movements, which may not necessarily be seizure movements, and is more likely to cause false alarms. If the time delay setting is increased this should reduce the probability of false alarms, but may not detect spasm movements of short duration. Some prior knowledge of the nature of the user’s seizure patterns is desirable to make a suitable choice of the time delay setting. The monitor will normally be provided with a pre-set time delay of about 15 seconds for general use and may not need to be changed, unless a more suitable specific setting can be selected based on experience with the user.
To adjust the setting, press the 'menu' button until the “SPASM MAGNIFY” display is observed. Press the ‘DECREASE’ button for higher energy movements and to decrease the detection gain Press the ‘INCREASE’ button to increase the gain for detection of low energy movements.

SPASM RATE SETTING

This adjustment can assist in distinguishing between the movements associated with normal body activity and rhythmic spasms. The spasm rate setting can be adjusted between 12 and 120 movements per minute in steps of 12 spasms/min. This adjustment is intended to prevent the alarm from being activated by slow, repetitive movements, which are not typical of a seizure.

To adjust the spasm rate setting, press the 'menu' button until the “SPASM RATE” display is observed. Press the ‘INCREASE’ button to increase the frequency limit (so that more rapid spasm movements are required to activate an alarm condition). To reduce the rate limit press the ‘DECREASE’ button (This will allow detection of seizures with both rapid and slow movements).

Setting the spasm rate limit to a low value may cause alarm activation with other normal movements and cause false alarms. By setting the spasm rate limit too high the probability of false alarms will be reduced but a seizure may possibly remain undetected. If in doubt initially set the frequency limit to a low value and gradually increase this, as necessary, in order to eliminate false alarms

Hints on setting SPASM detection

1. Turn off all other alarm sensors and use only the Seizure Detection.
2. Use the following settings as a start.
   Seizure Delay 15 seconds
   Spasm Rate 24 times per minute
3. You will note this means the system will require a minimum of 8 spasms to trigger the alarm, which is acceptable. If you do make the time shorter than 10 seconds then the minimum rate allowed will increase to ensure a reasonable number of spasms are needed to trigger the alarm (otherwise false alarms can be too easy).
4. Set the Spasm Magnification so that it is as high as possible (8), and test that the # symbol appears on the screen if the bed is pressed. If not, then check the connection and position of the sensor plate.
5. Decrease Spasm Threshold until the # symbol does NOT appear on the screen while the user is lying still or asleep normally.
6. Test the # does appear when the bed is pressed, but with less movement than the seizure produces. This test MUST be conducted every evening
7. If the system is failing to detect, then please note if the # symbol is flashing on the display while the seizure is in progress. If not, then the Magnification must be too low or the pad position is poor.

RESET SPASM MOVEMENT MONITORING

If the alarm is active and latched (eg on radio units), then press RESET to clear the alarm.
For non-latched (eg Nurse Call) units, the alarm will automatically clear once gross movement ceases.
The Spasm Monitor cannot be suspended as it will not false alarm when no-one is in the bed

SPASM MAGNIFICATION SETTING

The body movement energy level which can be detected is adjustable in 8 steps. Setting the spasm magnification at a high level will allow minor movements to be detected, at a low level the movements would need to be more energetic in order to be detected.

Routine Testing of Spasm Monitoring

Check the operation of the spasm alarm by repeatedly pressing on the mattress to simulate body spasm movements, and observe the # symbol appears with each press..

TRANSIENT SOUND ALARM

This alarm is designed to respond only to transient or non-continuous sounds in order to eliminate detection of background noises such as from radio, TV or talking. The monitor uses a microphone located in the top of the enclosure to detect sounds. The monitor will respond best when situated close to the source of sound but the exact positioning is not critical because the microphone is equally sensitive in all directions.

When the monitor has detected a sound, an bracket symbol **(** will flash in time with each sound on the display screen above the sound arrow indicator.

The transient sound alarm is activated when a sequence of transient sounds above a pre-set sound level occur within a pre-set time period. The sequence must repeat faster than a present frequency. The transient sound alarm can be set to respond for example to a baby crying, as well as personal vocalisations during a seizure or to someone calling for help. It is particularly designed to mirror the detection pattern used for Seizure Monitoring.

