SENTRY EC

Alarming Dosimeter & Ratemeter

THE SENTRY EC

RADIATION ®
A•L•E•R•T
QUALITY HANDHELD DETECTORS

se
INTERNATIONAL

The Sentry is a Personal Alarming Dosimeter and Rate Meter that measures gamma and x-ray radiation and provides dose rate monitoring in a small rugged package. The Sentry works as a stand alone unit or in conjuction with the optional SentryCom Software, which can assist in tracking exposure to generate incident reconstruction and analysis.The Sentry employs two bright pulsating LEDs, an Audio Alert, and/or a Vibration Alert for the selectable alert levels. Default Dose Alarm is 500 mR and the Default Rate Alarm is 50 mR/hr. If ordered in the optional µSv, the default Dose Alarm is 5000 µSv and the Default Rate Alarm is 500 µSv/hr. Coupled with the software, The Sentry can provide dose measurement, dose rate measurement, and dose history. It also enables you to easily set the alert to your desired levels for dose and rate.

User Interface

LEDs

There are two LEDs labeled Dose and Rate located on the endpanel. The LED labeled Dose will light when the Dose warning or alert is going off. The LED labeled Rate will light when the Rate warning or alert is going off.

Switches

The Sentry has two switches on the top of the unit. The first, located near the center of the end panel controls the power (ON/OFF), vibration alarm (VIBE), or the the audio and vibrate alarm (AUDIO). The second switch, located on the right of the unit, controls the audio clicks that sound with every count. It has two icons labeling the positions. ◁ Clicks on. ⊗ Clicks off. This switch is also used to turn off active alerts and
warnings.

The Sentry EC

The Sentry EC has a mini-USB port located on the end panel of the instrument, no headphone jack, an energy compensated GM tube, and an aluminum enclosure.

Peizo Speaker

Select Mode

Audio & Vibrate
Vibrate Only
Off/On

Symbol Marks
Center of Tube

Rate Alarm Light

Audio Clicks
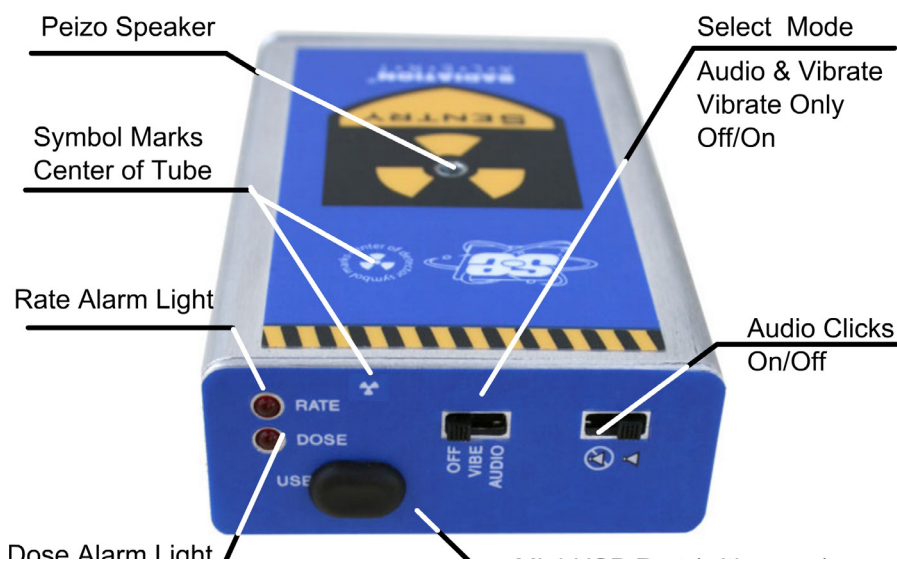On/Off

RATE
DOSE
USE

OFF
VIBE
AUDIO

Dose Alarm Light

Fig. 2   The Sentry EC (w/ Aluminum Enclosure) Switches
and LED Functions

Alert Modes

When The Sentry is initially switched on, the Sentry will conduct an alarm test. You will hear one high to low alert and feel a vibration. The audio and vibrating alert has two stages; *The Warning Alert* and *The Alarm.*

Audio and Vibrate Mode

The Warning Alert
The first stage of the alert is triggered when you reach the set warning level. The warning audio alert pulsates from high to low with a 1 second delay accompanied by a pulsating vibration. The flashing LED indicates a Rate or Dose Warning.

