

Industrial Hygiene

This chapter describes the measurement features associated with the Industrial Hygiene optional firmware 831-IH.

Measurement Setup

The Industrial Hygiene measurement features are setup from the Settings Screen, in the same manner as the basic measurement parameters are setup as described in Chapter 4 "Basic Measurement Setup" on page 4-1.

When this firmware is loaded in the instrument, two tabbed pages named Dosimeter 1 and Dosimeter 2 will appear which were not described in that chapter. The Dosimeter 1 and Dosimeter 2 Pages are provided to permit the evaluation of two independent noise dose data sets. Other than being on separate pages, they are identical. Note that the default values for Dosimeter 1 parameters are as shown in FIGURE 8-1.

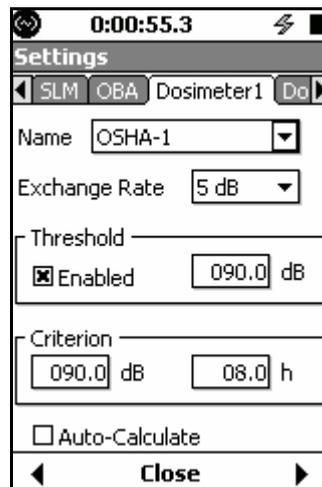


FIGURE 8-1 Dosimeter 1

Predefined Setups

In most cases, measurements of this type are setup to conform to a specific standard. The Model 831 permits the user to create such a setup in a single step by simply selecting the applicable standard. The standards addressed by the Model 831 and the corresponding parameters are as shown in Table 8-1 'Predefined Noise Dosimeter Setups'.

Standard	Exchange Rate	Threshold	Criterion	
			Level	Hours
OSHA-1	5	90	90	8
OSHA-2	5	80	90	8
ACGIH	3	80	85	8
NIOSH	3	80	85	8
IEC	3	Not Enabled	85	8

Table 8-1 Predefined Noise Dosimeter Setups

The Name field will already be highlighted when the Dosimeter 1 or Dosimeter 2 sections are opened. If this has been changed, use the 8 key to move the highlight back to the Name field.

The names of the predefined setups can be accessed from the Name field at the top of the display. Press the **ENTER** key to drop down a list of predefined setups by name as shown in FIGURE 8-2.

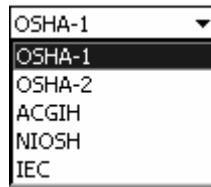


FIGURE 8-2 Predefined Dose Setups

Highlight the name of the desired setup and press the **ENTER** key to make the selection. The name of this setup will now appear in the Name field and all parameters will be set according to the setup selected, as shown in FIGURE 8-3.

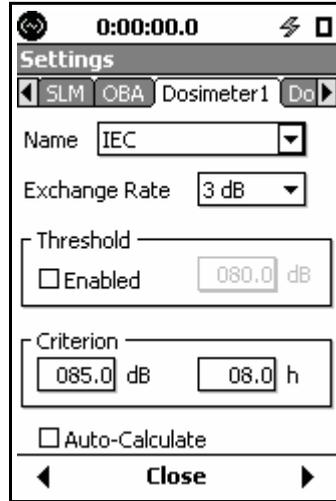


FIGURE 8-3 IEC Setup

Parameters Individually Defined

In the Dosimeter Page there are two fields (Name and Exchange Rate) and two sections (Threshold and Criterion).

Name Field

If a predefined setup has been selected and any of the preset parameters are modified, the user should consider changing the name of the setup.

The Name field is optional, although many users will enter text associated with the measurement to be performed such as a specific company Dose standard (“My Dose”) or the name of a standard not in the list. To enter a name, use the and keys to highlight the Name field. Use the key to highlight the name portion of the highlighted box; then press the key. Use the , , and keys to enter the desired characters. Press the key to complete your entry.

Parameter Fields

The titles of the second field (Exchange Rate) and the two sections at the lower portion of the display (Threshold and Criterion) correspond to the three parameters we wish to set. Within each is a numeric field into which the user can enter the value desired. Highlight the desired section and proceed as described below.

Exchange Rate

To set the exchange rate, highlight the data field and press the **ENTER** key to open a drop down list of values, as shown in FIGURE 8-4 "Exchange Rate List" .

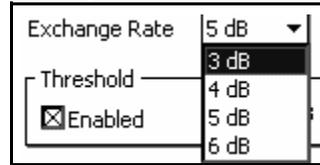


FIGURE 8-4 Exchange Rate List

Highlight the desired value and press the **ENTER** key to make the selection.

Threshold and Criterion

*Note that when setting the Threshold value, the Enabled check box must be checked before data can be entered into the numeric field. Use the Left Softkey to highlight the box and press the **ENTER** key.*

To set these parameters, highlight the appropriate section, press the **ENTER** key, enter the numeric value desired, then press the **ENTER** key.