When the monitor detects sounds, which meet the set criteria, the monitor will display the message “TRANSIENT SOUND ALARM”, and the alarm output will be activated

SOUND DELAY TIME

The transient sound alarm requires the sounds to continue for a set time period. The time period commences with the first sound and continues for the pre-set time. This period can be set between 5 and 30 seconds in 5-second steps.

To adjust the sound monitoring period or turn the sound alarm function on or off, press the 'menu' button until the "SOUND DELAY" display is observed. Press the 'INCREASE' button to turn the sound alarm function on and increase the setting. Press the 'DECREASE' button to decrease the time setting. Decreasing the time below 5 seconds will turn off the sound alarm function.

SOUND MAGNIFICATION

The sensitivity to sound can be adjusted with this setting. This can be set in 8 steps .

To adjust this setting press the 'menu' button until the "SOUND MAGNIFY" display is observed. Press the 'DECREASE' button to decrease the gain (for louder sound) or press the 'INCREASE' button to increase the gain (to detect quieter sounds).

SOUND RATE

To activate the alarm, the sound bursts must occur faster than the rate set.

To adjust the rate, press the 'menu' button until the "SOUND RATE" display is observed. Press the 'INCREASE' button to increase the rate or press the 'DECREASE' button to decrease the rate.

Hints on setting SOUND detection

1. With the user is sleeping normally in the bed, set the sound magnification to maximum and observe the occurrence of the "(" symbol on the display. It is reasonable that this may appear occasionally due to some outside noise, but if it appears regularly (so that it would trigger an alarm) then decrease the magnification until it stops).
2. Set the alarm conditions to
   Sound Min Time 10 seconds
   Sound Rate 24 per minute
3. If the system fails to detect seizure please observe if the "(" symbol is being displayed with the sounds made by the user during a seizure, and raise the magnification if not.
4. If the system is prone to false alarms then try decreasing the tmagnification. If this leads to failure to detect then reset the magnification and increase the Sound Rate (but to no more than 60 per minute). Finally you may try increasing the time delay to 15 seconds .

RESET SOUND MONITORING

If the alarm is active and latched (eg on radio units), then press RESET to clear the alarm.
For non-latched (eg Nurse Call) units, the alarm will automatically clear once the sound ceases.
The allow for daytime suspending of the alarm, the SOUND monitoring is only active when the Shallow Movement monitor is also active (indicating by movement that there is someone in the bed to monitor)

Routine Testing of Sound Monitoring

Tap the unit or click fingers to stimulate a sharp sound and note the) symbol appears

MOISTURE ALARM (A Patient Connected Sensor)

This is used to detect excessive perspiration or bed wetting with urine or, with the sensor sheet over the pillow, saliva or vomit, All can be a consequence of an epileptic seizure.

This function of the system can be used when the lead of the moisture detection sheet is plugged into the blue socket marked "Moisture" at the rear of the monitor. The connection lead for the sensor should be connected to the monitor prior to fastening to the sheet. All 4 press-studs are then fastened to the sheet which not only allows moisture detection but also warns of a sensor failure.

The alarm is activated when the sensor sheet becomes moistened with fluid of sufficient electrical conductivity. The message “MOISTURE ALARM” will be displayed and the alarm output activated

The alarm will only cancel if the moisture detection sheet dries or is replaced with a clean dry one. However pressing RESET will suspend the alarm (showing SUSPENDED m) until sheet is replaced.

Moisture sensor fault warning

If the moisture detection function is active and the sensor is not connected to the monitor or a wire broken in the sheet, then the message “MOISTURE SENSOR FAULT” will be displayed, and an alarm output is activated. The alarm is reset when the sheet is correctly connected, but can be suspended by pressing RESET (and SUSPENDED m will be displayed)

MOISTURE CONDUCTIVITY SETTING

The sensitivity to the conductivity of the liquid required to trigger the alarm can be adjusted in 5 steps from that for moist to wet. Using the least conductive setting will cause the monitor to produce alarms with most liquids, inclusing perspiration. Setting the conductivity higher will make the monitor more selective, and will only produce alarms with more liquid.
To adjust the conductivity setting, press the 'menu' button until the ‘MOISTURE’ display is observed. Press the ‘INCREASE’ button to turn the body moisture alarm function on and increase the setting. Press the ‘DECREASE’ button to decrease the conductivity setting. Continuing to decrease the setting will turn off the moisture alarm function.