The Alarm
The second stage of the alert is triggered when you have reached the set alarm threshold. The full alarm is a pulsating beeping sound with no pause accompanied by a pulsating vibration. The solidly lit LED indicates a Rate or Dose Alarm or both.

Vibrate Mode

The Warning Alert
The first stage of the alert is triggered when you reach the set warning level. The warning vibration and the flashing LED indicates a warning. A flashing LED indicates a Rate or Dose Warning.

The Alarm
The second stage of the alert is triggered when you have reached the set alarm threshold. The full alert is a pulsating vibration notably faster than the warning. The solidly lit LED indicates a Rate or Dose Alarm or both.

Fig. 3 Screen capture of Sentry Com Software screen where the user can set the warning and threshold alerts. Default mR settings shown above.

Acknowledging an Alert

To turn off the alert, change the position of the audio clicks switch. This will tell the unit that you have ackowledged the alert. You can switch it back if you want clicks or no clicks and the alert will remain off. After leaving the field detected, the alert resets itself and will reset to alert the next time you enter a field corresponding to the preset alert and warning levels. If the unit is set to the Audio and Vibrate Alert mode, users can turn off the audio portion of the alert by switching the mode switch to "vibe". The vibration alert and the LED will continue without the audio alert.
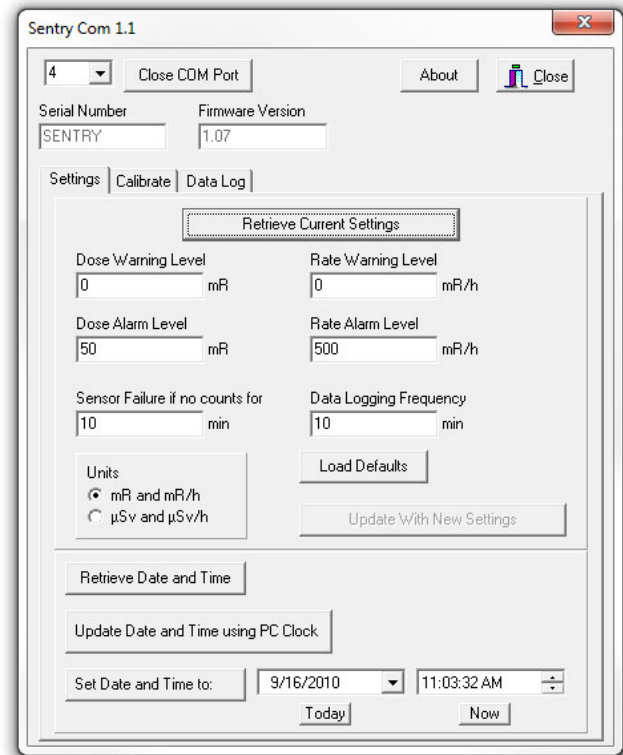
The SentryCom Software

The SentryCom Software enables the users to change the alert levels for both dose and rate, set the time and date, as well as download incident data.

Connecting The Sentry EC to a PC

To connect the Sentry to a PC with the included microUSB cable.

Launch The SentryCom Software, select the Com Port number assigned to your Sentry, and click "Retrieve Current Settings". This will populate the fields with the current alert and time/date settings, as well as the calibration factor.

For help identifying the COM Port Number
associated with your Sentry, go to The Device Manager on your PC. See Fig. 6 for information on accessing the Device Manager.

Changing your Default Alert Levels

When you open The SentryCom Software, the "Settings" tab opens by default. To change the alert levels on The Sentry, click on the field containing the setting you would like to change. After you have changed them to your desired settings, click "Update with New Settings" to update The Sentry. You will hear a beep after the settings are stored in The Sentry. Note: The minimum warning value for both is 0.1. To turn off the warning alerts, enter "0" (Zero) "0" = "OFF" .