Auto-Calculate

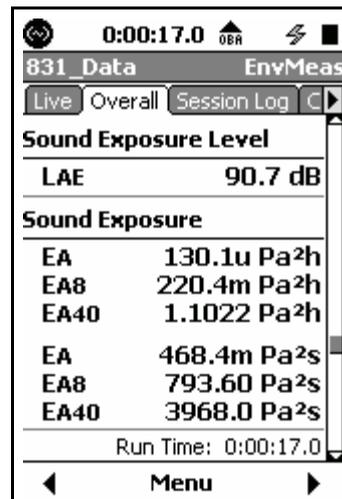
As described above, the Criterion Level and Time are set independently. However, in the standards there is a linear relationship between the Criterion Level and the Time. When Auto-Calculate is activated, by checking the check box to the left, then only one of these need be entered and the other will be automatically set to follow the standard.

Data Display

The Industrial Hygiene measurement data are displayed on the Overall Page of the Data Display View, as are the results of the basic sound level measurements as described in Chapter 5 "Basic Data Display" on page 5-1.

Four sections will appear: **Sound Exposure**, **Dosimeter 1**, **Dosimeter 2** and **SEA**. The two dosimeter displays will be identical except for the measurement values (if they had been setup with different measurement parameters). These four sections will be found just before the last section of the Overall Page.

Sound Exposure



The screenshot shows a handheld device interface with a status bar at the top displaying '0:00:17.0' and '0dB'. Below the status bar, the title '831 Data EnvMeas' is visible. A navigation bar contains 'Live', 'Overall', 'Session Log', and 'C'. The main content area is titled 'Sound Exposure Level' and shows 'LAE 90.7 dB'. Below this, a section titled 'Sound Exposure' contains two tables of metrics. The first table shows 'EA 130.1u Pa²h', 'EA8 220.4m Pa²h', and 'EA40 1.1022 Pa²h'. The second table shows 'EA 468.4m Pa²s', 'EA8 793.60 Pa²s', and 'EA40 3968.0 Pa²s'. At the bottom, 'Run Time: 0:00:17.0' is displayed, and a 'Menu' button is at the very bottom.

Sound Exposure Level	
LAE	90.7 dB

Sound Exposure	
EA	130.1u Pa²h
EA8	220.4m Pa²h
EA40	1.1022 Pa²h

EA	468.4m Pa²s
EA8	793.60 Pa²s
EA40	3968.0 Pa²s

Run Time: 0:00:17.0

FIGURE 8-5 Overall Page, Section 10

Section 10 shows the Sound Exposure metrics (in this instance for A-weighted). L_{AE} is the sound exposure level (previously known as SEL). The Sound Exposure metrics indicate the actual and extrapolated (8 and 40 hours) exposure accumulated in terms of hours and seconds. These are discussed in "Sound Exposure (SE)" on page D-16 and "Sound Exposure Level (SEL, LE)" on page D-17.

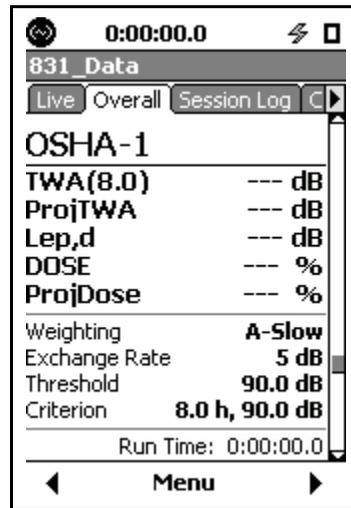


FIGURE 8-6 Dosimeter 1 Display

In this example, we can see that the measurement parameters correspond to the setup named “OSHA-1”.

TWA(8.0)

The value of TWA(8.0) (Time Weighted Average for 8 hours) is based on data measured during the run time and calculated for the user-defined Criterion Time, in this case 8 hours. The value of Criterion Time is set by selecting a predefined setup as described in "Predefined Setups" on page 8-2 or by entering a numerical value as described in "Threshold and Criterion" on page 8-4.

As an example, suppose a measurement was performed over a time period of ten minutes. The value of TWA(8.0) would be the same as the TWA measured over an eight hour period if there had been no sound exposure other than that which occurred during that ten minute period.

ProjTWA

The ProjTWA (Projected Time Weighted Average) is calculated from data measured during the measurement run

time and calculated without regard to the criterion time. Continuing with the example in the above paragraph, the ProjTWA for that ten minute measurement represents the value of TWA which would be measured if the noise measured during the ten minute period had continued for eight hours.

$L_{ep,d}$

The Daily Personal Noise Exposure, $L_{ep,d}$ is calculated from data measured during the run time of the measurement.

DOSE

Dose is based on data measured during the run time calculated for the user-defined Criterion Time and Criterion Level (100% definition). As an example, suppose a measurement was performed over a time period of ten minutes. The value of Dose would be the same as the Dose measured over an eight hour period if there had been no other sound exposure other than that which occurred during that ten minute period.

ProjDOSE

Projected Dose is based on data measured during the run time and calculated without regard to the criterion time. Continuing with the example in the above paragraph, the Projected Dose for that ten minute measurement represents the value of Dose which would be measured if the noise measured during the ten minute period had continued for eight hours.

The remainder of the display shows the parameters used for the measurement: Frequency Weighting, Exchange Rate, Threshold and Criterion (time and level).

SEA

The SEA parameter is used primarily in the Canadian province of Quebec.



FIGURE 8-7 SEA Display

SEA is an integration of 1 second peaks that exceeded 120 dB. Both the SEA value and the frequency weighting used for the measurement are displayed.