Hints on setting Wetting detection (either Bed or Pillow

1. Install the sensor pad in the bed on top of any waterproof mattress or pillow protection and connect.
2. Enable the alarm with the lowest sensitivity. Please note that the sensor pad is automatically tested for damage and a “Sensor Failure” will show if a wire is broken or the plug not inserted correctly.
3. If the system fails to detect, then note if the pad has been penetrated by moisture and reposition if necessary.
4. If the system to too sensitive (eg to dribbling or just slight wetting), then set the sensitivity accordingly.

Reset Moisture Alarm

The alarm will only cancel if the moisture detection sheet dries or is replaced with a clean dry one. However pressing RESET will suspend the alarm (showing SUSPENDED m) until sheet is replaced.

BED OCCUPANCY

This function can be used to provide a remote alarm after a preset period when the bed is vacated. It can be set to allow the user to leave the bed for a given time but generate an alarm if they have not returned within a preset time limit. The time period between the bed being vacated and the bed occupancy alarm activating can be set between 5 seconds and 8 hours. This feature will also stop nuisance alarms from the Shallow Movement sensor, whilst the bed is vacated. However to ensure failure of the mat does not permanently inhibit the Shallow Movement, a bed vacation alarm will always happen at least after 8 hours (the maximum time delay possible)
This function is automatically enabled by connecting an appropriate Bed Occupancy sensing device into the 3.5 mm socket marked “bed occupancy” at the rear of the monitor. The switch would need to be fitted with a jack plug as illustrated below.

Sensor Connection

There are currently 3 types of device that can be used.

1. **Bed Leg** sensor platform for location under a bed leg
   This adjustable device detects the change in weight of a bed when it is vacated. It acts as a normally closed switch when adjusted for an occupied bed.
2. **P143C Pressure sensitive mat** for use in the bed under the user
   In general the mat must be installed on top of the mattress, which should be firm. The mat is waterproof and easily wiped clean in the event of soiling. For a user of sufficient weight and size this simple device may be located under the mattress to detect the presence of a bed occupant. The mat will act as a normally closed switch for an occupied bed.
3. **P143E Bed Ribbon for under the mattress**

Hints on use of Bed Occupancy Sensor
1 If the user is known to leave the bed at night, or if the shallow movement false alarms indicate this is happening, then install the bed occupancy sensor. With the bed vacant the display should shows the word VACANT. Check that this word is not present when the user is in bed and sleeping normally.
2 If the user is known to risk collapsing out of bed then there is a feature to raise the alarm on extended vacation.

This is more discreet and comfortable than the mat but successful operation is influenced by the type of mattress, bed and user

Operation of Alarm

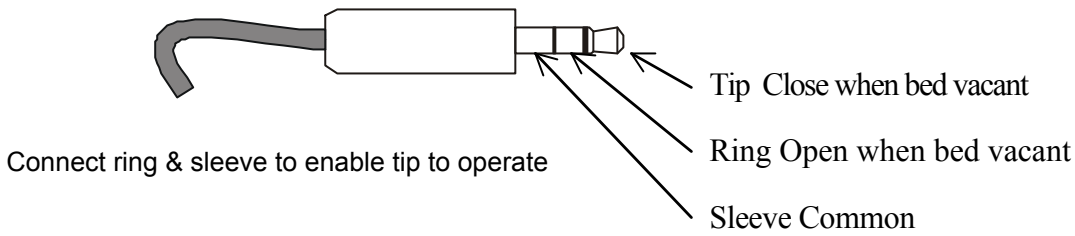
When the bed is vacated, thereby releasing the pressure switch, the shallow movement sensing is frozen to prevent any alarm from being activated. This enables a user to leave the bed temporarily without setting off alarms unnecessarily. The vacation is indicated on the normal display screen with the word “Vacant”.
When the bed is re-occupied and the pressure sensitive switch is activated the shallow movement function will resume after a short time.
If a time has been set for the bed occupancy alarm feature an alarm will be generated after the set time period, the monitor will display the message “BED OCCUPANCY ALARM”,and the alarm output will be activated.

