PSD3G User's Guide

Confidential

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1. INTRODUCTION

1.1 PURPOSE

The PSD2 improves prison guard safety. The PSD2 *Distress* Button allows a guard to summon help with the push of a button. The PRISM system tracks the location of each guard so help can arrive promptly. The PSD2 also monitors whether or not a guard is moving and upright and if the PSD2 is attached to the guard's belt. An alarm is sounded so that help can come to his aid if the guard appears to be down or immobile. An alarm is also sounded if the PSD2 is removed from the guard's belt.

2. PSD3G USER'S GUIDE OVERVIEW

2.1 PSD3G ON/OFF CONTROL

The PSD3G defaults to being turned *ON* when first powered up but can be turned *OFF* so that it can be shipped. To turn the PSD3G *OFF*, connect a powered charging plug into the PSD3G power jack J1. Then press the *Test* Button. The PSD3G will emit a series of tones that decrease in frequency. The PSD3G can be then disconnected from the charging plug. It will be *OFF*.

To turn the PSD3G back *ON*, place the PSD3G into its charger (or connect a powered charging plug into J1). Then press the *Distress* Button. The PSD3G will emit a series of tones that increase in frequency. The PSD3G can be then removed from the charger or disconnected from the powered plug. It will be *ON*.

2.2 RESET ALERT

The reset alert consists of a series of tones lasting one second. This series sounds when power is applied to the PSD3G (when the battery is connected) or if the PSD3G is reset or if the watchdog timer times out.

2.3 BATTERY CHARGER DISPLAY

The LED indicates the battery charging status when the PSD3G is plugged into the battery charger. The LED glows *ORANGE* while the battery is charging at a full charge rate and *GREEN* after the battery is charged. The LED continues to display as long as the PSD3G is in the charger unit. The LED is turned *OFF* to conserve power after the PSD3G is removed from the charger.

A short (0.5-seconds), two-tone, audio alert is sounded if the PSD3G is removed from the charger before the battery is fully charged. There is no LED display for this condition. These tones alert the user that the PSD3G battery is not fully charged. The PSD3G will also display a low-battery condition during the battery test and will transmit a low-battery status. The only way to remove a low battery status is to fully charge the battery until the LED turns *GREEN*.

The LED will flash *RED* if the battery cannot be charged within a programmable amount of time, typically four hours (See *Command B* in *Appendix B* for more information about setting the charger timeout time). This will most likely happen if the battery is defective or if the battery is so completely discharged that it cannot be recharged within the programmed time. The user could remove the PSD3G from the charger, then replace it back into the charger to try to charge is again. The battery was most likely depleted excessively if the PSD3G successfully charges the second time. The battery is probably defective and needs to be replaced if the battery does not successfully charge the second time.

2.4 NORMAL MODE DISPLAYS

2.4.1 BELT CLIP ALERT DISPLAY

The PSD3G issues an audio alert whenever the *Belt Clip* is *OPENED* or *CLOSED*. Both alerts consist of a series of tones that last 1 second. The series of tones decrease in frequency and the LED flashes *GREEN* when the belt is *OPENED*. The series of tones increase in frequency when the belt is *CLOSED*. There is no LED display when the belt *CLOSES.*

The PSD3G is stored in the battery charger with the belt clip *OPEN*. The belt clip remains *OPEN* as the PSD3G is removed from the battery charger. This will cause the PSD3G to sound a *Belt Open* Alert and flash the *GREEN* LED for 10 seconds after the PSD3G is removed from the battery charger. The PSD3G will sound the *Belt Closed* Alert when the PSD3G is placed on a belt and the belt clip is closed. The PSD3G can then be enrolled in the PRISM System. The belt clip status will be displayed by the PRISM System after the PSD is enrolled.

2.4.2 DISTRESS BUTTON ALARM DISPLAY

A 10-second audio alarm sounds, a 10-second *Distress* status is transmitted to the PRISM System and the LED flashes *GREEN* for 10 seconds if the *Distress* Button is pressed. The audio alarm consists of two frequencies that alternate and repeat at 1-second intervals.

2.4.3 TEST BUTTON DISPLAY

A short, two-tone, audio alert sounds to provide feedback that the *Test* button was pressed. The audio alert sounds when the *Test* button is released if the *Test* button is pressed for less than two seconds. This increases the motion time threshold from the default one minute to two minutes for two hours. This is used to reduce the number of false lack-of-motion alarms because it gives the wearer two minutes instead of one minute to move enough for the PSD3G to notice the movement. After two hours, the timing reverts back to one minute unless the wearer presses the *Test* Button prior to the two hours timing out.