Fig 5. The Sentry EC - Unplug the mini-USB cap from the USB port and connect the mini-USB cable
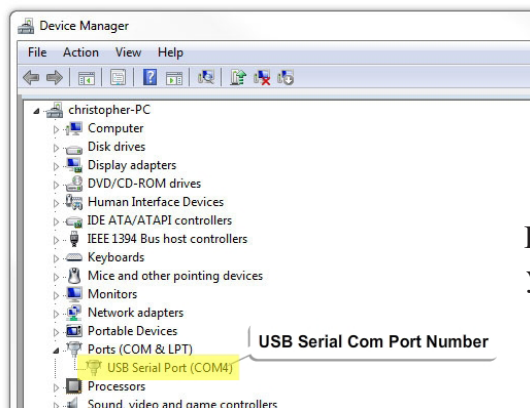

Fig 6. The Device Manager - To view the PORT NUMBER assigned to your USB or Serial connection, go to the PORTS section of the Device Manager. To access the Device Manager on your PC, go to:
Start > Control Panel > System Properties > Device Manager > Ports

Changing from mR & mR/hr to µSv & µSv/hr

WARNING: When changing the units from mR & mR/hr to µSv & µSv/hr, ALL THE ACCUMULATED DOSE DATA STORED IN THE SENTRY WILL BE ERASED.

To change the units of measurement, click the desired unit and click the "Update with New Settings" button.

Data Logging Frequency

This setting will determine how often data is recorded. For example, if you set the frequency to 1 minute, there will be a record every 1 minute when you download your accumulated data from The Sentry. (See Fig. 8)

Changing the Time and Date on The Sentry

To display the current date and time setting for The Sentry, click "Get Date and Time".

To set the date and time of The Sentry to the current date and time of your PC, click "Set Date and Time to PC" and then click "Update with New Settings" button. (See Fig. 3)

You can also set the date and time to any desired setting by selecting the date and time you desire in the available date and time fields and then clicking "Update with New Settings".

Calibration Factor

If the factory defaults of The Sentry do not meet your needs, you can adjust the deadtime and the cal factor by inputting your new settings in the Calibration tab.

Retrieving Accumulated Dose Data

The Sentry allows the user to download and log data that has been accumulated in The Sentry's memory. To download your data, connect your computer to The Sentry as described in *Connecting The Sentry to the PC*. Click on the "Data Log" tab, then click "Retrieve Data". After the table in the Data Log tab has been populated, you can click "Save Data" to save it to your computer as a text file. Accumulated Exposure readings labeled "Power On" indicate that the unit was turned off and on.
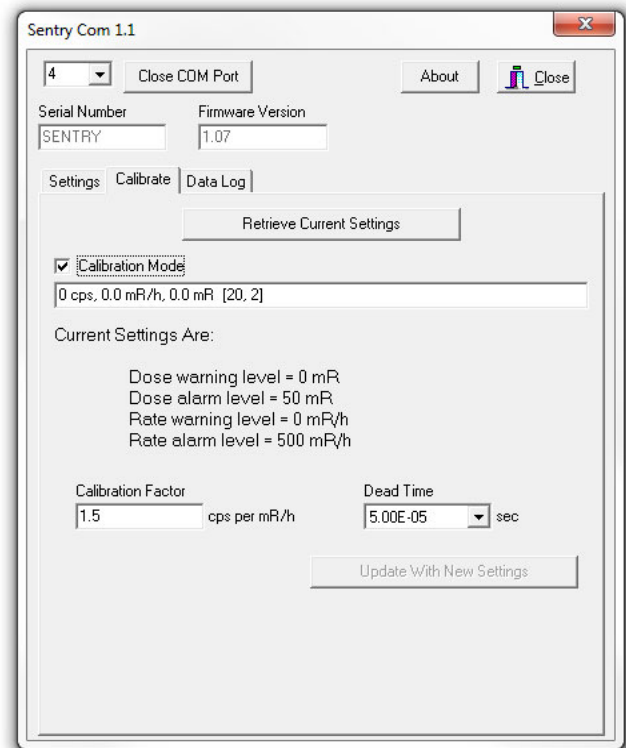