Bed Occupancy Alarm Setting

To adjust the bed occupancy alarm delay setting, press the 'menu' button until the “BED OCCUPANCY” display is observed. Press the ‘INCREASE’ button to increase the delay period. Press the ‘DECREASE’ button to decrease the delay period.

.Reset and Suspending the Bed Vacation Monitoring

If the alarm is active and latched (eg on radio units), then press RESET to clear the alarm. The monitor will then be suspended (showing SUSPENDED b), until the bed is re-occupied.
For non-latched (eg Nurse Call) units, the alarm will automatically clear once the bed is re-occupied., or it can be suspended by pressing RESET.



EXTERNAL ALARM CALL

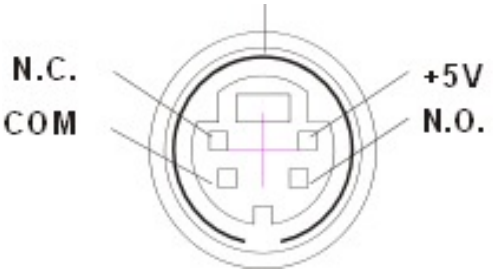
This alarm is only available on the P139xxC with the internal alarm receiver unit. This module can be coupled with up to 32 radio linked alarm monitors and if any trigger an alarm there will be:

- A period of 20 seconds while an audible tune is played, allowing the user to reset the source off any false alarm
- Activation of the alarm, with the message EXTERNAL ALARM displayed.
- The alarm is usually reset by resetting the external equipment.

RECALL DEFAULT

In the “hidden menu” the supervisor can store a complete snapshot of all the settings as “default”. Hence should the operator accidentally adjust any setting wrongly, this function will restore this saved default.

Output connector wiring



ALARM OUTPUT SOCKET

The multifunction alarm output socket is usually used to activate Nurse Call or Telecare devices. It also has power available for activating other equipment :

- Normally open contact output (closes for 2-3 seconds on alarm)
- Normally closed contact output. (opens 2-3 seconds on alarm)
- 5 volt power output (50 mA max.).
- Zero volt output

Continuous normally open or normally closed contact operation output is available to special order

BATTERY

An internal rechargeable battery allows the monitor to continue uninterrupted operation in the event of a mains power failure for several days or it allows the monitor to be used for short periods without a mains supply.

Battery Level Indication

When the battery status bar indication is static with hollow boxes, then the battery is powering the unit and there is no charger attached (and functioning). The number of bars indicates the battery charge condition as follows:

4 bars: 75 to 100% level (Fully charged)
3 bars: 50 to 75% level
2 bars: 25 to 50% level
1 bar: Up to 25% level (battery needs recharging immediately)
The later situation will be accompanied by short clicks from the audible alarm to ensure the potential danger is recognised.

Battery Charging

If possible, the monitor should be connected to the AC adaptor at all times. Prolonged periods of disconnection should be avoided. An inbuilt charger continuously monitors the battery condition. The battery charger has a number of modes of operation to maintain the battery in optimum condition.

Trickle Charge: While the monitor is connected to the mains supply via the AC adaptor the battery is trickle charged to maintain the battery voltage, even when the monitor itself is switched off. In this situation the Battery Status bargraph are solid black and static.

Fast Charge: If the battery needs charging, for example after a power cut, it will be automatically charged rapidly. This process is indicated by the battery bar graph continuously cycling from 1 through to 4 bars.

Top up charge: When the battery is nearly fully charged or when the battery needs charging during normal usage, intermittent charging will occur. This is indicated by intermittent cycling of the indicator from 1, 2, or 3 through to 4 bars.

Notes: Fast and Top up charging will only occur while the monitor is switched on with the mains adaptor operative.