If the *Test* button is pressed for more than two seconds, a *Test* Button audio alert sounds after the two-second delay. The LED then glows *GREEN* if the PSD3G battery voltage is good or *RED* if it is low (this assumes that the battery is not too weak to prevent the MSP430 from operating) for as long as the *Test* button is pressed.

2.4.4 ACCELEROMETER WARNING AND ALARM DISPLAY

A 10-second audio warning is issued if the PSD3G is tilted over 60 degrees from vertical for 10 seconds or is motionless for 120 seconds (programmable). This is followed by a 10-second alarm if the *Down* condition is not corrected before the alarm starts sounding. The warning sound is two 200mS tones alternatively repeating followed by 800mS of silence. The *Down* audio alarm consists of the two warning tones alternately repeating every second for 10 seconds.

Technical detail: The buzzer shakes the PSD3G case while it is sounding. The accelerometer can detect this shaking and firmware could interpret it as movement. So, the Down Warning signal consists of periods of 800mS of silence to allow the accelerometer and firmware quiet times to check the PSD3G Down and movement status.

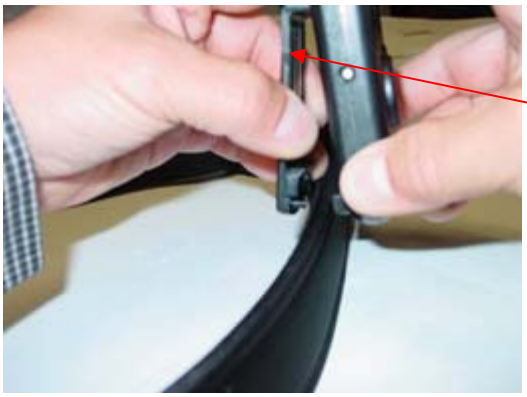
The *Down* alarm transmits a *Down* status to the PRISM System and flashes the LED *GREEN* for 10 seconds. If the PSD3G operator knows that he will be tilted or motionless, he can press the *Test* Button for over two seconds (until the battery test display is displayed) prior to the *Down* warning being sounded. This deactivates the *Down* warning, alarm and status for 60 seconds.

3. INSTALLATION

The purpose of this section is to describe how to install a PSD Unit.

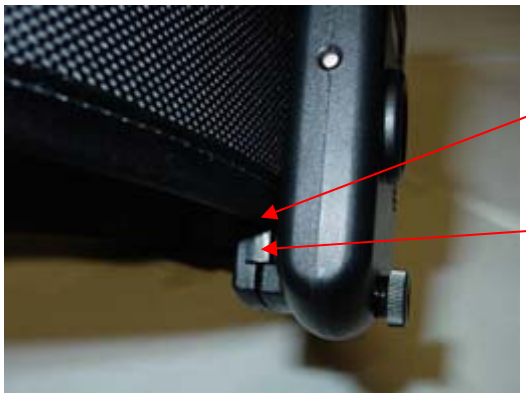
3.1 INSTALLATION PROCEDURE

Install PSD unit on belt by pulling clip away from housing and slipping unit over belt. Do not force the clip.



Squeeze PSD unit and Clip around belt, tighten thumb screw until screw is finger tight and clip alarm sounds.

Belt Clip Slider should be against belt. The Belt Clip Slider keeps the PSD unit upright and tight against the belt.



View of PSD Unit properly installed on belt.

4. REGULATORY STATEMENT

4.1 Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:
This device may not cause harmful interference.
This device must accept any interference received, including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy. If this equipment is not installed and used in accordance with the manufacturer's instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by during the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
Consult the dealer or an experienced radio/TV technician for help. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

4.2 Disclaimer Statement

The information in this document is subject to change without notice and does not represent a commitment on the part of the vendor. No warranty or representation, either expressed or implied, is made with respect to the quality, accuracy or fitness for any particular purpose of this document. The manufacturer reserves the right to make changes to the content of this document and/or the products associated with it at any time without obligation to notify any person or organization of such changes. In no event will the manufacturer be liable for direct, indirect, special, incidental or consequential damages arising out of the use or inability to use this product or documentation, even if advised of the possibility of such damages.