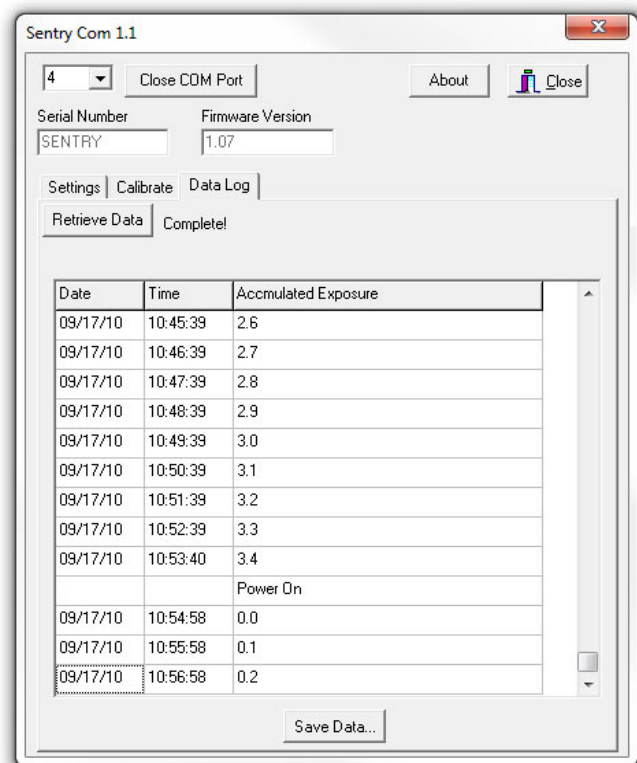Fig 7. Screen capture of the Calibration Screen

Fig 8. Screen capture of the Data Retreval Screen

Changing the Batteries on The Sentry EC

WARNING: When changing the battery, please be aware that there is high voltage on the board inside the unit. Improper handling could cause injury. Aside from the batteries, there are no user serviceable parts in the Sentry.

9-Volt Battery

To change the 9-volt battery, first make sure that the USB cap is inserted into the jack on the top of the unit. This will help hold the circuit board in place when changing the 9-volt battery. Next, unscrew the bottom endpanel (the endpanel with the serial number), and remove it. Unsnap the battery and replace it with a new one. Put the battery back in place and screw the endpanel back on to the unit.

Button Battery (CR-1025)

The typical battery life is 75,000 hours. If you are getting errant time and date stamps on your accumulated dose data, the button battery needs to be changed. READ ALL INSTRUCTIONS BEFORE ATTEMPTING TO REPLACE COIN BATTERY.

Sentry EC:
1. Unplug the USB cap from the mini-USB port on the top of the unit.
2. Unscrew the bottom endpanel (the endpanel with the serial number), and remove it.
3. Disconnect the 9-volt battery from the unit to prevent any shock or damage to the board.
4. Gently pull the circuit board out of the bottom of the unit with the belt clip side facing up (fig. 10).
5. Replace the small button battery located next to the transformer.
6. After replacing the battery, slide the circuit board back into the case, plug in the USB cap to hold   the board in place.
7. Replace the 9-volt battery, and screw the endpanel back on to the unit.

Fig. 10

Troubleshooting

When I download the accumulated dose data, the time and date read
in strange characters like "3F:7F:7F".

> *The button battery in the unit needs to be changed.*

I've tried a variety of different COM ports when connecting to unit using the Sentry Com Software, but it does not connect.

> *Ensure that the device is turned on.*

> *Open the "Device Manager" and go to "Ports" to see what the com port number is for that unit. If you have the correct port number and it still doesn't connect, make sure that the cable is properly connected to both the unit and the computer.*

When I turn on the unit, I get a "chirping sound" that isn't like the beeps I get for each count.