Battery Fault: If the battery cannot be charged to its full capacity, the bars on the indicator are replaced with question marks '????'. The charging process will continue in an attempt to reinstate the battery condition and, if successful, the display will revert to normal. If the Battery fault indication continues for more than a few days, the battery should be replaced with an identical type available from your supplier.

Battery care

The type of battery used is capable of being continuously kept on charge and topped up to full capacity.

End of Battery life

The battery will need to be replaced when the battery fault indication persists for several days

Battery capacity check

Periodically, after about every 12 months of daily use, or after an extended period of non-use, the capacity should be checked. This is done by first waiting for the battery to reach the fully charged condition (steady 4 bars while the AC

adaptor is connected and switched on), and then disconnecting the AC adaptor and allowing the monitor to operate from the internal battery alone.

If, after 24 hours use, the monitor shows 2 bars, or more, the battery has some useful service life remaining. If the monitor fails to operate for the full 24-hour period or the battery charge level has dropped to 1 bar the battery should be replaced.

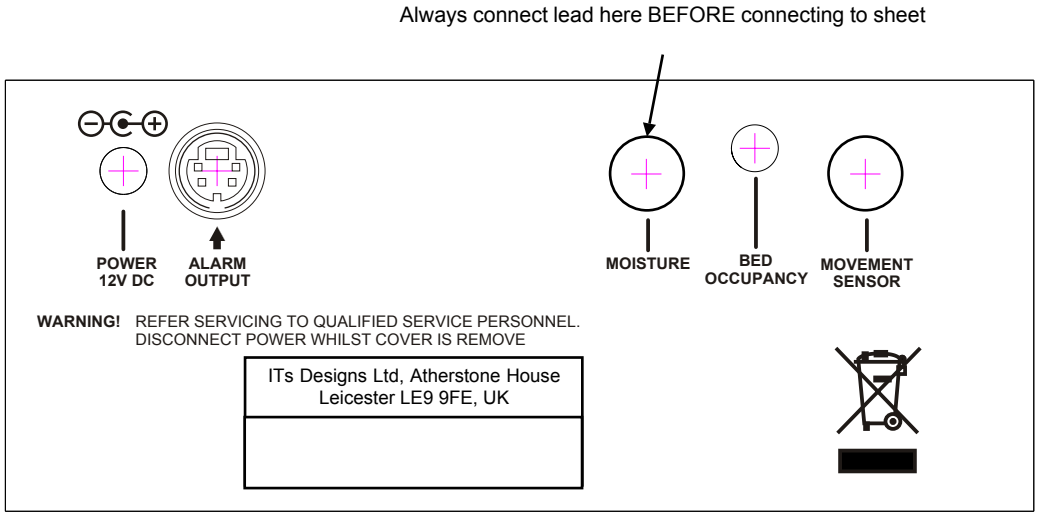
Periods of non-use

If the monitor is not going to be used for an extended period, ensure that the battery is fully charged before switching off and storing the monitor. Power is disconnected by removing the mains plug

Battery Replacement

Battery Type: 7.5v 1500mAh NiMH Bespoke Battery Pack available from iTs Designs Ltd

Note: When the battery is removed and replaced the monitor settings will revert to the default settings that have been pre-programmed. Thus ensure the defaults are safely saved (see HIDDEN menu) before removing the battery.
To replace or remove the battery, first switch off the monitor and disconnect the AC adaptor as well as any other connecting leads. Remove the side case screws and with a flat-bladed screwdriver depress the 2 tabs on the left and right hand sides of the monitor case and, with the monitor upside down, slide off the base, as illustrated. Disconnect the battery leads from the main board. Remove and keep the 4 retaining screws from the battery mounting board. Cut the 2 tie clips holding the battery and dispose of the old battery safely. Mount the new battery using 2 new tie clips and refit the mounting board with the 4 retaining screws. Re-connect the 2 battery leads, The base of the monitor can now be slid back into position. Squeeze the top and bottom of the enclosure together at each side so that they lock together.



INSTRUCTIONS FOR HIDDEN SETTINGS

These instructions are normally only used by service personnel or by the technical staff of authorised distributors of this product and allow functions to be tailored to a particular user's specific needs as follows:

- Hiding or display of menu items.
- Enabling or disabling of the internal audible alarm
- Radio Identification number setting.
- Site Identification number setting.
- Setting Alarms as latching or auto resetting.
- Saving of default settings.

To gain access to the hidden settings press the 'menu' button until the ‘POWER’ screen is displayed (one press from normal MONITOR screen) then press and hold the ‘INCREASE’ button for 10 seconds as shown on the countdown

Hiding or display of menu Items

Once you have gained access to the hidden settings the main menu entries for groups of functions can be set to either ‘VISIBLE’ or ‘HIDDEN’. (see table below)

Press the ‘INCREASE’ button to set to ‘VISIBLE’ or press the ‘DECREASE’ button to set to ‘HIDDEN’. Press the 'menu' button to advance down the list. If no buttons are pressed for 10 seconds then the monitor will revert to the normal STANDBY display.

The ‘VISIBLE’ selection allows full access for adjustment of the settings. The ‘HIDDEN’ selection maintains the current settings and hides the item from the menu to prevent user adjustment.

As an example, if the moisture detection feature is not required, set the moisture feature to ‘OFF’ using the main menu, then enter the Hidden Settings display and set the ‘MOISTURE’ display to ‘HIDDEN’. This will hide the moisture display from the main menu.

To ensure that all of the options are set as required, it will be necessary to check initially that all of the displays are ‘VISIBLE’. The required settings can then be adjusted and the displays hidden with ‘HIDDEN’.

Additional Control Settings

Power Off Func.

In some cases it is prudent to prevent the user turning the unit off. This can be done here

MAX/min Display

When VISIBLE this function shows the maximum and minimum shallow movements that have occurred since starting the recorder. This allows an intelligent assessment of the best settings for the Shallow Maximum and Shallow Minimum alarms, to protect those vulnerable to partial or tonic seizures. The recorder is reset to start a new session by pressing the DECREASE < key.

Audible Alarm

The audible alarm within the monitor can be turned on or off. It is often desirable to turn the ‘local’ alarm off if the monitor is linked to a remote monitoring station either via the alarm output socket or a radio link. In the Hidden Settings menu advance to the ‘AUDIBLE ALARM’ display with the 'menu' button and press the ‘INCREASE’ button to turn the alarm on, or the ‘DECREASE’ button to turn the alarm off..

Red Alarm Light

If the top red alarm light is likely to disturb the user, then it can be disabled

Monitor Identification number

When the monitor is fitted with a radio transmitter the monitor can be identified with an ‘ID’ number. This number should be set specifically so that no monitors operating within range of each other have the same number. In an environment where several monitors are in use, such as an institution, the ID could be set to match room numbers. When used with portable pager/ receiver alarms, the ID number can be displayed on the pager to identify the monitor from which the alarm signal has been received. The ID number can be set between 1 and 31.

In the hidden settings menu, advance to the ‘MONITOR ID No.’ display with the 'menu' button and press the ‘INCREASE’ button to increase the ID number or press the ‘DECREASE’ button to decrease the ID number. The ID number will scroll from 1 to 250 and 250 to 1.

Site Identification number

For asset management the monitors can be programmed with a ‘Site ID’ number. The site ID number can be set between 0 and 255.

In the hidden settings menu, advance to the ‘SITE ID NUMBER’ display with the 'menu' button and press the ‘INCREASE’ button to increase the ID number or press the ‘DECREASE’ button to decrease the ID number. The ID number will scroll from 0 to 255 and 255 to 0.

Alarm Output

The changeover relay is activated on alarm. It can be set to be activated while the alarm persists (as may benefit its use for a remote buzzer or beacon), or pulse for 2 seconds (usually required for activating a Nurse Call or Telacare interface)

Setting Alarms as latching or auto resetting

Once you have gained access to the hidden settings the alarms can be set as either ‘LATCHING’ or ‘AUTO RESET’.

Press the ‘INCREASE’ button to set to ‘LATCHING’ or press the ‘DECREASE’ button to set to ‘AUTO RESET’. Press the 'menu' button to advance down the list. If no buttons are pressed for 30 seconds then the monitor will revert to the normal display.