> *The chirps are to notify the user of two possible situations. First, check that the 9-volt battery is good. When the voltage on the battery gets too low, the chirping starts to let the user know that the battery needs to be changed. The other is to let the user know that the unit is not recieving counts and that the GM tube or the unit itself has been damaged. If you change the battery and are still hearing the chirps after 5 minutes of the unit being on, please contact S.E. International, Inc. for assistance.*

In the event that you stored The Sentry without a 9-volt battery or with a depleated one, the date on the unit will revert to 1/1/00. If you are not using the software to track your data, this is not an issue. If you are using The SentryCom Software, simply connect the unit to a PC, and reset the time and date before use.

Specifications

Detector
Sentry: Uncompensated GM Tube
Sentry EC: Energy Compensated GM Tube
Dose Rate Linearity
Better than ±15% up to 15 R
Energy Response
Sentry: down to 30 KeV
Sentry EC: down to 20 KeV
Gamma Sensitivity
1.5 cps/mR/hr referenced to Co-60
Switch Functions
Power, Audio On/Off, Vibrate & Audible Alert,
Silent Vibrating Only Alert
Operating Range
Dose Rate: .1 - 15 R/hr / Dose: .1 - 15 R/hr
Accumulated Dose: .1 - 65 R
Audible Alarms
Accumulated Dose & Dose Rate 90db @ 1 ft.

Alarm Thresholds
Default: Dose 500 mR / Rate 50 mR/hr
Sievert Option:
Dose 5000 µSv / Rate 500 µSv/hr
Alarm and warning levels are user selectable
with Optional SentryCom Software.
Connectors
Sentry: Headphone Connector, Internal Serial
Header connector (cable w/ Optional Sentry
Software)
Sentry EC: mini-USB.
Power Requirements
9 Volt Battery. 1500 hrs at normal background.
Temperature Range
-20° - + 50°C (-4° - +122°F)
Weight
Sentry: 4.8 oz. with Battery
8.3 oz w/ optional Boot
Sentry EC: 8 oz with Battery

LIMITED WARRANTY

WARRANTOR: S.E. International, Inc., P.O. Box 39, 436 Farm Road, Summertown, TN 38483-0039, USA, 931.964.3561

ELEMENTS OF WARRANTY: S.E. International, Inc., warrants for 1 year the Geiger-Mueller tube and for one year all materials and craftsmanship in this product to be free from all defects with only the limitations set out below.

WARRANTY DURATION: The warranty shall terminate and be of no further effect one year after the original date of purchase of the product or at the time the product is: a) damaged or not maintained as is reasonable or necessary, b) modified, c) repaired by someone other than the warrantor for a defect or malfunction covered by this Warranty, d) contaminated with radioactive materials, or e) used in a manner or purpose for which the instrument was not intended or contrary to S.E. International, Inc.'s written instructions. This warranty does not apply to any product subjected to corrosive elements, misuse, abuse, or neglect.

STATEMENT OF REMEDY: In the event that the product does not conform to the warranty at any time while this warranty is effective, the Warrantor will repair the defect and return the instrument to you prepaid, without charge for parts or labor.

NOTE: While the product will be remedied under this warranty without charge, this warranty does not cover or provide for Shipping cost to the factory for repair is the responsibility of the customer. Customer is also responsible for international costumes, duties, and taxes to and from the repair facility.

the reimbursement or payment of incidental or consequential damages arising from the use of or the inability to use this product. The liability of the company arising out of the supplying of this instrument, or its use, whether on warranties or otherwise, shall not in any case exceed the cost of correcting defects in the instrument, and after the said one year period all such liability shall terminate. Any implied warranty is limited to the duration of the written warranty.

PROCEDURE FOR OBTAINING PERFORMANCE OF WARRANTY: In the event that the product does not conform to this warranty, please write or call to the address above. S.E. International, Inc. will not accept contaminated instruments for calibration or repair under warranty or otherwise.

NOTE: Before using this instrument, the user must determine the suitability of the product for his or her intended use. The user assumes all risk and liability connected with such use.