When an alarm is set as latching, once activated, the alarm will continue until it is manually reset by pressing the ‘ALARM RESET’ button. This is the default for radio pager based units as it ensures the carer responds at the room. When an alarm is set as auto reset the alarm will automatically cancel as soon as the symptoms causing the alarm condition have stopped. This is the default for Nurse Call systems as the wall box has to be reset by the carer and the duplicated reset function would cause confusion.

Saving of default settings

The default settings are those that are reloaded if the latest settings have been lost. This will occur, for example, if the internal battery is removed and replaced. It is advisable to set the default settings once the monitor has been configured to a particular user's requirements so that, in the event of disruption to the battery power, the settings will not be lost. The USER is also able to reload these settings if, for instance, the sensor parameters have been adjusted wrongly

To save the current settings as the default settings (including all of the user-adjustable settings), enter the Hidden Settings menu and advance to the ‘SAVE SETTINGS AS DEFAULT’ display by using the 'menu' button. Press the ‘INCREASE’ button to store the settings. The monitor will turn off and once the settings have been stored the monitor will turn back on in the STANDBY mode.

EXIT HIDDEN MENU

Select to exit the hidden menu loop and return to normal monitoring STANDBY screen.

Cleaning Instructions

Cleaning:
The following is a general guide line based on the components listed . Where a different sensor has been supplied, then please refer to the cleaning instructions supplied with that sensor. A series of techniques are described and the appropriate method is shown in the table on page 3.

Technique A
Wetting with strong disinfectant. This can include immersion provided plugs and any obvious breathing holes are avoided.

Technique B
Wiping with cotton wool pads moistened (compressed until dripping stops) with a mild detergent (0.5% washing up liquid) solution.

Technique C
Wiping with disposable 70% isopropyl alcohol wipes. Ensure that any plugs are completely dry before reinserting into the sensor input socket on the monitor.

Technique D
Full immersion in detergent , water and optional disinfectant. See component washing instructions for details

Typical Accessories for use with the P139 Monitor

Part Description	Part No	Cleaning
Bedside Monitor	P139B	C
Bed Movement Sensor	P140A	C
Bed Occupancy Mat	P143C	A
Extension lead for C	P157D	B
Power Supply for A (UK)	P113B	C
Pager	P138B	B
Power Supply for F*	P153A	C
Moisture Sheet	P142A	D
Connecting Lead for H	P141A	B
Bed Occupancy Ribbon	P143G	A
Bed Leg Weight Sensor	P144A	B
Nurse Call lead	P145	B

* recommended to be used out of patient reach

Alarm Setting & Pager Messages

Function/Menu	Left	Range		Comment	Defaut	Monitor /Pager	Client Set
ID Number/Site No				Appears on screen at power up			
On/reset/menu key	off		menu	Press to scroll menu. Press also resets alarms			
SUSPEND/POWER	OFF			1 press to suspend alarms, 2 press to turn off (if enabled)			
Tick Volume	off	1	8	Volume of click on each shallow movement	8		
Shallow Delay	off	10	60	Minimum time for Shallow movement alarm to be detected	30	SHALLOW MOVEMENT Urgent 11	
Shallow Magnify		1	8	Set for optimum movement detection using tick or * symbol	4		
Shallow Minimum	off	5	10	MPM below which is alarm	OFF	SHALLOW MIN Urgent 12	
Shallow Maximum	off	20	30	MPM above which is alarm	OFF	SHALLOW MAX Urgent 13	
Spasm Delay	off	5	60	Time for spasm to set alarm	15	SPASM MOVEMENT Urgent 01	
Spasm Magnify		1	8	Set for optimum detection of spasm using # symbol	4		
Spasm Rate		12	120	Movements per minute above which a spasm is assumed	24		
Sound Delay	off	5	30	Time for sound level to set alarm	OFF	TRANSIENT SOUND Urgent 05	
Sound Magnify		1	8	Sensitivity of microphone	4		
Sounds Rate		1	20	Sound bursts per minute to trigger alarm	24		
Moisture	off	1	5	Fault alarm if sensor open circuit. Covers moist to wet	OFF	MOISTURE Help 21	
Bed Occupancy	Stop Alarms	5 s	24h	Time allowed for vacancy before alarm. Shallow alarm inhibited.	15 h	BED VACATION Help 23	
Reload Default				Snapshot saved in “hidden menu”			

Other alarms without set-up parameters		
Function	**Pager**	**Comment**
Moisture Sensor fault	Fault 21	Open circuit wires
Battery Low	Fault 31	Connect charger
External Alarm	Help 20	Only on P139xxB with internal radio receiver

Hidden Menu Settings

Function	Comment	Factory Setting	User Setting
Power Off Func.	Stops user switch off: VISIBLE/HIDDEN	VISIBLE	
Shallow Movement	VISIBLE/HIDDEN	VISIBLE	
Spasm Movement	VISIBLE/HIDDEN	VISIBLE	
Transient Sound	VISIBLE/HIDDEN	VISIBLE	
Moisture	VISIBLE/HIDDEN	VISIBLE	
Bed Vacation	VISIBLE/HIDDEN	VISIBLE	
Snooze Feature	Allows the user a period without some alarms	VISIBLE	
MAX/min DISPLAY	Shows values learned overnight	HIDDEN	
Audible Alarm	Loud internal audible alarm	OFF	
Red Alarm Light	Enables the red alarm warning light on top	ON	
Monitor ID	Used as Unit Address for Radio Use, hence every P139 must be different when used with P137/8 Pager	1	
Site ID NUMBER	Information only	0	
SPASM MOVEMENT	Latching or self resetting when alarm cleared	Alarm Latching	
Transient Sound	Latching or self resetting when alarm cleared	Alarm Latching	
Shallow MOVEMENT	Latching or self resetting when alarm cleared	Alarm Latching	
Moisture	Latching or self resetting when alarm cleared	Alarm Latching	
External Alarm	Reset normally on external equipment	Alarm Auto Reset	
Alarm Output	Auto-reset = 2 seconds, Latched = continuous	Auto-reset	
Save as Default	All settings will be remembered as default and can be restored by the USER		
Exit HIDDEN SETTINGS			

This system is certified to the following European Standards	
93/42/EEC: 2007/47/EC[1] **EN 300 220-1 V2.1.1 (2006-04)** EN 14971:2007 EN 61010-1:2005 EN12182:1999 EN 61010-1-2:2004 *Also complies with* 2002/95/ECRoHS	Class 1 Medical Device Permitted radio transmission Risk Assessment Medical Device Safety Assistive Technology Medical Device EMC Permitted Materials

[1]*Alert-it Care Alarms are social aids designed and manufactured in accordance with 93/42/EEC as Class 1 Medical Devices. They are intended to improve the vigilance of carers to distressing side-effects of various diseases, such as Epilepsy and Dementia. They do not monitor vital physiological processes and should not be expected to diagnose any disease or predict the onset of any symptoms.*

Certified as Class 1 Medical,
Class II Electrical Safety

Additional Documents	
Quick Start Radio System	UQ1136
Quick Start Wired	UQ1208
Recommended Initial Settings for P139	UT1248
Epilepsy Support risk calculator	UT1167
Product Selection for Epilepsy Support	UT1166
You tube Instruction Videos Index	UT1198

Support

HELP: 0845 2179951
FAX : 0845 2179953
enquiries@alert-it.co.uk

Designed by:
ITs Designs Ltd
Leicester
LE9 9FE UK

...using technology to care for carers

None of the components, including batteries should be disposed of as Domestic Waste. For information on disposal contact iTs Designs Ltd.

The Alert-it system has been designed with due regard to reliability and integrity. While it offers a highly vigilant monitoring method,it is always possible that a distress condition can go undetected for a variety of reasons (including malfunction) and in life threatening situations it is advisable to use the Alert-it system in conjunction with additional monitoring techniques (e.g. video). Neither the manufacturer nor its agent can accept legal responsibility to provide a system that is infallible. The carer is responsible for assessing the risks of using this equipment and any settings pertaining to it.